

**NO ALARM: HYPERSONIC WEAPONS DEVELOPMENT AND THE SHIFTING  
LOGICS OF ARMS CONTROL**

by

Omar Garcia

B.A., King's University College at Western University, 2015

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES  
(Political Science)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

August 2016

© Omar Garcia, 2016

## **Abstract**

Why has the development of hypersonic weapons systems provoked such little concern among arms control organizations relative to that raised by the development of autonomous weapons systems and soldier-enhancing technologies, on one hand, and past weapons research programs with similar strategic implications, like Ronald Reagan’s Strategic Defense Initiative, on the other? This thesis employs social network analysis and case comparisons to argue that a historical shift in arms control imperatives has shifted attention from weapons systems of interstate strategic consequence to weapons systems of individual consequence. Specifically, the shift from the Cold War arms control paradigm to a humanitarian arms control agenda after 1991 has led to the prioritization of efforts to limit or ban weapons that indiscriminately or disproportionately harm individual human lives. As a result, weapons systems that threaten to upset the military balance between the leading global military powers—like hypersonic weapons systems—no longer cause as much concern as was the case for most of the past century and a half.

## **Preface**

This thesis is an original, unpublished intellectual product of the author, O. Garcia.

## Table of Contents

<b>Abstract.....</b>	<b>ii</b>
<b>Preface.....</b>	<b>iii</b>
<b>Table of Contents .....</b>	<b>iiiv</b>
<b>List of Figures.....</b>	<b>v</b>
<b>List of Abbreviations .....</b>	<b>vi</b>
<b>Acknowledgements .....</b>	<b>vii</b>
<b>Dedication .....</b>	<b>viii</b>
<b>Chapter 1: Introduction: Culture, Weapons, History.....</b>	<b>1</b>
<b>Chapter 2: Variation in Normative Alarm: Emerging Weapons Systems and Threat Perceptions.....</b>	<b>7</b>
<b>Chapter 3: Hypersonic Weapons Development and International Security .....</b>	<b>14</b>
<b>Chapter 4: No Alarm: Historical Shifts in Arms Control Paradigms and Threat Perceptions.....</b>	<b>18</b>
<b>Chapter 5: Conclusion and Implications: Politics that are no Longer Active? .....</b>	<b>29</b>
<b>References .....</b>	<b>31</b>

## List of Figures

Figure 1 Prevalence of specific terms in English literature, 1950-2007 .....	12
Figure 2 Relative Polularity of specific search terms, 2005-2016.....	12

## **List of Abbreviations**

SDI (Strategic Defense Initiative); NGO (non-governmental organization); FAS (Federation of American Scientists); ICRC (International Commission of the Red Cross); 9/11 (September 11, 2001); CPGS (Conventional Prompt Global Strike); US (United States); A2/AD (anti-access/area denial); PLA (People Liberation's Army); MAD (Mutually Assured Destruction); START (Strategic Arms Reduction Treaty); ABM (Anti-Ballistic Missile Treaty).

## **Acknowledgements**

I thank the faculty, staff and my fellow students at the UBC Department of Political Science. Their help and advice were integral to both the completion and final quality of this project. In particular I wish to thank Dr. Arjun Chowdhury for his guidance throughout this process, his patience, and his honest and helpful feedback. I owe thanks also to Dr. Richard Price, who encouraged my fledging interest in the normativity of weapons systems and who offered constructive commentary at both the earliest and last stages of this project.

Special thanks are owed to the Social Sciences and Humanities Research Council of Canada, whose financial support was indispensable during my studies. I also thank the Political Science Department at UBC for its financial assistance.

Finally I thank my parents, Omar and Maria, and my sister, Laura, for always supporting my endeavors.

## **Dedication**

To my grandparents—Alfonso and Gilma, Omar and Maruja.



## Chapter 1: Introduction: Culture, Weapons, History

It is ironic that a century as violent as the twentieth should have been marked also by the most sustained and comprehensive efforts to codify the conduct of armed conflict and define ‘legitimate’ or ‘appropriate’ means of war. Or perhaps not—perhaps the historically unprecedented interest in limiting the destructiveness of war that motivated the First Hague Conference of 1899 and which continues in other guises today was a necessary consequence of that destructiveness itself.

Yet the recent history of arms control efforts and of the relationship between weapons and politics more generally is not linear or without setbacks. Indeed, both the logic and practice of arms control have changed in significant ways since the beginning of the last century. Many of the agreements and resolutions reached in 1899 and in the Second Hague Conference of 1907 were, after all, either neglected or broken in the decades that followed—only to resurface again in even more ambitious treaties after World War II. In other words, arms control initiatives did not become a political imperative with widespread support overnight. While the efforts today of governments, multilateral bodies and non-governmental organizations alike to control weapons in some manner or other may seem natural and appropriate, the fear of and concern over military technologies is, in fact, powerfully conditioned by history. The suspicions that often accompany the introduction of novel military technologies are never inevitable or automatic: they reflect, as we will see, prevailing perceptions of threat as well as the power certain actors in world politics have to problematize and stigmatize specific weapons systems and military practices.

The contingent—erratic, even—nature of the ethics of weaponry (and by extension, arms control efforts) is well illustrated by the Paris Exposition of 1900. Organized to celebrate both the ‘civilizational’ achievements of the nineteenth century and the elemental force of progress—which were understood to be synonymous—the event was fittingly titled *L’Exposition Universelle* to capture what it represented: the ‘universal’ genius of a world created in Europe’s image. Massive pavilions and ornate displays were set up to showcase everything from art to sculpture to

architecture—all, indeed, that was thought to embody human ingenuity and creativity.<sup>1</sup> The most modern technological advances were on display as well: the wonders of electricity, the first x-ray machines and even proto-automation.<sup>2</sup> Innovations in weaponry were included, too. One of the displays was the Palace of Armies and Navies, which “showcased the great advances in the past decade in making weapons more destructive.”<sup>3</sup> And, “[i]n sections set aside for foreign countries, the British had [for example] built a Maison Maxim...devoted to the eponymous machine gun.”<sup>4</sup> Imagine for a moment the outcry that would follow if the United States today set up a House of Drones to celebrate the striking power of unmanned military technologies.

Yet what is most striking about the recent history of arms control is the way some novel weapons systems are singled out as particularly problematic, and thus in need of control, and not others. More striking still are cases of weapons technologies whose attributes and implications raise concerns in specific historical junctures, but not in others. The history of arms control, in other words, presents us with two types of puzzles: first, what explains variation in the degree to which contemporaneous weapons systems elicit concern? For example, why were chemical weapons, and not rapid-firing artillery batteries, labelled ‘inhumane’ in the early twentieth century? Second, what explains variation in the degree to which certain military capabilities elicit concern *across time*?

For example, there are a number of similarities between the supersonic Vengeance 2 rockets Nazi Germany introduced in the final months of the Second World War and the hypersonic weapons systems that the United States, China and Russia are developing today. The V-2 rockets marked a qualitative breakthrough in *speed*: at the time of their introduction, no other weapon in the hands of the Allies or the Axis was as fast. The ‘unparalleled’ speed of V-2 rockets obviated the elaborate air defense system Great Britain had successfully employed against German bomber aircraft and the slower V-1 rockets, effectively rendering the British people ‘defenceless’ against

---

<sup>1</sup> Margaret McMillan, *The War that Ended Peace: The Road to 1914* (New York: Random House, 2013), 3-18.

<sup>2</sup> *Ibid*, 9.

<sup>3</sup> *Ibid*, 25.

<sup>4</sup> *Ibid*.

V-2 rocket attacks.<sup>5</sup> Similarly, there are no ballistic missile defense systems in operation or under development today that would be capable of intercepting the types of hypersonic weapons that the world's foremost military powers are developing.<sup>6</sup> In other words, the qualitative impact V-2 rockets had in 1944-1945 is comparable to that which hypersonic weapons will have in the near future: all things being equal, the velocity and launch-distance attributes of these weapons relative to that of their contemporary countermeasures makes them tactically—and strategically, as we will see—problematic.

In contrast to the V-2 rockets, however, which were received with alarm by the Allies because they could not be defended against, hypersonic weapons development today has not raised much normative concern.<sup>7</sup> Indeed, while other contemporary emerging weapons systems such as autonomous weapons, soldier-enhancing bio-cognitive technologies and cyberwarfare capabilities have been the subject of extensive normative scrutiny, hypersonic weapons systems have not—despite the significant tactical-strategic implications they portend. Shortly put, while some emerging weapons technologies, like autonomous weapons, appear to challenge widely-held normative ideas of what constitutes an acceptable ‘means of war’, others, like hypersonic weapons, do not. Why is this the case? Why has the development of hypersonic weapons systems not provoked the same degree of normative alarm as that of autonomous weapons and soldier-enhancing bio-cognitive technologies? That hypersonic weapons technologies have provoked little anxiety is more puzzling still when contrasted with past weapons research programs, like Ronald Reagan’s Strategic Defense Initiative, that portended to have similar military-strategic consequences. This thesis attempts to address this puzzle.

---

<sup>5</sup> Fortunately for the Allies, the German V-2 offensive did not last long enough for it to have any strategic impact. In fact, Allied Supreme Commander Dwight D. Eisenhower noted in hindsight that, had the V-2 been introduced only six months earlier, the strategic posture of Allied troops in Normandy would have been at risk. See *Ibid*, 17-18.

<sup>6</sup> James M. Acton, “Hypersonic Boost-glide Weapons,” *Science and Global Security* 23, no 3. (2015) 212-13.

<sup>7</sup> Of course, the tactical and normative impact of novel weapons systems is far more evident during open war. This partly explains why V-2 rockets were so feared—they were actively being used against civilian populations. That said, since both V-2 and hypersonic weapons have comparable tactical attributes, a corresponding similarity in concern should nevertheless exist. In the interwar period, for example, bomber aircraft drew much alarm in Britain—even *before* they were used—and *also* because it was thought they could not be defended against.

To explain the variation in normative impact among contemporary emerging weapons systems, generally, as well the lack of normative concern hypersonic weapons systems development has provoked, specifically, this thesis advances a historical argument. In what follows, I outline this argument in brief. But first, it will be useful to define what, exactly, *normative impact* means in relation to emerging weapons systems.

The normative impact of emerging weapons technologies refers to the extent to which novel weaponry challenges existing standards of what an appropriate—that is, normatively acceptable—weapon of war constitutes. Emerging weapons technologies with significant normative impact, then, are those that upset or push the boundaries of how war, as a contest of strength, should be fought. What is worth stating from the outset, however, is that the normative impact of emerging or existing weapons systems is not solely the function of weapons’ material attributes *themselves*. Rather, the normative impact of novel and existing weaponry is largely a product of social construction: through both contingency and agency, some weapons are marked as normatively problematic and in need of control.<sup>8</sup>

There is a simple, if nevertheless important, reason or explanation behind the limited normative impact hypersonic weapons development has had. Put shortly, arms control initiatives today are dominated by a humanitarian logic. The shift away from the Cold War arms control paradigm has moved normative attention from long-range missile technologies and nuclear security—which largely dominated Cold War armaments ethics debates—to other weapons systems and security issues. To illustrate, I contrast the reaction the American Strategic Defense Initiative (SDI) provoked in the 1980s with that provoked by hypersonic weapons today. The contrast is significant because, like hypersonic weapons today, SDI was seen as potentially destabilizing. SDI was criticized for having the potential to upset the condition of Mutually Assured Destruction that held between the United States and the Soviet Union; likewise, as we

---

<sup>8</sup> See Richard M. Price, *The Chemical Weapons Taboo* (Ithaca: Cornell University Press, 1997); Richard M. Price and Nina Tannenwald, “Norms and Deterrence: The Nuclear and Chemical Weapons Taboo,” in *The Culture of National Security: Norms and Identity in World Politics*, ed. Peter J. Katzenstein (New York: Columbia University Press, 1996); Richard M. Price, “Reversing the Gun Sights: Transnational Civil Society Targets Land Mines,” *International Organization* 52, no. 3 (1998): 613-644

will see, hypersonic weapons threaten to upset the nuclear balance between Russia, China and the United States. Yet unlike SDI, which was the subject of much controversy and debate, hypersonic weapons development has produced relatively little discussion.

Because the post-Cold War arms control paradigm is mainly premised on humanitarianism, there is far more normative scrutiny today over weapons technologies of *individual consequence*. That is, weapons technologies that are likelier to indiscriminately or disproportionately harm individual human beings elicit more normative alarm than weapons technologies of *systemic consequence*—weapons that threaten to destabilize interstate security relations. Thus, because hypersonic weapons development has not been framed and is not seen as a humanitarian issue—while other emerging weapons systems are—it has elicited much less normative concern.

The reason why there has been a shift in arms control paradigms is that interstate strategic stability—the international balance of power—no longer features prominently among prevailing threat perceptions. The concept and agenda of human security cast a shadow on the system security paradigm that dominated Cold War international security thinking. Following the Cold War, and especially after 2001, a series of ‘new’ threats quickly became the focus of international attention: among them terrorism, climate change and civil war. These wider shifts in threat perceptions trickled down, as it were, into arms control agendas. As a result, the influence and impact of certain actors in transnational advocacy networks increased. Thus, after 1989, the International Commission of the Red Cross and Human Rights Watch, who Charlie Carpenter calls the *advocacy super powers* of the humanitarian arms control network, achieved unprecedented success in launching arms control campaigns.<sup>9</sup>

The paper proceeds in three sections. First, I show that hypersonic weapons have, in fact, provoked little normative alarm relative to other emerging weapons technologies and international ‘threats’—namely, autonomous weapons and soldier-enhancing bio-cognitive technologies, as well as, for example, terrorism. Second, I detail the implications of hypersonic weapons

---

<sup>9</sup> Charli Carpenter, *“Lost” Causes: Agenda Vetting in Global Issue Networks and the Shaping of Human Security* (Ithaca: Cornell University Press, 2014), 8, 27, 100.

development for international security and argue that there *should* be more normative concern over this emerging capability. In the third section I present the paper's main arguments.

## Chapter 2: Variation in Normative Alarm: Emerging Weapons Systems and Threat Perceptions

Weapons research and development is driven by a logic, or imperative, that is immediately and in the first instance ethically suspect: the production of ever more efficient means to harm. If a *weapon*, by definition as well as function, is an “artefact designed to be the means to harm,”<sup>10</sup> it necessarily follows that weapons research commissioned to “improv[e] existing standards of accuracy, velocity, range, rapidity of fire, size, reliability of the delivery and the control of more and more deadly projectiles”<sup>11</sup> is inevitably bound to and complicit in a self-propelling complex of violence. There are, therefore, persuasive ethical reasons why weapons research and development, as an enterprise that facilitates harm, is normatively questionable.

But while there is indeed at least a first instance, baseline argument against weapons research and development *tout court*, there is nevertheless remarkable variation in the degree to which particular weapons development programs draw normative concern and become implicated in ethical debates. This variation, moreover, is empirically demonstrable. This section details this variation by contrasting the levels of normative alarm autonomous weapons, soldier-enhancing bio-cognitive technologies, and hypersonic weapons—members of the conceptual and empirical ‘emerging weapons systems’ category—have provoked. But first, a word on methodology.

How can ‘levels of normative alarm’ be empirically measured? Surveys are one possible approach: a questionnaire could be devised to document whether some emerging weapons technologies provoke more normative concern than others. Tracking public debates and discussions over emerging weapons systems is another option. Specific-term search trends in leading search engines as well as the prevalence of specific themes and topics in literature also indicate the salience of certain issues in world politics. All things being equal, weapons systems that generate ‘noise’ are likelier to be the subject of normative consideration. A third option involves documenting whether transnational advocacy networks are drawing attention to specific emerging weapons systems. Again, weapons development programs that become the focus of arms control NGOs or United Nations agencies can be coded, or understood, as producing higher levels

---

<sup>10</sup> John Forge, *Designed to Kill: The Case Against Weapons Research* (New York: Springer, 2013) 10.

<sup>11</sup> *Ibid*, 11.

of normative alarm than weapons development programs that do not.<sup>12</sup> I employ a combination of options two and three. By looking at the degree to which particular emerging weapons systems provoke ethics-driven public discussion—in the shape of academic analyses—as well as transnational advocacy concern, I show that while autonomous weapons systems and bio-cognitive soldier enhancements have provoked substantial normative alarm, hypersonic weapons have not. I show, furthermore, that hypersonic weapons technologies and interstate nuclear security are concerns or ‘threats’ of less urgency today than, among other issues, terrorism.

Scholarly literature on the ethics of weapons development is replete with discussions and analyses of autonomous weapons systems and soldier-enhancing technologies—but not of hypersonic weapons systems.<sup>13</sup> Here, I present demonstrative but not exhaustive evidence of this disparity.

Work by scholars of weapons ethics, both in recent years and since the turn of the century, stipulates that advances in robotics as well as the life sciences have serious implications for the ethics of war. Almost axiomatically, autonomous technologies are said to involve “legal, ethical and societal concerns.”<sup>14</sup> Among emerging weapons systems, autonomous weapons systems,

---

<sup>12</sup> Of course, these three approaches do not exhaust all possibilities. Rather, they stem considerations of what, for the purposes of this paper, is plausible. My approach, moreover, does not yield foolproof or definitive evidence but, rather, a plausible standard of proof.

<sup>13</sup> See, for example, Armin Krishnan, *Killer Robots: Legality and Ethicality of Autonomous Weapons* (Farnham: Ashgate, 2009); Peter W. Singer, *Wired for War: The Robotics Revolution and Conflict in the 21st Century* (New York: Penguin Books, 2009); Patrick Lin, Keith Abney, and George A. Bekey, eds., *Robot Ethics: The Ethical and Social Implications of Robotics* (Cambridge: Massachusetts Institute of Technology Press, 2012); Peter Asaro, “How Just Could A Robot War Be?” in *Current Issues in Computing and Philosophy*, eds. Adam Briggie, Katinka Waelbers and Philip Brey (Fairfax: IOS Press, 2008); Jason Borenstein, “The Ethics of Autonomous Military Robots,” *Studies in Ethics, Law, and Technology* 2, no. 1 (2008): 2-17; Mark S. Swiatek, “Intending to Err: The Ethical Challenge of Lethal Autonomous Systems,” *Ethics and Information Technology* 14, no. 4 (2012): 241-54. On enhanced soldiers, see, for example, Paolo Tripodi and Jessica Wolfendale, *New Wars and New Soldiers* (Burlington: Ashgate Publishing Company, 2011); Patrick Lin, “Ethical blowback from emerging technologies,” *Journal of Military Ethics* 9, no. 4 (2010): 313-31. Here, Lin looks at both robotics and human enhancements.; Jai Galliot and Mianna Lotz, eds., *Super Soldiers: The Ethical, Legal and Social Implications* (New York: Routledge, 2015); Nayef R.F. Al-Rodhan, *The Politics of Emerging Strategic Technologies: Implications for Geopolitics, Human enhancement and Human Destiny* (New York: Palgrave, 2011); Dave Shunk, “Ethics and the Enhanced Soldier of the Near Future,” *Military Review* 95, no. 1 (2015): 91-98.

<sup>14</sup> Jack M. Beard, “Autonomous Weapons and Human Responsibilities,” *Georgetown Journal of International Law* 45, no. 3 (2014): 620.



soldier enhancements and cyber weapons are singled out as “ethically and legally problematic.”<sup>15</sup> In fact, several works that look explicitly at emerging weapons technologies do not even mention hypersonic weapons but devote considerable attention to, for example, autonomous and cyberwarfare capabilities.<sup>16</sup> Indeed, it is striking that academic journals such as the *Journal of Military Ethics*, *Military Review* and the *Journal of Applied Philosophy*, which routinely publish work that addresses the ethics of war and weapons, have countless articles on the ethical implications of autonomous weapons and enhanced soldiers but *not a single publication* on hypersonic weapons.

One of the substantive issues that drives scholarly work on the ethics of war is remote or virtual warfare.<sup>17</sup> Emerging technologies that remove soldiers from the battlefield, this line of work holds, must be ethically interrogated. Overwhelmingly, it is unmanned, cyber and autonomous weapons systems that are the subject of this type of ethical analysis. Ethical concerns over “killing at a distance,”<sup>18</sup> however, should also apply to missiles, artillery and aircraft systems—to all weaponry, indeed, that employs projectiles. Alarm over ‘remote’ or ‘virtual’ lethality implicitly and unjustifiably assumes that soldiers operating long-range artillery batteries, for instance, are less ethically compromised than soldiers operating unmanned weapons systems.

To be sure, that there is a dearth of ethical concern over hypersonic weapons development relative to other emerging weapons systems does not mean academics have shown *no* interest in the implications of these weapons systems. Analysts associated with *The Bulletin of the Atomic Scientists*, the *Nonproliferation Review* and the Federation of American Scientists, for instance, have in fact questioned whether hypersonic weapons technologies should be developed.<sup>19</sup> That

---

<sup>15</sup> Jean-Lou Chameu, William F. Ballhaus and Herbert S. Lin, eds., *Emerging and Readily Available Technologies and National Security: A Framework for Addressing Ethical, Legal, and Societal Issues* (Washington D.C: National Academies Press, 2014), 2.

<sup>16</sup> William H. Boothby, *Conflict Law: The Influence of New Weapons Technology, Human Rights and Emerging Actors* (The Hague: Asser Press and Springer, 2014).

<sup>17</sup> Suzy Killmister, “Remote Weaponry: the Ethical Implications,” *Journal of Applied Philosophy* 25, no. 2 (2008): 121-133.

<sup>18</sup> Paolo Tripodi and Jessica Wolfendale, *New Wars and New Soldiers* (Burlington: Ashgate Publishing Company, 2011) 118.

<sup>19</sup> See James M. Acton, “Russia and Strategic Conventional Weapons: Concerns and Responses,” *The Nonproliferation Review* 22, no. 2 (2015): 141-154; Andrew Futter and Benjamin Zala, “Advanced US Conventional

concern over hypersonic weapons development is raised in these platforms is certainly important. But these discussions are not ethically motivated: they frame hypersonic weapons as a military-strategic issue—not as an emerging capability with normative implications. Unlike academic work on autonomous weapons, which asks whether, owing to ethical considerations, such technologies should be developed *at all*, hypersonic weapons are evaluated on their technical and military merits alone. Consider the language, for example, with which the Federation of American Scientists approaches hypersonic weapons development: “[FAS] will investigate the use of prompt global strike advanced conventional weapons to achieve *strategic purposes* or to target terrorists and other non-state actors.”<sup>20</sup>

Further evidence that hypersonic weapons development has been normatively neglected can be drawn from transnational advocacy networks. Charli Carpenter has shown that arms control issues that are taken up by the Arms Unit of the ICRC and the Arms Division of Human Rights Watch are far likelier to spur both advocacy and normative debate.<sup>21</sup> It should be the case then that, absent concern over hypersonic weapons by these two influential civil society organizations, the wider arms control transnational advocacy network should be largely unconcerned by this emerging capability. And, indeed, this is the case: hypersonic weapons development is inconspicuous among the many weapons-related issues the arms control transnational advocacy network has raised.

Human Rights Watch has drawn attention to and supported campaigns against autonomous weapons systems, landmines, incendiary weapons, and cluster munitions.<sup>22</sup> For its part, the ICRC’s advocacy against emerging technologies focuses on cyberwarfare and autonomous systems.<sup>23</sup>

---

Weapons and Nuclear Disarmament: Why the Obama Plan Won’t Work,” *The Nonproliferation Review* 20, no. 1 (2013): 107-122; Joshua H. Pollack, “Boost-glide Weapons and US-China Strategic Stability,” *The Nonproliferation Review* 22, no. 2 (2015): 155-164; Tong Zhao, “Going Too Fast: Time to Ban Hypersonic Missile Tests? A Chinese Response,” *Bulletin of the Atomic Scientists* 71, no. 5 (2015): 5-8; Mark Gubrud, “Going Too Fast: Time to Ban Hypersonic Missile Tests? A US Response,” *Bulletin of the Atomic Scientists* 71, no. 5 (2015): 1-4.

<sup>20</sup> “Biological, Chemical and other Non-Nuclear Threats,” Federation of American Scientists, <https://fas.org/issues/biological-chemical-and-other-non-nuclear-threats/>. Emphasis mine.

<sup>21</sup> Charlie Carpenter, “*Lost*” *Causes*, 100.

<sup>22</sup> “Arms,” Human Rights Watch, <https://www.hrw.org/topic/arms>.

<sup>23</sup> “New Technologies and IHL,” The International Commission of the Red Cross, <https://www.icrc.org/en/war-and-law/weapons/ihl-and-new-technologies>.

Other notable arms control NGOs share similar concerns. The Finnish Peace Committee does work related to landmines and cluster munitions;<sup>24</sup> Scientists for Global Responsibility's emerging technologies-related advocacy focuses on autonomous weapons as well as synthetic biology and genetics technologies;<sup>25</sup> Article36 advocates against, among other things, autonomous weapons;<sup>26</sup> the Consortium on Emerging Technologies, Military Operations and National Security has drawn attention to advances in biotechnology, cyberwarfare and robotics.<sup>27</sup> The lack of normative attention that hypersonic weapons have drawn from the arms control transnational advocacy network thus confirms Charli Carpenter's work on issue creation in world politics.

Over and against the relative concern specific weapons technologies provoke, however, interstate military and nuclear security—issues to which hypersonic weapons systems are related—are generally much less salient today than other security issues or threats in world politics. Contemporary threat imaginaries no longer include the fear of nuclear war, inadvertent or not, which formerly informed widespread ideas of international security. Consider the following graphs:

---

<sup>24</sup> "Disarmament for Development," Finnish Peace Committee, <http://www.ipb.org/web/index.php?mostra=content&menu=Home>.

<sup>25</sup> "Emerging Technologies," Scientists for Global Responsibility, [www.sgr.org.uk/resources/emerging-technologies](http://www.sgr.org.uk/resources/emerging-technologies)

<sup>26</sup> "Issues," Article36, <http://www.article36.org/issues/>.

<sup>27</sup> "Research Areas," Consortium on Emerging Technologies, Military Operations and National Security, <http://cetmons.org/research-areas/framework-assessment>.

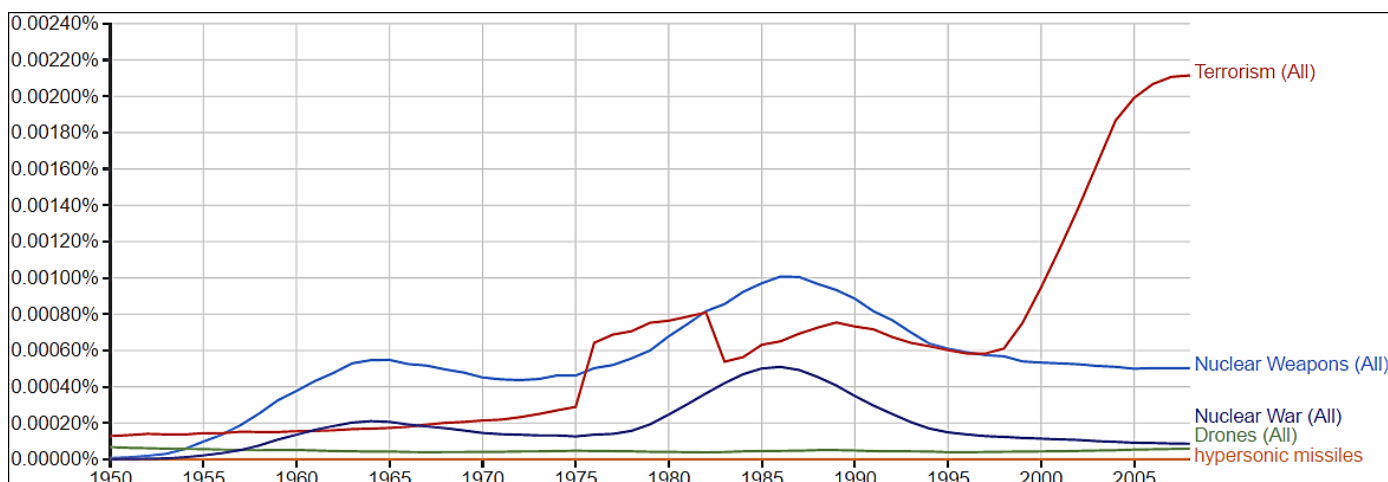


Figure 1. Prevalence of specific terms in English literature, 1950-2007.<sup>28</sup>

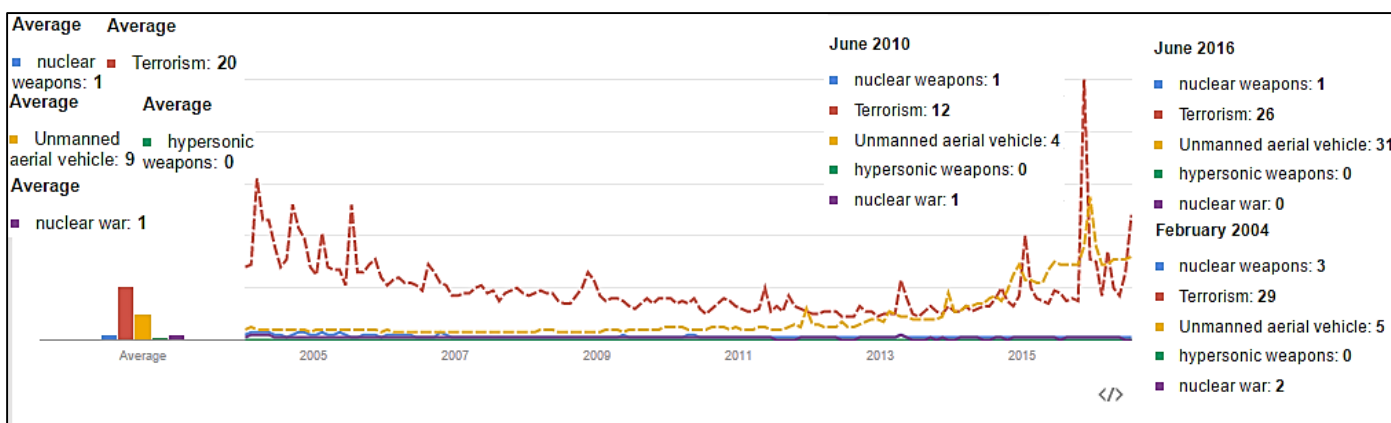


Figure 2. Relative popularity of specific search terms, 2005-2016.<sup>29</sup>

Figure 1 shows the incidence of specific terms in English-language books between 1950 and 2007. While this data says little about the context in which specific terms are used, the aggregate trends nevertheless suggest how relevant certain themes are over time. Between 1950 and until the late 1980s, for example, references to nuclear weapons and nuclear war increased considerably—only to decline following the end of the Cold War. References to terrorism, in contrast, were less prevalent (though not unsubstantial) during the Cold War. But by the late

<sup>28</sup> Jean-Baptiste Michel, Yuan Kui Shen, Aviva Presser Aiden, Adrian Veres, Matthew K. Gray, William Brockman, The Google Books Team, Joseph P. Pickett, Dale Hoiberg, Dan Clancy, Peter Norvig, Jon Orwant, Steven Pinker, Martin A. Nowak, and Erez Lieberman Aiden, “Quantitative Analysis of Culture Using Millions of Digitized Books,” *Science* (2010).

<sup>29</sup> Google Trends,

[https://www.google.ca/trends/explore#q=Nuclear%20Weapons%2C%20%2Fm%2F07jq\\_%2C%20%2Fm%2F0g2bc%2C%20hypersonic%20weapons%2C%20nuclear%20war&cmpt=q&tz=Etc%2FGMT%2B7](https://www.google.ca/trends/explore#q=Nuclear%20Weapons%2C%20%2Fm%2F07jq_%2C%20%2Fm%2F0g2bc%2C%20hypersonic%20weapons%2C%20nuclear%20war&cmpt=q&tz=Etc%2FGMT%2B7).

1990s—and even before 9/11—the incidence of ‘terrorism’ in English-language publications skyrocketed. References to terrorism today eclipse even the height of references to nuclear weapons in the mid-1980s.

Figure 2 shows the popularity of specific search terms relative to each other. The inferences that can be drawn from this data are limited, partly because only searches made after 2005 are available, and partly because internet search engines only became available in the late 1990s. That said, as a snapshot of the relative ‘popularity’ of certain terms in the last decade, it suggests a number of things. The data presents a more ‘popular’ picture of widespread interests since, in contrast to data drawn from book publications, the barriers to entry into the data pool are far lower. The data is also highly circumstantial—it records spikes in interest after particular events. Thus, while searches of ‘terrorism’ decline somewhat between late 2005 and 2013, they increase significantly after in 2014—as a result, perhaps, of the emergence of the Islamic State. Finally, while the ‘popularity’ of terrorism is punctuated throughout the period in question, it is still consistently higher than that of nuclear weapons-related issues.

It is clear, then, that there is remarkable variation in the degree to which emerging weapons technologies are the subject of ethical consideration. On one hand, autonomous weapons systems and soldier-enhancing bio-cognitive technologies have provoked substantial discussion by both academics and advocacy practitioners. On the other, hypersonic weapons systems have not. More generally, contemporary threat imaginaries are no longer informed by nuclear security—something that has changed dramatically since the 1980s. As we will see, the reasons behind these asymmetries are not self-evident. There are good reasons why hypersonic weapons systems, and their potential impact on interstate nuclear security, should draw more normative concern than they currently do.

### Chapter 3: Hypersonic Weapons Development and International Security

This section examines the implications hypersonic weapons development has for international security and interstate strategic stability. These implications should concern not only arms control advocates, especially those that work under the nonproliferation umbrella, but the arms issues transnational advocacy network at large. The argument is that, insofar as strategic stability among the world's leading military powers is a global good that is normatively desirable, the development of hypersonic capabilities is problematic for two reasons. First, this emerging capability is fomenting strategic suspicion between the United States, China and Russia. Second, hypersonic weapons systems are *destabilizing* because they blur the line between strategic—that is, nuclear—and conventional deterrence.

The United States began funding hypersonic weapons development in 2003 under the Conventional Prompt Global Strike (CPGS) program. Initially, the George W. Bush administration requested that the CPGS program develop a long-range, conventional strike capability that could be used against non-state actors and rogue nuclear states in extremely short notice.<sup>30</sup> In fact, the ultimate goal of CPGS is producing a conventional strike system that can hit a target *anywhere in the world* in under an hour.<sup>31</sup> When Russian and Chinese defense analysts learned of CPGS, however, concerns were quickly raised over whether the United States could use hypersonic capabilities to threaten their strategic forces or bypass their ballistic missile defenses.<sup>32</sup> In response, Russia and China began developing their own hypersonic weapons technologies. Interest in this emerging capability by both Moscow and Beijing, in turn, pushed the US Department of Defense to continue funding CPGS. As Eleni Ekmektsioglou notes, “[a]ny doubt regarding further funding [of CPGS] evaporated after the Chinese tests [of hypersonic weapons] in January and August 2014,

---

<sup>30</sup> James Acton, “Hypersonic Boost-glide Weapons,” 192.

<sup>31</sup> Amy F. Woolf, *Conventional Prompt Global Strike and Long Range Ballistic Missiles: Background and Issues* (CRS Report No. R41464) (Washington, DC: Congressional Research Service, 2016), 1, <https://www.fas.org/sgp/crs/nuke/R41464.pdf>.

<sup>32</sup> Eleni Ekmektsioglou, “Hypersonic Weapons and Escalation Control in East Asia,” *Strategic Studies Quarterly* 9, no. 2 (2015): 44.

which confirmed the pursuit of similar systems by a US peer competitor.”<sup>33</sup> Thus the US, China, and Russia are now all developing and testing hypersonic weapons *with each other mind*.<sup>34</sup>

Russian and Chinese defense analysts and politicians alike are suspicious of what the US intends the development of hypersonic weapons for. In his 2013 presidential address to the Russian Federal Assembly, for example, Vladimir Putin stated that US

...development of new weapons systems, such as...strategic non-nuclear missiles and hypersonic high-precision non-nuclear systems for prompt, long-range strikes are...causes for concern. We are closely following [CPGS]...implementing all of these plans could have extremely negative consequences for regional and global stability...[w]e understand this very well, and in this context we know exactly what we need to do. No one should entertain any illusions about achieving military superiority over Russia; we will never allow it.<sup>35</sup>

What Chinese and Russian specialists seem to be most concerned about is the integrity of their respective strategic forces in the face of a fully operational US long-range conventional hypersonic capability.<sup>36</sup> The concern here is that, in a crisis, an American conventional hypersonic strike could pre-emptively destroy or significantly degrade an adversary’s nuclear infrastructure. For China, US advances in hypersonic technologies are doubly threatening. An American conventional hypersonic capability would both render Beijing’s nuclear force vulnerable to attack *and* compromise the anti-access/areal denial (A2/AD) strategy the Chinese People’s Liberation Army (PLA) has developed to prevent US intervention in East Asia in the event of hostilities.<sup>37</sup> And, in fact, Chinese suspicions are well-founded: US government publications that state that “[i]f an adversary developed air defences or other capabilities that could deny US aircraft access to critical

---

<sup>33</sup> Ibid, 47.

<sup>34</sup> The US tested hypersonic vehicles in 2010, 2011 and 2014; China tested its own prototypes in 2014 and 2015; Russia has been conducting similar tests since at least 2011, with the latest reported Russian test in 2015. See Mark Gubrud, “Going Too Fast: Time to Ban Hypersonic Missile Tests? A US Response,” *Bulletin of the Atomic Scientists* 71, no. 5 (2015): 2.

<sup>35</sup> “Presidential Address to the Federal Assembly,” The Kremlin, December 12, 2013, <http://en.kremlin.ru/events/president/news/19825>.

<sup>36</sup> James M. Acton, “Russia and Strategic Conventional Weapons: Concerns and Responses,” *The Nonproliferation Review* 22, no. 2 (2015): 144.

<sup>37</sup> Ekmektsioglou, “Hypersonic Weapons and Escalation Control in East Asia,” 49.

targets, a long-range strike capability...could prove valuable” are indicative of which ‘adversaries’ CPGS research has in mind.<sup>38</sup>

Hypersonic weapons development is also problematic because it threatens to blur the line between conventional and strategic deterrence. In 1966, Thomas Schelling wrote that “[t]he chances are good that the distinction between nuclear and conventional weapons will not be blurred, either in prospect or in action.”<sup>39</sup> This proposition is premised on the assumption that conventional and strategic deterrence are separate domains—that it is on principle plausible for strategic deterrence to hold even if conventional deterrence fails. But if conventional strikes can be used to degrade a state’s strategic assets, as defense analysts argue hypersonic weapons could, the danger of nuclear escalation increases. In other words, conventional hypersonic weapons will be able to do what, previously, only strategic counterforce assets could: degrade or destroy an adversary’s nuclear capabilities. Indeed, as James Acton has noted, “Russian strategists appear to believe that conventional weapons are now approaching nuclear weapons in their effectiveness.”<sup>40</sup> For their part, Chinese officials have questioned whether China’s long-standing no-first-use nuclear weapons policy should be revised in light of emerging conventional hypersonic threats to the PLA’s nuclear force.<sup>41</sup> And, recently, the Chinese People’s Liberation Army Navy announced it would begin deploying nuclear-armed submarines in the Pacific—for the first time—in response to the threat US hypersonic capabilities and missile defenses pose to its land-based strategic forces.<sup>42</sup>

There are good reasons, then, why hypersonic weapons development is problematic—or, at least, why it deserves more scrutiny than it has received. This emerging capability is increasing

---

<sup>38</sup> Amy Woolf, *Conventional Prompt Global Strike and Long Range Ballistic Missiles: Background and Issues*, 2.

<sup>39</sup> Thomas C. Schelling, *Arms and Influence: With a New Preface and Afterword* (New Haven: Yale University Press, 2008) 165.

<sup>40</sup> Acton, “Russia and Strategic Conventional Weapons: Concerns and Responses,” 143.

<sup>41</sup> Tong Zhao, “Going Too Fast: Time to Ban Hypersonic Missile Tests? A Chinese Response,” *Bulletin of the Atomic Scientists* 71, no. 5 (2015): 5.

<sup>42</sup> Julian Borger, “China to Send Nuclear-Armed Submarines Into Pacific Amid Tensions with US,” *The Guardian*, May 26, 2016, accessed May 27, 2016, [https://www.theguardian.com/world/2016/may/26/china-send-nuclear-armed-submarines-into-pacific-us?utm\\_source=Sailthru&utm\\_medium=email&utm\\_campaign=New%20Campaign&utm\\_term=%2ASituation%20Report](https://www.theguardian.com/world/2016/may/26/china-send-nuclear-armed-submarines-into-pacific-us?utm_source=Sailthru&utm_medium=email&utm_campaign=New%20Campaign&utm_term=%2ASituation%20Report)



strategic tensions between the world's foremost military powers and calling into question long-established nuclear weapons policies. As the previous section noted, however, the normative impact hypersonic weapons development has had is minimal. But, if hypersonic weapons do in fact have significant international security implications, why is this the case?

## Chapter 4: No Alarm: Historical Shifts in Arms Control Paradigms and Threat Perceptions

This section presents an argument that explains why, relative to other contemporary emerging weapons systems, hypersonic weapons have drawn so little normative concern. They draw from networks relations theory and considerations of historical shifts in arms control paradigms.

Charli Carpenter argues that *issue creation* in world politics is a two-stage process: an issue must first be defined and then adopted by transnational civil society networks for it to attract widespread attention.<sup>43</sup> *Issue definition*, that is, is prior to *issue adoption*. Issue definition involves the problematization of a particular practice in world politics by an ethically motivated norm entrepreneur; it refers, in other words, to the active construction of a problem. Once an issue is defined, however, it must be adopted or taken up by an influential NGO, such as Humans Rights Watch, for it to gain salience, become a potential advocacy campaign issue, and stand a chance at attracting policy intervention. In this sense, then, influential civil society organizations are ‘issue gatekeepers’: they largely determine which issues in world politics become the focus of normative concern and activism by transnational advocacy networks.<sup>44</sup> Thus, issues or problems in world politics that successfully go through this two-stage issue creation process are significantly likelier to elicit normative alarm. As Carpenter states, “[i]ssue creation is the conceptual link between the myriad bad things out there and the persuasive machinery of advocacy politics in world politics.”<sup>45</sup>

Issues that do *not* attract the attention of influential advocacy organizations, then, are much less likely to elicit normative alarm. Human Rights Watch and the ICRC wield the most influence in the arms control transnational advocacy network; as Carpenter notes, “[i]f there is one thing that distinguishes weapons that have been banned from those that have not in the post-war era, it is the endorsement of one or both of the ICRC and Human Rights Watch.”<sup>46</sup> Thus, while autonomous weapons have been advocated against by both the ICRC and HRW, hypersonic weapons have not.

---

<sup>43</sup> Carpenter, “*Lost*” *Causes*, 6-8.

<sup>44</sup> *Ibid*, 27.

<sup>45</sup> *Ibid*, 8.

<sup>46</sup> *Ibid*, 100.

This explains the asymmetry in normative alarm these emerging weapons systems have generated. That the ICRC and HRW have not framed hypersonic weapons development as a problem, however, only partly explains the variation in normative impact among emerging weapons systems. A key question emerges from the foregoing considerations: why do powerful advocacy organizations adopt some issues, but not others?

Carpenter argues that certain *issue attributes* increase the likelihood that a given issue is adopted by an advocacy superpower. These include

[t]he nature of the victims [whether they are innocent or vulnerable], the nature of the harm caused (bodily integrity rights violations versus social harms), the nature of the perpetrators...the nature of the causal chain between victim and perpetrator, and whether the issue is culturally sensitive in nature.<sup>47</sup>

The perceptual-subjective character of issues matters as well: issues that inspire fear or provoke an emotional-visceral reaction are likelier to be the subject of transnational advocacy.<sup>48</sup> This further explains why autonomous weapons and soldier-enhancing technologies have generated more normative concern than hypersonic weapons. Subjective images conjured up by notions of ‘killer robots’ and ‘superhuman soldiers’ are more subjectively impactful than those provoked by ‘fast missiles’. (To be sure, this is partly because missiles became accepted weapons of war during the twentieth century.)<sup>49</sup> Because advocacy superpowers must make strategic choices about which issues to adopt and which to neglect, issues that are easier to frame and create ‘noise’ about are thus likelier to be taken up.

These network-relations insights, however, are largely ahistorical: they paint transnational advocacy networks as working in a historical vacuum. Without considering the relationship between and impact of historical junctures on both transnational advocacy networks and the

---

<sup>47</sup> Ibid, 38-39

<sup>48</sup> Ibid, 43.

<sup>49</sup> Richard Price, *The Chemical Weapons Taboo* (Ithaca: Cornell University Press, 1997), 1.

advocacy elites that lead them, it is not clear why Humans Rights Watch and the ICRC, for example, have been at the vanguard of humanitarian arms control successes in the past two decades. To be sure, Carpenter does suggest that historical shifts “create or shrink space for advocacy, affecting organizations’ sense that specific issues might succeed.”<sup>50</sup> ‘Trigger events’, furthermore, push certain issues up the transnational advocacy agenda.<sup>51</sup> As we will see, the influence of what we could call the ‘historical dimension’ on contemporary arms control practices is in fact very significant: it grants prominence to entire universes of cases and problems that would otherwise remain neglected. Shortly put, the reason why Human Rights Watch and the ICRC are central ‘nodes’ in the arms control network today is because a larger historical shift in the international arms control agenda has cast light on issues these organizations are specifically well-suited to address.

Studies of the recent history of arms control generally conclude that for most of the last century a *Westphalian logic* dominated arms control practices.<sup>52</sup> The assumptions sustaining this logic were manifestly statist: arms control efforts were largely a state-led activity culminating in binding legal agreements between sovereign states—what some scholars refer to as the ‘treaty method’.<sup>53</sup> Together with state survival, the guiding assumption behind this arms control logic was “[t]he old idea that mutually agreed upon restrictions of armaments can improve international and national security.”<sup>54</sup> Indeed, efforts to mitigate the risks to international security accruing from self-propelling arms races and military build-ups have a long tradition. The 1899 and 1907 Hague Conferences, for example, as well as the post-World War I naval reduction treaties, all fundamentally aimed to limit “military competition between states.”<sup>55</sup> Arms control efforts

---

<sup>50</sup> Charlie Carpenter, *Lost Causes*, 43.

<sup>51</sup> *Ibid.*

<sup>52</sup> Alyson Bailes calls this the “Westphalian vision of arms and arms control transactions.” See Alyson J.K. Bailes, “The Changing Role of Arms Control in Historical Perspective,” in *Arms Control in the 21<sup>st</sup> Century: Between Coercion and Cooperation*, eds. Oliver Meier and Christopher Daase (New York: Routledge, 2013), 28.

<sup>53</sup> Alyson J.K. Bailes “The Evolution of Arms Control: A Longer-Term Perspective,” in *The Future of Arms Control*, ed. Heinrich Böll Foundation (Berlin: Heinrich-Böll-Stiftung, 2014), 20-22.

<sup>54</sup> Oliver Meier and Christopher Daase, “Introduction,” in *Arms Control in the 21<sup>st</sup> Century: Between Coercion and Cooperation*, 3.

<sup>55</sup> Oliver Meier and Christopher Daase, “The Changing Nature of Arms Control and the Role of Coercion,” in *Arms Control in the 21<sup>st</sup> Century: Between Coercion and Cooperation*, 234.

inspired by this Westphalian logic intended to help shape an interstate military *balance* that could be managed and which would discourage general wars. If it failed spectacularly between 1900 and 1950, it succeeded (acting in conjunction with other dynamics) beyond expectation between 1950 and 1989.<sup>56</sup>

Following the internationalization of nuclear weapons after World War II and the restructuring of the international system into antagonistic bipolarity, the Westphalian arms control logic was slightly revised.<sup>57</sup> If its foundational tenets—interstate military stability, the reduction of international tensions and the avoidance of war—persisted, the urgency of its survivalist imperative grew and its practice changed to accommodate the superpower relationship.<sup>58</sup> Arms control became a *bilateral issue of universal consequence* between the United States and the Soviet Union: the arms control agenda, and international security more generally, was re-organized around agreements and attempts to limit military capabilities that threatened to upset the nuclear and conventional balances between the superpowers. It was in this context—the prevailing Westphalian arms control logic, the superpower rivalry and the existential threat of nuclear war—that specific weapons systems were singled out as potentially destabilizing and in need of regulation. These included technologies that encouraged nuclear first-strike strategies, that asymmetrically increased the vulnerability of either superpower’s deterrent forces, or that threatened to blunt the penetrative power of counterforce assets.<sup>59</sup>

---

<sup>56</sup> As Schelling put it in 2008: “The most astonishing development during these more than forty years [after the 1960s]—a development that no one I have known could have imagined—is that...for fifty-five years after Hiroshima and Nagasaki...not a single nuclear weapon was exploded in warfare.” See Thomas C. Schelling, *Arms and Influence*, vii.

<sup>57</sup> Jeffrey A. Larsen, “An Introduction to Arms Control and Cooperative Security,” in *Arms Control and Cooperative Security*, eds. Jeffrey A. Larsen and James J. Wirtz (Boulder: Lynne Rienner Publishers, 2009), 11.

<sup>58</sup> In the 1960s, Thomas Schelling and Morton Halperin summarized the driving goals of classical arms control as “reducing the likelihood of war, reducing the political and economic costs of preparing for war, and minimizing the scope and violence of war if it occurred.” See Jeffrey Larsen, “An Introduction to Arms Control and Cooperative Security,” 1-8.

<sup>59</sup> Kerry M. Kartchner, “The Evolving International Context,” in *Arms Control and Cooperative Security*, 56.

In short, most arms control efforts during the Cold War revolved around military technologies of *systemic consequence*.<sup>60</sup> The 1968 Non Proliferation Treaty meant to halt the spread of nuclear weapons among sovereign states; the 1972 Anti-Ballistic Missile Treaty prohibited both superpowers from developing nation-wide missile defences that could suspend mutual vulnerability; more generally, the numerous arms control treaties signed between the United States and the Soviet Union aimed to limit arms racing in order preserve the strategic balance between both superpowers.

During the Jimmy Carter administration, for example, plans to develop and deploy a neutron bomb were rejected due to strategic considerations. As Thomas Schelling notes,

[t]he arguments [against the neutron bomb] stated that it was important not to blur the distinction...between nuclear and conventional weapons; and either because of its low yield or because of its 'benign' lethality, it was feared and it was argued, there would be a strong temptation to use this weapon where nuclear weapons were otherwise not allowed, and that the use of this weapon would erode the threshold, blur the firebreak, pave the way by incremental steps for nuclear escalation.<sup>61</sup>

What is worth noting about this passage is that a similar argument could be made about hypersonic weapons: because they blur the line between conventional and strategic deterrence, thereby increasing the incentive to launch a first-strike, they are as problematic as the proposed neutron bomb was.

The controversy occasioned by Ronald Reagan's announcement in March 1983 of his intention to develop and deploy the Strategic Defense Initiative (SDI) further illustrates what the Cold War-era arms control paradigm involved. Reagan and his advisors saw in SDI a morally justified opportunity to exit the condition of MAD, which bound the United States and the Soviet

---

<sup>60</sup> Keith Krause, "Leashing the Dogs of War: Arms Control from Sovereignty to Governmentality," *Contemporary Security Policy* 32, no. 1 (2011): 22-27.

<sup>61</sup> Schelling, *Arms and Influence*, 293-94.

Union and underpinned international security more generally.<sup>62</sup> The 1972 Anti-Ballistic Missile Treaty notwithstanding, Reagan believed that, by committing enough funding and intellectual resources to the task, the United States could build and deploy a multi-layered ballistic defense system capable of intercepting inbound ballistic missiles.<sup>63</sup> As Reagan himself put it, the ultimate goal of SDI was to render “nuclear weapons impotent and obsolete.”<sup>64</sup>

Despite its ostensibly noble aim, SDI was widely criticized by scientists, global leaders and arms control activists alike. Most scientists and engineers generally agreed that SDI was not feasible—that a ballistic missile defense system capable of blunting a Soviet first-strike simply could not be built given contemporary technologies.<sup>65</sup> The Soviet leadership—initially believing SDI was in fact practicable—held that SDI was needlessly destabilizing because it threatened the stability created by MAD.<sup>66</sup> Only days after Reagan’s 1983 speech, for instance, Soviet General Secretary Yuri Andropov stated: “let there be no mistake in Washington. It is time they stop devising one option after another in their search for best ways of unleashing nuclear war in the hope of winning it.”<sup>67</sup> Defense analysts, then and today, agreed: effective ballistic defenses are destabilizing because they make a disarming first-strike conceivable—even attractive.<sup>68</sup> As contemporary scholars put it, “[c]hances of nuclear war are reduced if deterrent forces are *survivable* rather than vulnerable; are *not attractive* targets...and can *penetrate* without fear or

---

<sup>62</sup> Mira Duric, *The Strategic Defense Initiative: US Policy and the Soviet Union* (Hampshire: Ashgate Publishing Ltd., 2003), 8-9.

<sup>63</sup> Alun Chalfont, *Star Wars: Suicide or Survival?* (London: Weidenfeld and Nicolson, 1985), 83.

<sup>64</sup> Sidney D. Duell, Philip J. Farley and David Holloway, *The Reagan Strategic Defense Initiative: A Technical, Political and Arms Control Assessment* (Cambridge, MA: Balliger Publishing Company, 1985), 63.

<sup>65</sup> Craig Eisendrath, Melvin A. Goodman and Gerald E. Marsh, *The Phantom Defense: America’s Pursuit of the Star Wars Illusion* (Westport: Praeger, 2001), 17.

<sup>66</sup> Robert Bowman, *Star Wars: A Defense Insider’s Case Against the Strategic Defense Initiative* (New York: Jeremy P. Tarcher, Inc., 1986), 2-3.

<sup>67</sup> Mira Duric, *The Strategic Defense Initiative*, 41.

<sup>68</sup> As a group of scholars summarized it well over a decade after SDI was proposed, “Classical deterrence proposes that, once MAD is achieved, the addition of antiballistic missile systems is dangerous because the other side then loses the capacity to deter, forcing a transition back from the ultra-stable condition of MAD to the less stable condition of massive retaliation. For this reason, the classical deterrence community opposed [Reagan’s SDI].” See Ronald L. Tammen et al., *Power Transitions: Strategies for the 21<sup>st</sup> Century* (New York: Chatham House Publishers of Seven Bridges Press, LLC, 2000 ), 103.

failure if retaliation were to be necessary."<sup>69</sup> Because the strategic implications of SDI violated these nuclear stability requirements, it was criticized as an unnecessarily risky technology. Finally, arms control activists opposed SDI because it threatened to further intensify the arms race between the superpowers and thus increase international tensions and the potential for conflict.<sup>70</sup>

The contrast between the reactions provoked by SDI, then, and hypersonic weapons development, today, is sharp indeed. While the potential consequences for international security of both types of technologies are comparable, the degree of concern and attention each has elicited could not be more different: while SDI was criticized by both elites and the public, only a few technical experts have raised concerns about hypersonic weapons development. As noted above, Russian and Chinese defense analysts and leaders have critiqued the American hypersonic weapons research program for the same reason the Soviets feared SDI: the possibility that their strategic forces could become vulnerable to a disarming first-strike. And while SDI proved to be scientific fantasy, the Soviets were nevertheless concerned enough about its long-term implications that it was repeatedly brought up during arms control summits.<sup>71</sup> It is similarly unlikely that hypersonic missile systems, today or in the near term, will be able to successfully destroy all or even most Chinese or Russian nuclear assets in a first-strike. That said, Russian and Chinese leaders are still concerned about the *relative* safety of their strategic forces in the face of this emerging capability. And, like SDI, hypersonic weapons development has produced an incipient arms race between the leading military powers. That the strategic implications of such advances in weaponry provoked substantial normative alarm when SDI was announced, but not today, illustrate that contemporary arms control efforts are driven by a logic different from that which underpinned arms control during the Cold War.

---

<sup>69</sup> Duell, Farley and Holloway, *The Reagan Strategic Defense Initiative: A Technical, Political and Arms Control Assessment*, 81.

<sup>70</sup> Chalfont, *Star Wars: Suicide or Survival?*, 20-1.

<sup>71</sup> Mira Duric, *The Strategic Defense Initiative*, 39.



The difference is that arms control efforts today revolve around two distinct post-Westphalian logics: coercive counterproliferation and humanitarianism.<sup>72</sup> In the late 1990s and early 2000s, the Westphalian arms control logic lost urgency and receded owing to the peaceful conclusion of the Cold War. This, in turn, reoriented specific arms control imperatives, practices and trends. While arms control efforts inspired by humanitarianism—and humanitarianism itself—were not novel, the reconfiguration of the international system into transient unipolarity in the 1990s and the consequent emergence of ‘new’ threats to international security brought both non-state nuclear proliferation and humanitarian problems into sharper focus. Let us look at these post-Westphalian arms control logics in turn.

Michael Barnett notes that the end of the Cold War inaugurated the age of *liberal humanitarianism*.<sup>73</sup> This period is defined by the relative decrease of interstate conflict as well as the growing incidence of and violence in intra-state conflicts. If statist security had previously conditioned the ambit of international security, the reach of *human security* now grew as the relevance of the former declined.<sup>74</sup> Humanitarians raised concerns about both the precarity and vulnerability of civilians in collapsing states as well as the deliberate, large-scale targeting of civilians in intrastate conflicts.<sup>75</sup> The animus behind the evolving human security agenda was further galvanized by “cataclysmic events” like the Rwandan genocide and ethnic conflicts in the Balkans.<sup>76</sup> In an effort to address these issues, the total volume of official humanitarian assistance grew from two to six billion dollars between 1990 and 2000.<sup>77</sup>

---

<sup>72</sup> Alyson Bailes, “The Changing Role of Arms Control in Historical Perspective,” in *Arms Control in the 21<sup>st</sup> Century*, 19. In his history of humanitarianism, Michael Barnett also notes that the humanitarian and international security ‘novelties’ of the 1990s in fact had a longer but often neglected history. See Michael Barnett, *Empire of Humanity: A History of Humanitarianism* (Ithaca: Cornell University Press, 2011) 2-3. Keith Krause likewise notes that the humanitarian impetus behind arms control practices have existed since the nineteenth century. See Krause, “Leashing the Dogs of War: Arms Control from Sovereignty to Governmentality,” 29.

<sup>73</sup> Barnett, *Empire of Humanity*, 7.

<sup>74</sup> *Ibid*, 31.

<sup>75</sup> *Ibid*, 162-3.

<sup>76</sup> *Ibid*, 26.

<sup>77</sup> *Ibid*, 2-3. Barnett notes that most of this money came from the public sector. By 2011, humanitarian assistance totalled eighteen billion dollars.

Liberal humanitarianism thus extended the scope of “the organization and governance of activities designed to protect and improve humanity.”<sup>78</sup> Humanitarianism, as Barnett notes, “is connected to governance...a stunning development of the last two centuries is the deepening and growing governance of humanitarianism...[b]eginning in the nineteenth century and continuing in the twentieth, there was a growing zeal for creating institutions.”<sup>79</sup> The impact of humanitarian governance practices is well illustrated by the arms control successes of the past two decades: the bans on landmines, cluster munitions and blinding lasers.<sup>80</sup> Humanitarian arms control practitioners effectively problematized and secured the regulation of these weapons. These outcomes highlight the fundamental difference between the Westphalian and humanitarian arms control logics: while the former revolved around weapons of systemic consequence, the latter revolves around weapons of *individual consequence*—weapons, that is, that are likelier to harm non-combatants indiscriminately. The objections raised against these kinds of weapons are not related to interstate security and military advantage, but to the threat they pose to individual human lives.

Following the election in 2000 of George W. Bush, however, a counterproliferation-oriented arms control agenda joined humanitarian and Westphalian arms control as a subcategory of international arms control writ large.<sup>81</sup> If the referent objects of humanitarian arms control differ from those of its Westphalian counterpart, they are nevertheless not mutually exclusive. In contrast, counterproliferation arms control contradicts many of the key tenets and practices of Westphalian arms control. The Bush administration, for example, abandoned negotiations with Russia on a new START, withdrew from the ABM Treaty and rejected further considerations of the Comprehensive Test Ban Treaty.<sup>82</sup> To address the threat of nuclear proliferation among both non-state actors and rogue states (Iraq, Iran, and North Korea for Bush) the United States embraced

---

<sup>78</sup> Ibid, 10.

<sup>79</sup> Ibid, 21.

<sup>80</sup> Keith Krause, “Leasing the Dogs of War,” 29.

<sup>81</sup> Christopher Daase and Oliver Meier, “The Changing Nature of Arms Control and the Role of Coercion,” in *Arms Control in the 21<sup>st</sup> Century*, 233.

<sup>82</sup> Jeffrey Larsen, “An Introduction to Arms Control and Cooperative Security,” in *Arms Control and Cooperative Security*, 12.

unilateralism and the doctrine of pre-emptive military action.<sup>83</sup> Scholars refer to this arms control approach as ‘coercive’ counterproliferation: it eschews the treaty-based Westphalian approach in favour of compellence.<sup>84</sup> Such was the Bush administration’s commitment to this doctrine that unilateral pre-emption was referenced in both the 2002 and 2006 National Security Strategy documents.<sup>85</sup> And while ‘pre-emption’ does not appear in the National Security Strategy documents of the Obama period, its practice persists in the use of unmanned aerial vehicles to execute anti-terrorist strikes.<sup>86</sup>

The guiding prerogative of counterproliferation arms control simply cannot be reconciled with Westphalian arms control imperatives.<sup>87</sup> Coercive counterproliferation encourages (or allows the possibility of) prompt military action; Westphalian arms control aims to avoid military confrontation. Coercive counterproliferation mandates action; Westphalian arms control dictates caution. The problem with coercive counterproliferation is the possibility that its logic and practices might exceed its specific domain (non-state actors) and intrude into other domains of international security. Interstate arms control practices and military doctrines—especially in the nuclear age—cannot rest on the confrontational disposition of coercive counterproliferation. What is alarming, therefore, is the receding relevance of traditional arms control practices and imperatives in the face of both humanitarian and non-proliferation arms control.

Indeed, the end of the Cold War effectively put an end to public debates concerning the ethics nuclear weapons and their impact on interstate military security. Nuclear security policy

---

<sup>83</sup> Ibid.

<sup>84</sup> I use the term ‘compellence’ in the sense that Thomas Schelling used it in *Arms and Influence*: “Compellence... usually involves *initiating* an action (or an irrevocable commitment to action) that can cease, or become harmless, only if the opponent responds.” See Thomas Schelling, *Arms and Influence*, 72.

<sup>85</sup> Guy B. Roberts, “Beyond Arms Control: New Initiatives to Meet New Threats,” in *Arms Control and Cooperative Security*, 204.

<sup>86</sup> The ‘signature strike’ tactic, as it is known, is entirely pre-emptive: strikes are carried out against targets American intelligence agencies assume are or will likely engage in terrorism. See Kevin J. Heller, “‘One Hell of a Killing Machine’: Signature Strikes and International Law,” *Journal of International Criminal Justice* 11, no. 1 (2013): 90.

<sup>87</sup> Kerry Kartchner, “The Evolving International Context,” in *Arms Control and Cooperative Security*, 56.

was consequently relegated to the realm of military and technical expertise.<sup>88</sup> This partly explains why hypersonic weapons development has been cast as an expert-specific, technical rather than normative issue. As the Union of Concerned Scientists—which participated in the SDI debate during the 1980s—notes, “[t]imes have changed. The defining force behind US nuclear weapons policy—the Soviet Union—hasn’t existed for over 20 years. In its place are terrorism and other modern conflicts, none of which are solved by atomic bombs and missiles.”<sup>89</sup> Thus, because hypersonic weapons development poses implications for *deterrence*—an issue which figured most prominently in Cold War-era ethical debates—it has produced less normative alarm than other emerging weapons systems whose implications are more easily mapped onto or framed as humanitarian or counterproliferation issues concerns.

---

<sup>88</sup> Steven Lee, “What’s Living and What’s Dead in Nuclear Ethics,” in *Ethics and the Future of Conflict: Lessons from the 1990s*, eds. Anthony F. Lang et al. (New Jersey: Pearson Prentice Hall, 2004), 91.

<sup>89</sup> “Nuclear Weapons,” Union of Concerned Scientists, accessed June 28, 2016, <http://www.ucsusa.org/nuclear-weapons#.V4S0UzVCgnI>.

## Chapter 5: Conclusion and Implications: Politics that are no Longer Active?

Commenting on the state and direction of philosophy after the failures of political Marxism in the twentieth century and the emergence of postmodernism, French theorist Alain Badiou calls ours “[a] time in which former politics are no longer active, and in which new forms of politics experiment, with some difficulty, their truth.”<sup>90</sup> In a sense, the little attention hypersonic weapons development has drawn relative to both other contemporary emerging military technologies and past weapons systems of comparable military implications supports Badiou’s assertion: certain forms of politics “are no longer active.” The condition and robustness of interstate military security—an issue of the utmost importance to most statesmen for the past three centuries—no longer informs mainstream discussions of international security. It figures even less in contemporary threat imaginaries. Consider the more than one million activists that attended the Freeze the Arms Race demonstration in New York City in June 1982—could the integrity of interstate strategic security animate as many individuals today?<sup>91</sup>

The shifts in arms control logics this thesis has highlighted are but a symptom of this trend. To the extent that the military balance between the leading powers fades from international attention, to that extent are military technologies that threaten this balance—such as hypersonic weapons—unlikely to elicit normative alarm. The normative injunction that follows from this proposition is not that the Westphalian arms control logic is the most, or even the only, important approach to arms control worth pursuing. The successes in the past two decades of humanitarian arms control, and the humanitarian imperative that guided them, are powerful testament to the progressive impact of the human security agenda on world politics. The point, rather, is that each logic speaks to specific security issues that deserve similar attention.

And while the receding relevance of the international balance of power and the commensurate increase in that of other pressing security threats since 1989 is understandable in

---

<sup>90</sup> Alain Badiou, *The Adventure of French Philosophy* (New York: Verso, 2012), 65.

<sup>91</sup> Lawrence S. Wittner, “Looking Back: The Nuclear Freeze and Its Impact,” *Arms Control Today* 40, no. 1 (2010): 54. <http://www.jstor.org/stable/23628845>.

light of the unipolar euphoria that marks our period—as well as the end of history it putatively heralded—its functional importance as a cornerstone of international security has not changed. Indeed, as the international system veers away from unipolarity and into (bi?)multipolarity, the need to heed the resulting reconfigurations of interstate security will only grow.

The irony is that the asymmetric growth in the relevance of humanitarian relative to Westphalian arms control ultimately contradicts the interest humanitarianism has in saving human lives. “Over the decades,” Michael Barnett writes, “humanitarianism has maintained a delicate, and ultimately unstable, balance between different elements...humanitarianism is defined by an ‘unstable balance’ between potentially contradictory elements that are always present and never reconcilable.”<sup>92</sup> The reason is that—at least in the context of arms control—by neglecting the dynamics of interstate security and the balance of power in favour of localized practices and low-impact weaponry, humanitarian arms control practitioners forgo the opportunity to create change of comparably greater impact. General wars between the leading powers result by definition in large-scale humanitarian tragedies. To the extent that the general shift in international arms control to humanitarianism has blunted the urgencies behind Westphalian arms control efforts, therefore, do practices and technologies that threaten to raise tensions between the powers not elicit the normative attention they should.

---

<sup>92</sup> Michael Barnett, *Empire of Humanity*, 8

## References

- Acton, James M. 2015. "Hypersonic Boost-glide Weapons." *Science and Global Security* 191-219.
- Acton, James M. 2015. "Russia and Strategic Conventional Weapons: Concerns and Responses." *The Nonproliferation Review* 141-154.
- Al-Rodhan, Nayef R. F. 2011. *The Politics of Emerging Strategic Technologies: Implications for Geopolitics, Human Enhancement and Human Destiny*. New York: Palgrave.
- Article36. n.d. *Issues*. Accessed April 11, 2016. <http://www.article36.org/issues/>.
- Badiou, Alain. 2012. *The Adventure of French Philosophy*. New York: Verso.
- Barnett, Michael. 2011. *Empire of Humanity: A History of Humanitarianism*. Ithaca: Cornell University Press.
- Beard, Jack M. 2014. "Autonomous Weapons and Human Responsibilities." *Georgetown Journal of International Law* 617-680.
- Boothby, William H. 2014. *Conflict Law: The Influence of New Weapons Technology, Human Rights and Emerging Actors*. The Hague: Asser Press and Springer.
- Borenstein, Jason. 2008. "The Ethics of Autonomous Military Robots." *Studies in Ethics, Law and Technology* 2-17.
- Borger, Julian. 2016. "China to Send Nuclear-armed Submarines into Pacific Amid Tensions with US." *The Guardian*, May 26.
- Bowman, Robert. 1986. *Star Wars: A Defense Insider's Case Against the Strategic Defense Initiative*. New York: Jeremy P. Tarcher, Inc.
- Briggle, Adam, Katinka Waelbers, and Philip Brey. 2008. *Current Issues in Computing and Philosophy*. Fairfax: IOS Press.
- Carpenter, Charli. 2014. *"Lost" Causes: Agenda Vetting in Global Issue Networks and the Shaping of Human Security*. Ithaca: Cornell University Press.
- Chalfont, Alun. 1985. *Star Wars: Suicide or Survival?* London: Weidenfeld and Nicolson.
- Chameu, Jean-Lou, William F. Ballhaus, and Herbert S. Lin. 2014. *Emerging and Readily Available Technologies and National Security: A Framework for Addressing Ethical, Legal, and Societal Issues*. Washington: National Academies Press.
- Committee, Finnish Peace. n.d. *Disarmament for Development*. Accessed April 11, 2016. <http://www.ipb.org/web/index.php?mostra=content&menu=Home>.

- Consortium on Emerging Technologies, Military Operations and National Security. n.d. *Research Areas*. Accessed April 11, 2016. <http://cetmons.org/research-areas/framework-assessment>.
- Cross, The International Commission of the Red. n.d. *New Technologies and IHL*. Accessed April 11, 2016. <https://www.icrc.org/en/war-and-law/weapons/ihl-and-new-technologies>.
- Duell, Sidney D, Philip J Farley, and David Holloway. 1985. *The Reagan Strategic Defense Initiative: A Technical, Political and Arms Control Assessment*. Cambridge, MA: Balliger Publishing Company.
- Duric, Mira. 2003. *The Strategic Defense Initiative: US Policy and the Soviet Union*. Hampshire: Ashgate Ltd.
- Eisendrath, Craig, Melvin A Goodman, and Gerald E Marsh. 2001. *The Phantom Defense: America's Pursuit of the Star Wars Illusion*. Westport: Praeger.
- Ekmektsioglou, Eleni. 2015. "Hypersonic Weapons and Escalation Control in East Asia." *Strategic Studies Quarterly*.
- Finnermore, Martha, and Kathryn Sikking. 1998. "International Norm Dynamics and Political Change." *International Organization* 887-917.
- Forge, John. 2013. *Designed to Kill: The Case Against Weapons Research*. New York: Springer.
- Foundation, Heinrich Böll. 2014. *The Future of Arms Control*. Berlin: Heinrich-Böll-Stiftung.
- Futter, Andrew, and Benjamin Zala. 2013. "Advanced US Conventional Weapons and Nuclear Disarmament: Why the Obama Plan Won't Work." *The Nonproliferation Review* 107-122.
- Galliot, Jai, and Mianna Lotz. 2015. *Super Soldiers: The Ethical, Legal and Social Implications*. New York: Routledge.
- Google. 2016. "Google Trends."
- Gromley, Dennis M. 2008. *Missile Contagion: Cruise Missile Proliferation and the Threat to International Security*. Westport: Praeger Security International.
- Gubrud, Mark. 2015. "Going Too Fast: Time to Ban Hypersonic Missile Tests? A US Response." *Bulletin of the Atomic Scientists* 1-4.
- Heller, Kevin J. 2013. "'One Hell of a Killing Machine': Signature Strikes and International Law." *Journal of International Criminal Justice* 89-119.
- Katzenstein, Peter J. 1996. *The Culture of National Security: Norms and Identity in World Politics*. New York: Columbia University Press.



- Killmister, Suzy. 2008. "Remote Weaponry: The Ethical Implications." *Journal of Applied Philosophy* 121-133.
- Krause, Keith. 2011. "Leashing the Dogs of War: Arms Control from Sovereignty to Governmentality ." *Contemporary Security* 20-39.
- Kremlin, The. 2013. *Presidential Address to the Federal Assembly*. December 12. Accessed April 3, 2016. <http://en.kremlin.ru/events/president/news/19825>.
- Krishnan, Armin. 2009. *Killer Robots: Legality and Ethicality of Autonomous Weapons*. Farnham: Asghate.
- Lang, Anthony F., Albert C. Pierce, and Joel H. Rosenthal. 2004. *Ethics and the Future of Conflict: Lessons from the 1990s*. New Jersey: Pearson Prentice Hall.
- Larsen, Jeffrey A, and James J Wirtz. 2009. *Arms Control and Cooperative Security*. Boulder: Lynne Rienner Publishers.
- Lin, Patrick, Keith Abney, and George A. Bekey. 2012. *Robot Ethics: The Ethical and Social Implications of Robotics*. Cambridge: Massachusetts Institute of Technology.
- Lin, Patrik. 2010. "Ethical Blowback from Emerging Technologies." *Journal of Military Ethics* 313-331.
- McMillan, Margaret. 2013. *The War that Ended Peace: The Road to 1914*. New York: Random House.
- Meier, Oliver, and Christopher Daase. 2013. *Arms Control in the 21st Century: Between Corecion and Cooperation*. New York: Routledge.
- Michel, Jean-Baptiste, Yuan K Shen, Aviva P Aiden, Adrian Veres, Matthew K Gray, William Brockman, Joseph P Pickett, et al. 2010. "Quantitative Analysis of Culture Using Millions of Digitized Books." *Science*.
- Pollack, Joshua H. 2015. "Boost-glide Weapons and US-China Strategic Stability." *The Nonproliferation Review* 155-164.
- Price, Richard M. 1998. "Reversing the Gun Sights: Transnational Civil Society Targets Land Mines." *International Organization* 613-644.
- . 1997. *The Chemical Weapons Taboo*. Ithaca: Cornell University Press.
- Responsibility, Scientists for Global. n.d. *Emerging Technologies*. Accessed April 11, 2016. [www.sgr.org.uk/resources/emerging-technologies](http://www.sgr.org.uk/resources/emerging-technologies).
- Schelling, Thomas C. 2008. *Arms and Influence: With a New Preface and Afterword*. New Haven: Yale University Press.

- Scientists, Federation of American. n.d. *Biological, Chemical and Other Non-Nuclear Threats*. Accessed April 11, 2016. <https://fas.org/issues/biological-chemical-and-other-non-nuclear-threats/>.
- Scientists, Union of Concerned. n.d. *Nuclear Weapons*. Accessed June 28, 2016. <http://www.ucsusa.org/nuclear-weapons#.V4S0UzVCgnI>.
- Shunk, Dave. 2015. "Ethics and the Enhanced Soldier of the Near Future." *Military Review* 91-98.
- Singer, Peter W. 2009. *Wired for War: The Robotics Revolution and Conflict in the 21st Century*. New York: Penguin Books.
- Swiatek, Mark S. 2012. "Intending to Err: The Ethical Challenge of Lethal Autonomous Systems." *Ethics and Information Technology* 241-254.
- Tammen, Ronald L, Jacek Kugler, Douglas Lemke, Allan C Stam III, Carole Alsharabati, Mark A Abdollahian, Brian Efirid, and AFK Organski. 2000. *Power Transitions: Strategies for the 21st Century*. New York: Chatham House Publishers of Seven Bridges Press, LLC.
- Tripodi, Paolo, and Jessica Wolfendale. 2011. *New Wars and New Soldiers*. Burlington: Ashgate Publishing Company.
- Watch, Human Rights. n.d. *Arms*. Accessed April 11, 2016. <https://www.hrw.org/topic/arms>.
- Wittner, Lawrence S 40, no. 10 (2010): 53-56. 2010. "Looking Back: The Nuclear Freeze And Its Impact." *Arms Control Today* 53-56.
- Woolf, Amy F. 2016. *Conventional Prompt Global Strike and Long Range Ballistic Missiles: Background and Issues*. Washington: Congressional Research Service.
- Zhao, Tong. 2015. "Going Too Fast: Time to Ban Hypersonic Missile Tests? A Chinese Response." *Bulletin of the Atomic Scientists* 5-8.