



Nuclear Modernization from a Just War Perspective

Citation

Walsh, Brian D. 2022. Nuclear Modernization from a Just War Perspective. Master's thesis, Harvard University Division of Continuing Education.

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Nuclear Modernization from a Just War Perspective

Brian Walsh

A Thesis in the Field of International Relations
for the Degree of Master of Liberal Arts in Extension Studies

Harvard University

May 2022

Abstract

Just War Tradition has guided the conduct of warfare for over two thousand years. Despite ever advancing military technology and tactics its principles have remained nearly timeless over two millennia. Nuclear weapons however, due to their immense destructive power, posed a moral and scholarly dilemma challenging these principles. Contemporary events including Chinese expansion in the Pacific and Russian aggression in Syria and Ukraine are reigniting the long perceived dormant risk of nuclear war. Against this backdrop aging Cold War era nuclear weapon systems are driving the United States and its rivals to make significant investments into modernizing nuclear arsenals.

This period of modernization provides the United States the opportunity to learn from historic lessons and to reemphasize the principles of just war tradition in its nuclear strategy. This paper explores just war principles along with elements of nuclear deterrence strategy. It analyzes publicly available nuclear strategy documents to determine if and how the United States incorporates just war principles into its nuclear deterrence strategy. It concludes that nuclear weapons, due to their immense power, while not totally excluded, have very limited application when applying the principles of just war, primarily due to the principles of proportionality and the differentiation between civilian and combatant targets.

Frontispiece



The Children's Peace Monument topped by Sadako Sasaki¹

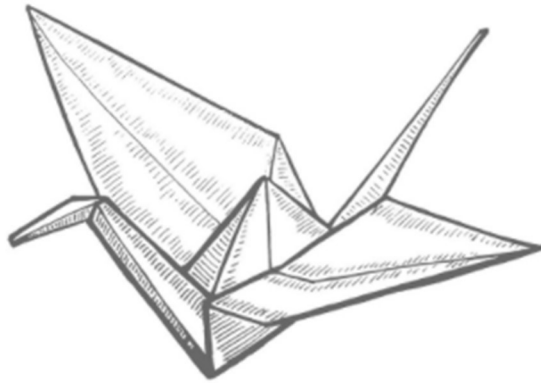
¹ “@The Japan Times: The Children's Peace Monument, topped by the figure of Sadako Sasaki,” Alo Japan, <https://www.alojapan.com/5184/the-japan-times-the-childrens-peace-monument-topped-by-the-figure-of-sadako-sasaki-is-surroun/>.

Author's Biographical Sketch

Brian Walsh is a graduate of the United States Naval Academy. He served as a Naval Flight Officer onboard the E-2C Hawkeye conducting airborne command and control, in Afghanistan in support of the Joint Special Operations Command and in counterintelligence in support of nuclear treaty verification. As a civilian Walsh managed the reliability and repair of nuclear delivery systems including the Minuteman III, Air Launched Cruise Missiles and Submarine based nuclear deterrent systems.

Dedication

This work is dedicated to the memory of Sadako Sasaki. Her faith and innocence in the face of years of illness following the nuclear bombing of Hiroshima continues to inspire hope. May none of our children ever have to face such tragedy or pain.



“We have the power to make this the best generation of mankind in the history of the world or to make it the last.” – John F. Kennedy

Acknowledgments

This work would not have been possible without the support and help of countless individuals. In particular, I would like to thank Dr. Ariane Liazos who provided the guidance to give the work strong legs and direction and Dr. Asher Orkaby who provided significant research and scholarly guidance to give it wings.

Most importantly I want to thank my wife, Bryn Bird. None of this could have been possible without her endless support.

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Chapter I.

Introduction

Since the end of World War II, the United States has relied on its military might, including its nuclear arsenal, to deter aggression around the globe. The nuclear triad, composed of land based, submarine based, and air launched weapon systems, has been the means of projecting a credible deterrence strategy for nearly seven decades. Today, the nuclear strategy employed by the United States is at a crossroads. Aging weapons systems make it necessary to reevaluate the future of American deterrence. Time is limited to make modernization decisions before the maintainability and reliability of current systems risks degrading confidence in the United States' nuclear deterrence capabilities. Due to the significant investment associated with modernization the decisions made today may have national security implications for the next fifty years.² The average weapon in the current U.S. nuclear stockpile is 32 years old and getting older.³ Aging systems in several nuclear powered nations means that globally there is a resurgence of nuclear weapons investments not seen since the Cold War.⁴ As modernization efforts advance it is important to take a renewed look at the moral implications of America's nuclear strategy.

² Jeff Richardson, "Shifting from a Nuclear Triad to a Nuclear Dyad," *Bulletin of the Atomic Scientists* 65, no. 5 (2009): 33-42, <https://doi.org/10.2968/065005004>, 1.

³ Thomas Karako, "Nuclear Forces: Restore the Primacy of Deterrence" (Center for Strategic & International Studies, December 2016), 2, http://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/161212_Transition45-Karako-Nuclear-Forces.pdf?0O8xHGkGLILXCQmalfqsd4QbD1p20s2h.

⁴ "Nuclear Posture Review, 2018 - U.S. Department of Defense" (U.S. department of defense, 2018), 1 <https://media.defense.gov/2018/Feb/02/2001872877/-1/-1/1/EXECUTIVE-SUMMARY.PDF>.

It has been nearly four decades since significant scholarly attention was paid to the morality of nuclear weapons. This gap, coupled with recent global nuclear modernization efforts, necessitates renewed dialogue on nuclear weapons. This research paper seeks to provide context on nuclear deterrence and modernization and take a fresh look at available nuclear strategy documents. It seeks to determine if morality, in the context of Just War Tradition, is evaluated as a factor in nuclear weapons and modernization strategies. Ultimately it contends that nuclear weapons, due to their immense power, while not totally excluded, have very limited application when applying the principles of just war, primarily due to the principles of proportionality and the differentiation between civilian and combatant targets.

Nuclear deterrence, like any strategy, is a means to an end, the end objective is the success of America's grand strategy. Understanding grand strategy helps put into perspective America's nuclear deterrent policies and the role nuclear weapons play in that strategy. As Stephen Brooks, William Wohlforth and John Ikenberry stated:

Grand strategy is a set of ideas for deploying a nation's resources to achieve its interests over the long run. For more than sixty years, the United States has sought to advance its core interests in security, prosperity, and domestic liberty by pursuing three overlapping objectives: managing the external environment to reduce near- and long-term threats to U.S. national security; promoting a liberal economic order to expand the global economy and maximize domestic prosperity; and creating, sustaining, and revising the global institutional order to secure necessary interstate cooperation on terms favorable to U.S. interests.⁵

America's grand strategy was heavily influenced by the immense destruction of World War II that left much of Europe and Asia physically and economically ruined.

⁵ Stephen G. Brooks, G. John Ikenberry, and William C. Wohlforth, "Don't Come Home, America: The Case against Retrenchment," *International Security* 37, no. 3 (2013): 11, https://doi.org/10.1162/isec_a_00107.

President Truman and other world leaders sought a system to confront the challenges of international order and the pursuit of a long-standing peace. This post-war strategy included steps such as the creation of The United Nations “with one central mission: the maintenance of international peace and security.”⁶ In pursuit of this goal historical norms were codified into formal international laws guiding global conduct. Collectively the post-World War II actions created what has become known as the liberal world order.

Referring to this order John Ikenberry stated:

The great American accomplishment of the twentieth century: the building of the liberal international order... organized around economic openness, multilateral institutions, security cooperation, democratic solidarity, and internationalist ideals. For decades, the United States has served as the system's first citizen, providing leadership and public goods—anchoring the alliances, stabilizing the world economy, fostering cooperation, and championing the values of openness and liberal democracy.⁷

The creation and design of institutions and standards heavily benefit the United States and its allies, however not all nations chose, or were invited to participate in the design of this new order leading to new post war tensions. As a result, the United States and its allies had to be prepared to defend the new international order from external threats, including through the use of nuclear deterrence.

Nuclear weapons represent the last line of defense of America’s grand strategy.

General David Goldfein, Chief of Staff of the United States Air Force stated, “Our nuclear deterrent underwrites all courses of diplomacy and every military operation...there is a direct line between a safe, secure, and reliable nuclear deterrent...and our responsibility as global defenders of freedom.”⁸ Despite the

⁶ “Our Work,” United Nations (United Nations), accessed February 4, 2022, <https://www.un.org/en/sections/what-we-do/>.

⁷ John G. Ikenberry, “The Plot Against American Foreign Policy,” *Foreign Affairs*, 2017, 1-7, 2.

⁸ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” 15.

significant role nuclear weapons continue to play and their immense destructive potential, since the end of the Cold War, nuclear weapons receive little public and decreasing scholarly attention. However, nuclear dangers continue to warrant our attention and study. Historically much of the study into the morality of nuclear weapons originated from religious scholars. Groups such as the National Conference of Catholic Bishops sought to reconcile the use of nuclear arms with Christian beliefs. Just War Tradition (JWT) creates the means to morally evaluate war, both the causes for entering it, *jus ad bellum*, and the conduct of the parties once entered, *jus in bello*. The final component to JWT is the post war evaluation of its morality, *jus post bellum*.⁹

Dating back to antiquity, the term just war, coined by Aristotle (384–322 B.C.E.), has been refined and more widely disseminated by great minds like Saint Augustine, Saint Thomas Aquinas, and Marcus Tullius Cicero.¹⁰ It is prudent, given the massive undertaking of nuclear modernization, and the example it sets for the rest of the globe, for the United States to evaluate how moral traditions intersect with its pursuit of a nuclear deterrence strategy. By evaluating key documentation released by the United States on nuclear modernization this paper will evaluate if and how concepts of Just War are applied to the next generation of nuclear deterrence. It is estimated that the United States maintains 852 weapons on high alert, capable of being launched within fifteen minutes, Russia maintains an additional 897 nuclear weapons on alert, combined these weapons equate to 744 megatons of destructive power.¹¹ The nuclear weapons on alert alone, from

⁹ Cian O’Driscoll, “No Substitute for Victory? Why Just War Theorists Can’t Win,” *European Journal of International Relations* 26, no. 1 (2019): 187-208, <https://doi.org/10.1177/1354066119864706>.

¹⁰ Christopher Shields, “Aristotle,” *Stanford Encyclopedia of Philosophy* (Stanford University, August 25, 2020), <https://plato.stanford.edu/entries/aristotle/>.

¹¹ “Alert Status of Nuclear Weapons - Federation of American,” Alert Status of Nuclear Weapons (Federation of American Scientists, April 21, 2017), https://uploads.fas.org/2014/05/Brief2017_GWU_2s.pdf.

just two of the nine global nuclear powers, equates to 49,600 times the destructive power of the nuclear bomb employed by the United States against Hiroshima. Given the immense potential for destruction the entire global community should be concerned by the extent moral concepts are applied to decisions made regarding nuclear deterrence. This paper will analyze the history of nuclear deterrence and nuclear force structures along with planned modernization efforts. The power of nuclear weapons along with historical targeting approaches and publicly available nuclear strategy documents will be analyzed and assessed against the principles of just war tradition. These documents include the Nuclear Posture Review and publicly released portions of Operation Plans. The United States is facing a resurgence of near peer rivals around the globe. An increasingly bellicose Russia is undertaking military movements, particularly in Ukraine and Syria, while simultaneously attempting to undermine the NATO alliance. In the Pacific and Asia China's expansionist policies pose economic and military threats to American and allied interests in the region. Considering these dynamics coupled with nuclear modernization it is possible these superpowers are on the verge of a new nuclear arms race. It is imperative that the United States not only learn from the lessons of the Cold War but also to ensure it sets an example and precedence of incorporation of just war tradition into its nuclear strategy. This paper will determine if the United States is utilizing just war principles and potentially setting this example.

Chapter II.

Nuclear Deterrence

Although the United States rapidly demobilized its wartime forces at the end of World War II the Soviet Union continued to maintain a large conventional force. This posed a significant threat to Europe which was weak and in shambles following the war. In 1950 National Security Council (NSC) 68 was released painting a grim picture of the ability of the United States defend Europe from the Soviet Union. NSC 68 predicted that by 1954 the Soviet Union would possess two hundred nuclear weapons and recommended a massive increase in defense spending.¹² Both the Truman and Eisenhower administrations sought to defend America's allies around the globe without straining the economy, to do this the United States developed a nuclear deterrence policy to hold the menacing Soviet forces at bay. Leveraging nuclear weapons allowed the United States to avoid the significant cost of maintaining a large standing army but opened to door to a decades long nuclear arms race.

The objective of deterrence is to discourage or restrain other nations' behaviors and actions by altering the cost-benefit calculus of conflict for a potential aggressor via the threat of harm.¹³ In the nuclear age aggression could be met with immediate and immense destruction. The consequences of overly aggressive actions became so great that escalation of conflict had to be carefully managed to avoid a nuclear catastrophe. Deterrence helps impose limits to aggression that could upset the international order and

¹² John Newhouse, *War and Peace in the Nuclear Age* (New York: Knopf, 1989), 82.

¹³ Michael Mazarr et al., "What Deters and Why: Exploring Requirements for Effective Deterrence of Interstate Aggression," 2018, 1-3, <https://doi.org/10.7249/rr2451>.

America's grand strategy. The effectiveness of deterrence can be demonstrated by the fact that the United States and Soviet Union repeatedly, although indirectly, squared off against each other throughout the Cold War. By means of proxy wars in the Chinese Revolution, Korea, Vietnam, Afghanistan and in several Middle- Eastern crises nuclear weapons were not used, even if doing so could have shortened the conflicts or impacted the outcome.¹⁴ The power of deterrence and the so called "nuclear taboo" have made nuclear powers refrain from the use of nuclear weapons.¹⁵ Janice Stein commented, "central to the theory of deterrence is the assumption leaders make rational choices, that they estimate the probable consequences of a use of force."¹⁶ During the Cold War rational political and military leadership understood that any aggressive action could result in uncontrollable escalation, however much of today's national and military leadership were too young or even not yet born to have experienced these Cold War lessons first hand. For this reason, the application of just war principles to nuclear strategy is critical.

For deterrence to be effective the deterring side must have the capability to act on the threat, the resolve to carry it out and the willingness to pay the cost of both maintaining the capability and to face the repercussions of dispensing the promised harm. As Lawrence Freedman put it, effective deterrence requires the United States to "maintain at all times a clear and unmistakable ability to inflict an unacceptable degree of damage upon any aggressor, or combination of aggressors – even after absorbing a

¹⁴ Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 2009), IX.

¹⁵ Nina Tannenwald, "The Vanishing Nuclear Taboo?," *Foreign Affairs*, 2018, <https://www.foreignaffairs.com/articles/world/2018-10-15/vanishing-nuclear-taboo>.

¹⁶ Robert Jervis, Richard Ned Lebow, and Janice Gross Stein, *Psychology and Deterrence* (Baltimore, MD: Johns Hopkins University Press, 1991), 51.

surprise first strike.”¹⁷ The United States provides allies in Europe, Asia and the Pacific extended deterrence guarantees. These guarantees are critical to nonproliferation efforts by reassuring allies that might otherwise pursue nuclear weapons programs of their own. The 2018 Nuclear Posture Review (NPR) puts great emphasis on the readiness of the United States to provide a nuclear umbrella to its allies. “No country should doubt the strength of our extended deterrence commitments or the strength of U.S. and allied capabilities to deter, and if necessary, defeat, any potential adversary’s nuclear or non-nuclear aggression. In many cases, effectively assuring allies and partners depends on their confidence in the credibility of U.S. extended nuclear deterrence.”¹⁸

To maintain the credibility of its nuclear deterrence guarantees the United States must instill confidence in its allies and fear in potential aggressors. Both tasks are highly challenging. The United States must be able to demonstrate a flexible, adaptable, and resilient nuclear capability able to maintain counterstrike abilities event after absorbing a surprise first strike.¹⁹ Over the decades nuclear strategy has detoured down various paths but has always returned to the need for flexibility. Presidents Truman, Eisenhower, Kennedy, Johnson, Nixon and Carter all sought increased options for nuclear confrontation. Robert McNamara, serving as Secretary of Defense for both Kennedy and Johnson, pushed for a flexible response saying the “president’s hand should not be forced by a lack of alternatives.”²⁰ The resulting Schlesinger Doctrine called for a “wide a range of nuclear options, from the very small to the very large.”²¹ NATO adopted a flexible

¹⁷ Lawrence Freedman, *The Evolution of Nuclear Strategy*, 3rd ed. (London, etc.: Palgrave, 2004), 233.

¹⁸ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” viii.

¹⁹ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” VI.

²⁰ Freedman, *The Evolution of Nuclear Strategy*, 216.

²¹ Freedman, 360-361.

response strategy in 1967 followed by the French in 1976.²² The only way to ensure having a survivable and flexible nuclear response to wide ranging threats is through the implementation of a well-designed force structure which will be outlined in Chapter III.

It is important to note nuclear deterrence has many critics that argue it is impossible to attribute the lack of a major global conflict solely to the presence of nuclear deterrence. It is true there are countless considerations such as the personalities and policies impacting the actions of national leaders. However, there is significant governmental, military, and academic consensus on the effectiveness of nuclear deterrence. It is the view of this paper that nuclear deterrence is an effective strategy. However, the purpose of this work is not to validate deterrence. Instead, it seeks to determine if there exists a connection between the modernization of nuclear deterrence and just war tradition based on available strategy documents.

²² Freedman, 271, 308.

Chapter III.

The Nuclear Triad Force Structure

Today the nuclear forces of the United States and Russia are limited by the New START Treaty that went into effect in 2011. New START requires the United States and Russia to reduce nuclear forces to 700 deployed Intercontinental Ballistic Missiles (ICBM), Submarine Launched Ballistic Missiles (SLBM), and bombers, 800 total deployed and non-deployed launchers and 1,550 deployed warheads across all systems. One ICBM, SLBM, and nuclear bomber counts as one launcher, even if it is capable of carrying multiple warheads.²³ Within the confines of New START the United States created a nuclear force comprise of 400 Minuteman III, 240 Trident II on twelve Ohio Class SSBNs, 42 B-52Hs, and 18 B-2s. Ohio-class submarine capacity has been reduced to carry only 20 Trident IIs that retain the ability to carry multiple independently targeted re-entry vehicles (MIRV) and carry 4.5 warheads on average.²⁴

Dispersing the nuclear force across three distinct delivery vehicles helps ensure the second-strike capability required to maintain a credible deterrence. As Lawrence Freedman stated, “There is an obvious danger inputting all the eggs in one basket. If the deterrent depended solely on one type of delivery vehicle, then the adversary’s defensive problem would be simplified. To mount an attack simultaneously on three completely different types of systems would be an awesome task; one system might be

²³ “Fact Sheets & Briefs,” New START at a Glance | Arms Control Association, accessed February 4, 2022, <https://www.armscontrol.org/factsheets/NewSTART>.

²⁴ Todd Harrison, “Options for the Ground-Based Leg of the Nuclear Triad,” Options for the Ground-Based Leg of the Nuclear Triad | Center for Strategic and International Studies, September 21, 2017, 27-28, <https://www.csis.org/analysis/options-ground-based-leg-nuclear-triad>.

manageable.”²⁵ The composition of the United States’ nuclear triad has remained fairly consistent over decades of nuclear deterrence as depicted in Figure 1 below.

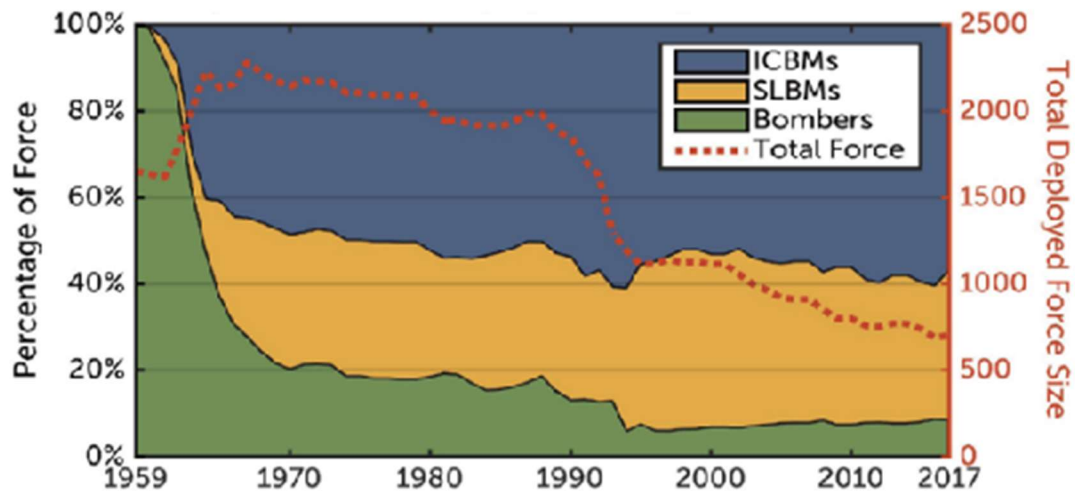


Figure 1. American Nuclear Triad.²⁶

The United States, Russia, and China all rely upon a force structure comprised of a nuclear triad composed of ground based Intercontinental Ballistic Missiles (ICBM), submarine launched ballistic missiles (SLBM) and air launched nuclear weapons including strategic and tactical bombers. The three legs of the triad are held together by a command-and-control component. “One of the most important things to consider regarding the current structure of the US nuclear triad is that it was never planned. The current reliance on strategic bombers, ICBMs, and SLBMs is the direct result of an intertwined evolution of nuclear weapon and delivery system technologies.”²⁷ The Soviets during the Cold War emphasized a force structure that continues to hold true

²⁵ Freedman, *The Evolution of Nuclear Strategy*, 326.

²⁶ Harrison, “Options for the Ground-Based Leg of the Nuclear Triad,” 6.

²⁷ Darius E. Watson, “Rethinking the US Nuclear Triad,” *Strategic Studies Quarterly*, 2017, 136.

today that “all types of weapons had their functions and values. The important thing was not to place a disproportionate emphasis on one type of weapon or tactic.”²⁸

The strength of US, Russian and Chinese strategic delivery systems comprising each nation’s nuclear triad Figure 2 generated by the International Institute for Strategic Studies.

IISS Estimate of Strategic Delivery Systems

ICBMs	400	313	70
SSBNs (Ships/Maximum Missiles)	14/336	13/192-212	4/48
Bombers	157	129	162

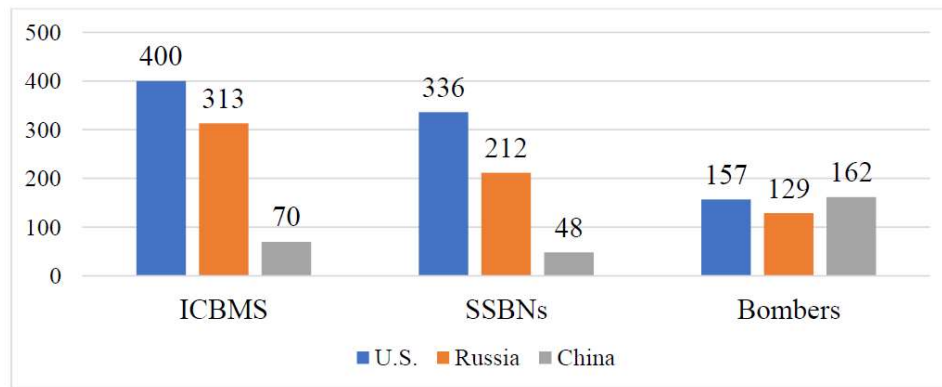


Figure 2. Triad Composition.²⁹

The world has changed since the end of World War II when nuclear deterrence strategies first emerged. “There now exists an unprecedented range and mix of threats, including major conventional, chemical, biological, nuclear, space, cyber threats, and

²⁸ Freedman, *The Evolution of Nuclear Strategy*, 57.

²⁹ Anthony H. Cordesman, “China and the New Strategic Nuclear Arms Race,” Center for Strategic & International Studies, November 15, 2018, <https://www.csis.org/analysis/china-and-new-strategic-nuclear-arms-race>, 25.

violent non-state actors.”³⁰ While these emerging threats pose dangers to international security this thesis will focus on traditional nation versus nation deterrence strategy.

The utilization of nuclear weapons has been far greater for diplomatic maneuvering rather than military action. Scholars of nuclear strategy including Robert Jervis and William Brodie claim “nuclear weapons revolutionized military strategy and the relationships between force and foreign policy.”³¹ From the start of the Cold War to present day the United States effectively leveraged its nuclear capabilities in pursuit of its national objectives. The United States and Russia, remain unable to impose their will upon each other because doing so risks escalation and crisis.³² Henry Kissinger stated this mutual risk encouraged both sides to seek only moderate objectives and thus has kept relative global peace since 1945.³³

³⁰ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” V.

³¹ Robert Jervis, *Meaning of the Nuclear Revolution - Statecraft and the Prospect of Armageddon* (Cornell University Press, 1990), 46.

³² Jervis, 7.

³³ Freedman, *The Evolution of Nuclear Strategy*, 101.

Chapter IV.

Nuclear Modernization

The assets comprising the U.S. triad include the B-52H bomber designed in the 1950's, the B-2 first flown in 1989, the air-launched cruise missile (ALCM) in service since 1982, the Minuteman III ICBM, first fielded in 1970, and the *Ohio Class* nuclear submarine introduced in 1981. Uranium and plutonium facilities dating back to the Manhattan Project also require updating.³⁴ The recent investment to modernize nuclear arms is largely the result of aging systems, however given the costs involved and the expected length of service of new systems it is imperative the upgrades will serve nuclear strategy goals for decades to come. Perhaps equally imperative is ensuring the next generation of nuclear deterrence aligns with America's concept of moral beliefs.

The United States outlined its modernization efforts in the 2018 Nuclear Posture Review. The plan calls for the production of the new *Columbia-Class* SSBN, along with low-yield submarine-launched ballistic missile (SLBM), and a new nuclear submarine-launched cruise missile (SLCM), the new B-21 strategic bomber; a new Long-Range Standoff Weapon (LRSO) ALCM, and a replacement for the now 40-year-old Minuteman ICBM, these programs are estimated to cost \$1.2 trillion.³⁵

This paper will break down modernization efforts in order to provide additional context. First modernization efforts of other nations will be detailed, specifically the

³⁴ Thomas Karako, "Nuclear Forces: Restore the Primacy of Deterrence" (Center for Strategic & International Studies, December 2016), http://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/161212_Transition45-Karako-Nuclear-Forces.pdf?008xHGkGLILXCQmalfqsd4QbD1p20s2h, 2.

³⁵ Cordesman, "China and the New Strategic Nuclear Arms Race," 9.

efforts of Russia and China. Then the United States’ efforts will be broken down by the three legs of the nuclear triad.

Global Nuclear Modernization

The United States is not alone in its modernization efforts. Emerging threats including North Korea and Iran are continuing to grow capabilities, both in nuclear warheads and delivery technologies. China and Russia, with systems comparable in age to the arsenal of the United States are also undergoing nuclear modernization programs. Figure three below from the 2018 Nuclear Posture Review shows investments in nuclear delivery modernization programs since 2010 and the disparity in investments between potential adversarial nuclear states. Additional details on Russian and Chinese investments are provided next.

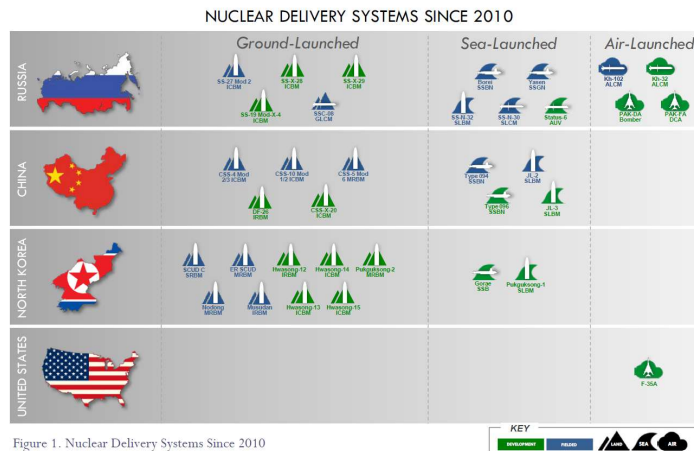


Figure 1. Nuclear Delivery Systems Since 2010
Data provided by the DoD

Figure 3. Global Nuclear Modernization.³⁶

³⁶ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” 32.

Russian Nuclear Modernization

Russia remains the only true peer threat to the United States in the nuclear realm. Tensions have increased between the two nations following the Russian seizure of Crimea in 2014 and the involvement of both nations in military action in Syria.³⁷ The Russian invasion of Ukraine this year came with Russian threats of nuclear war. Like the United States, Russia had to make decisions on the future of its nuclear forces due to aging systems and infrastructure. Following the collapse of the USSR, Russia lost 23.8% of its territory, 48.5% of its population, 41% of the GDP and 44.6% of its military capability due to the division among the former Soviet republics, the military equipment remaining is becoming obsolete.³⁸ In 2018, President Putin announced Russian nuclear modernization priorities, including hypersonic weapons, ICBMs, SLBMs and a new SSBN to launch them from, a new bomber with new nuclear missiles and mobile SRBMs.³⁹ “Even more troubling has been Russia’s adoption of military strategies and capabilities that rely on nuclear escalation for their success.”⁴⁰ While Russia has been active on the international stage in recent years its economy remains small, roughly only one tenth that of the United States.⁴¹ It will continue to take actions it believes will improve its international stature but its limited economy will moderate its ability to deploy conventional forces or exert an unmanageable influence around the globe. Perhaps Russia has become more bellicose about nuclear modernization due to its weakened economic state, in a way paralleling how the United States had to rely upon nuclear

³⁷ Cordesman, “China and the New Strategic Nuclear Arms Race,” 32.

³⁸ Cordesman, 32.

³⁹ Cordesman, 9.

⁴⁰ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” 1.

⁴¹ Jacob L. Shapiro, “A Tale of Two Economies: Russia and the US,” Geopolitical Futures, April 19, 2019, <https://geopoliticalfutures.com/a-tale-of-two-economies-russia-and-the-us/>.

weapons following World War II when it too relied upon nuclear weapons compensate for far smaller conventional forces. China on the other hand has the ability to drastically alter global economic activity should it chose to assert its growing regional powers.

Chinese Nuclear Modernization

While numerically China has far few nuclear weapons than the United States or Russia it is unquestionably a world superpower. China's smaller nuclear force requires it to maintain very high levels of reliability to ensure that its smaller force is capable at any time to respond to a nuclear crisis. The smaller a nuclear force is the less redundancy there is, maintaining confidence in weapons systems is a high priority to ensure an effective deterrence strategy. For this reason, China is heavily investing in not only modernizing but also growing its nuclear forces. "China is pursuing entirely new nuclear capabilities tailored to achieve particular national security objectives."⁴² The addition of nuclear capable bombers will for the first time equip China with a nuclear triad of its own.⁴³ China must maintain its nuclear deterrence against the increasingly active Russia and to counter missile defense systems being fielded by the United States, South Korea and Japan.⁴⁴ Aware of the potentially destabilizing effects of such defenses the United States has constructed only 44 interceptor silos "a number that was designed to deal with the limited or developing threat from Iran and North Korea, and with forces that are not located for anything approaching an effective defense against Russia."⁴⁵ Memories of the

⁴² "Nuclear Posture Review, 2018 - U.S. Department of Defense," i.

⁴³ Cordesman, "China and the New Strategic Nuclear Arms Race," 49.

⁴⁴ Cordesman, 60.

⁴⁵ Cordesman, 29.

Cold War continue to direct the focus of nuclear conversations to Russia but the United States cannot afford to discount the growing military and economic power China wields.

China, with its relatively small nuclear weapon stockpile, has long adhered to a version of Henry Kissinger's concept of "sufficiency" promoted during the Nixon administration. This strategy has worked well for their interests and security. "Russia and China have coexisted for decades along a contentious border with a large mismatch in conventional and nuclear forces. From this scenario, strategists have learned that it is most important to have a sufficient deterrent rather than an equal deterrent."⁴⁶ Jervis notes "The United States does not need the ability to win a nuclear war to protect itself and its allies."⁴⁷ The side that is able to successfully deter with the least expensive nuclear force may be considered the winner.⁴⁸ Accepting a strategy of not mirroring an adversary's moves increases the criticality of maintaining an effective nuclear force. However, deterrence relying on a potentially smaller nuclear arsenal will require the highest level of confidence in nuclear weapons and command systems.

American Nuclear Triad

It is the position of this paper that nuclear deterrence is effective, and that the United States, and its peer rivals, will not eliminate nuclear arsenals. With these considerations in mind America must invest in its nuclear systems to ensure weapons and command and control systems remain reliable. Failure to do so would result in decreasing confidence in America's nuclear deterrent, both with potential adversaries, but also with

⁴⁶ Jeff Richardson, "Shifting from a Nuclear Triad to a Nuclear Dyad," 9.

⁴⁷ Jervis, *Meaning of the Nuclear Revolution*, 23.

⁴⁸ Cordesman, "China and the New Strategic Nuclear Arms Race," 62.

allies. Instead, this paper seeks to examine how Just War Tradition is applied within that strategy while taking a realistic view that denuclearization is not likely over the next several decades, if ever. In order to provide context on the current triad each leg will be discussed. It is important to note that while American command and control elements will also be updated, due to limited data available on them, they are not covered in this paper. It must be stressed however how critically important these command and control elements are. Data on the current components of each leg will provided context on why modernization is required. Components being developed to replace the current aging systems are introduced.

Strategic Bombers and Air Launched Systems

The nuclear capable bomber was the first delivery vehicle for nuclear weapons. Until the advent of ICBMs in the late 1950's bombers represented 100% of America's ability to deploy nuclear weapons. The conventional bombing campaigns of World War II proved the bomber was not a means of breaking a deadlock, but another instrument of attrition.⁴⁹ Despite the massive destruction imposed by bombers on Japan and Germany they alone were not sufficient to decide the outcome of the War. Today's nuclear bomber force is comprised of the B-52, the newest of which were built in 1962, the B-2 in service since 1993, and the F-15E which entered service in 1989. The main advantages of airborne platforms are that they can operate in nuclear or conventional roles, can provide an overt signal to an adversary during a crisis and can be recalled or redirected. However, airborne delivery vehicles are also vulnerable to attack. They can be shot down by air

⁴⁹ Freedman, *The Evolution of Nuclear Strategy*, 21.

defenses or destroyed on the ground in a surprise first strike.⁵⁰ These platforms rely upon nuclear bombs or Air Launched Cruise Missiles (ALCM) to perform their role. All of these platforms are approaching or have already exceeded their original planned design life. The AGM-86 ALCM, allows one bomber to strike multiple widely separated targets without having to penetrate enemy airspace however, they must be replaced due to structural fatigue issues.⁵¹ Currently the U.S. is investing in both guided and unguided nuclear bombs and a Long Range Stand Off cruise missile to replace the ALCM.⁵²

The United States Air Force plans to purchase 100 B-21 Raiders to replace its current aging fleet. Designing, producing, and maintaining bombers represents a significant investment. The strategic bomber leg of the nuclear triad has consistently represented the most expensive component of the US nuclear arsenal. The annual cost of maintaining this fleet of aircraft ranged from \$3.1 to \$3.5 billion between 2014 and 2018 for a total of \$16.5 billion. This number is double the planned costs associated with ICBMs which ranged from \$1.7 to \$1.9 billion per year, and exceeded the cost associated with the development and support of submarine forces at \$2.9 billion a year.⁵³ The United States will also leverage the F-35 as a nuclear capable delivery vehicle.

Ground Based Intercontinental Ballistic Missiles

Intercontinental Ballistic Missiles (ICBMs) make up the majority of the deployed nuclear triad with 400 missiles deployed across 450 silos. The Minuteman III is the only

⁵⁰ Harrison, "Options for the Ground-Based Leg of the Nuclear Triad," 1.

⁵¹ Dennis Evans and Jonathan Schwalbe, "The Long-Range Standoff Cruise Missile," *Air & Space Power Journal*, 2018, 50.

⁵² Evans and Schwalbe, 54.

⁵³ Darius Watson, "Rethinking the US Nuclear Triad," 144-145.

land-based ICBM used by the United States, was designed in the 1960's and entered service in 1970 with an expected life span of only ten years.⁵⁴ ICBM's offer a rapid response that has been vital since the early days of the Cold War. Both the Killian Report of 1955 and the Gaither Report of 1957 stressed the need for the United States to invest in ICBMs.⁵⁵ As Freedman said ICBMs are "able to deliver thermonuclear weapons at great speed to anywhere on the globe and in any weather; air defenses were incapable of stopping them."⁵⁶ Minuteman missiles, spread out over thousands of square miles, simultaneously forces an opponent to directly target the U.S. mainland and act as a missile sponge forcing an adversary to use a large percentage of their own nuclear forces to neutralize them or accept an assured retaliatory response.⁵⁷

To destroy U.S. ICBMs on the ground, an adversary would need to launch a precisely coordinated attack with hundreds of high-yield and accurate warheads. This is an insurmountable challenge for any potential adversary today, except for Russia. In contrast, in the absence of our ICBM force, a large proportion of our strategic nuclear triad, including SSBNs in port and non-alert bombers, could be subject to an attempted nuclear first strike involving a relatively small number of nuclear weapons.⁵⁸

ICBMs also present weaknesses. ICBMs are always on alert and out of sight, this means they are not the strongest diplomatic tool, and once launched they cannot be recalled or redirected. Additionally, they "are of doubtful utility against many non-Russian countries due to the need for overflight of Russia on the way to the country being targeted."⁵⁹

⁵⁴ Harrison, "Options for the Ground-Based Leg of the Nuclear Triad," 4.

⁵⁵ Freedman, *The Evolution of Nuclear Strategy*, 149-151; "The Gaither Report," NSA Archive GWU (George Washington University), accessed February 17, 2022, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB139/nitze02.pdf>.

⁵⁶ Freedman, *The Evolution of Nuclear Strategy*, 143.

⁵⁷ Harrison, "Options for the Ground-Based Leg of the Nuclear Triad," 6.

⁵⁸ "Nuclear Posture Review, 2018 – U.S. Department of Defense," 46.

⁵⁹ Evans and Schwalbe, "The Long-Range Standoff Cruise Missile," 49.

Submarine Launched Ballistic Missiles

Submarine Launched Ballistic Missiles are considered the most survivable leg of the triad all but guaranteeing a survivable second-strike capability. The 1993 START II Treaty allows the Trident II (D5) missiles onboard today's *Ohio Class* SSBN submarines to carry multiple independently targetable reentry vehicles (MIRV).⁶⁰ As part of the New START of 2011 The United States removed four launchers from each of the 14 Ohio-class submarines allowing them to carry only 20 missiles, each missile carries 4.5 warheads on average.⁶¹ "When on patrol, SSBNs are, at present, virtually undetectable and there are no known, near-term credible threats to the survivability of the SSBN force."⁶² For all of their strengths however submarines are limited in many ways. Submarines cannot be used as a diplomatic tool without alerting an adversary to their presence which would reduce its survivability. "The fragility of communication links" means submarines may go hours or even days without communication in normal circumstances let alone in the face of degraded infrastructure that would accompany a nuclear first strike, they may require additional hours or days to position the submarines to a location it can effectively launch its missiles.⁶³

Designed for a 30-year service life the *Ohio Class* SSBN entered service in 1981. Service life was extended to 42 years which will make it the longest serving submarine in United States' history, the Trident D5 service life has been extended to 2042 to match the

⁶⁰ Harrison, "Options for the Ground-Based Leg of the Nuclear Triad," 27.

⁶¹ Harrison, 27-28.

⁶² "Nuclear Posture Review, 2018 – U.S. Department of Defense," 44-45.

⁶³ Freedman, *The Evolution of Nuclear Strategy*, 158.

remaining service life of the *Ohio Class* SSBN.⁶⁴ To replace the aging *Ohio Class* the new *Columbia Class* SSBNs are being developed with a plan to deliver a minimum of twelve beginning in 2031. An evaluation of options for the Trident is also planned.⁶⁵

The United States will also be modernizing the Nuclear Command, Control and Communications. This critical component provides for the detection, warning, attack characterization, planning and management of orders from the President. The systems supporting these capabilities were last updated thirty years ago.⁶⁶ When current systems were created cyber and growing space threats were not the significant threats they pose today. Upgrades will allow for an adaptable system for a growing list of threats to the United States and its allies.

The Cost of Modernization

The 2018 Nuclear Posture Review contends that the cost of three simultaneous modernization efforts will be manageable. The highest projection puts the cost at around 6.4% of the Defense Department budget and less than 1% of the overall federal budget. Maintaining the current systems costs between 2-3% of the DoD budget. These numbers are far below the 10.6% allocated in the 1980s and 17.1% in the early 1960s.⁶⁷ The percentage of Defense Department spending on the nuclear triad is displayed in figure four.

⁶⁴ “Nuclear Posture Review, 2018 – U.S. Department of Defense,” 45.

⁶⁵ “Nuclear Posture Review, 2018 – U.S. Department of Defense,” 49.

⁶⁶ “Nuclear Posture Review, 2018 – U.S. Department of Defense,” 56.

⁶⁷ “Nuclear Posture Review, 2018 – U.S. Department of Defense,” 51.

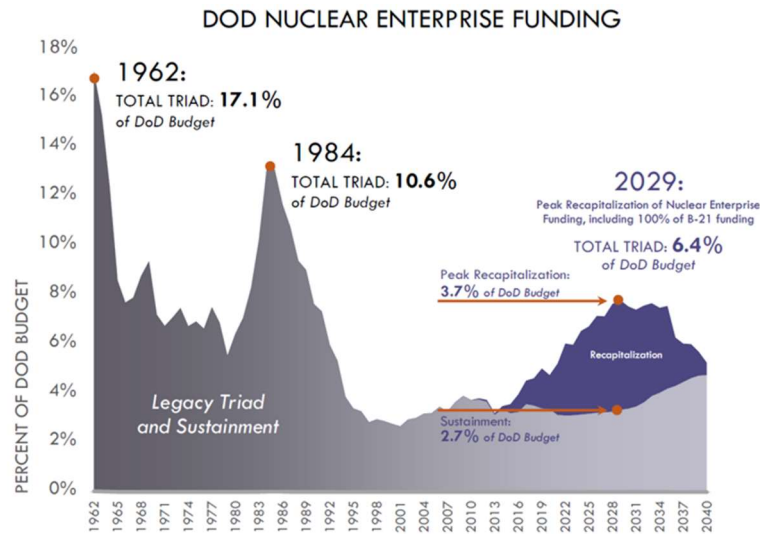


Figure 4. Nuclear Weapons Funding.⁶⁸

There has been debate surrounding such a significant investment in nuclear weapons programs, these debates trace back to the start of the Cold War. NSC 162/2 created for President Eisenhower in 1953 sought to balance maintaining a global position of strength while avoiding creating undue pressure on the economy.⁶⁹ As a cost saving approach some have called for a reduction from a three-leg nuclear triad to a two-legged dyad approach. Others contend having a strong nuclear deterrence capability reduces the need to have a large standing conventional force, resulting in an overall decrease in spending.⁷⁰

This paper contends that investment must be made to maintain the nuclear triad to provide the most adaptable nuclear capabilities required to respond to and unprecedented range of threats and unpredictable future events. However, the United States must avoid falling into the trap of a new nuclear arms race with Russia and China. Reversals of treaties in the post-Cold War era could continue as occurred with the collapse of the Anti-

⁶⁸ “Nuclear Posture Review, 2018 - U.S. Department of Defense” 52.

⁶⁹ Freedman, *The Evolution of Nuclear Strategy*, 77.

⁷⁰ Freedman, 53, 74.

Ballistic Missile Treaty (ABM) in 2002 and Intermediate-Range Nuclear Forces Treaty (INF) in 2019. It is important to have a sufficient deterrent rather than an equal deterrent.⁷¹ As Robert Jervis stated during the Cold War “the United States does not need to meet all Soviet threats on their own terms.”⁷² If the Russians continue to pursue intermediate nuclear weapons and non-strategic nuclear weapons the United States, based on its geographic position in the world, does not need to develop complementary weapons of its own. The United States has already fought the Cold War and need not repeat it. Instead, it has the opportunity during this moment of modernization to implement a new approach to deterrence incorporating a new emphasis on Just War Tradition.

⁷¹ Jeff Richardson, “Shifting from a Nuclear Triad to a Nuclear Dyad,” 9.

⁷² Jervis, “*Meaning of the Nuclear Revolution*,” 57.

Chapter V.

Just War Tradition

War has long been the ultimate display of power by one nation against another. By its nature the purpose of war is to win, but how does one determine what actions are acceptable in the quest for victory? Is there any price that is too high to achieve a nation's objective? For thousands of years these questions have been pondered by some of humanity's greatest philosophers. Over that expansive time common norms and themes have come to be accepted in what has become known as just war tradition or just war theory. As James Dubik summarizes, "Just war theory is a theory of practical morality applied to the most complex human activities."⁷³ Collectively the principles of just war have withstood the test of time and helped shaped military strategy.

Most consider Christian theology to be the origin of just war theory as far back as Aristotle.⁷⁴ Many attribute the work of Saint Augustine (357-430 CE) as the foundation of just war. In his work, *Questions on the Heptateuch*, Augustine states, "just wars are defined as those which avenge injuries, if some nation or state against whom one is waging a war has neglected to punish a wrong committed by its citizens, or to return something that was wrongly taken."⁷⁵ From these beginnings philosophers continued to develop just war tradition.

⁷³ James M. Dubik, *Just War Reconsidered: Strategy, Ethics, and Theory* (Lexington, KY: University Press of Kentucky, 2018), 25.

⁷⁴ Liane Hartnett and Cian O'Driscoll, "Sad and Laughable and Strange: At War with Just War," *Global Society* 35, no. 1 (December 2020): 28, <https://doi.org/10.1080/13600826.2020.1828294>.

⁷⁵ O'Driscoll, "No Substitute for Victory?," 192.

Just war is comprised of three core components that guide the decisions to enter into war, *jus ad bellum*, the conduct of the warring parties once the conflict is initiated, *jus in bello*, and lastly the post war analysis which includes determining responsibility and assessing how the victors treat the defeated populations, *jus post bellum*. Perhaps nowhere are the first two aspects more important than when considering nuclear war, because only in a nuclear war is it possible there may not be a civilization left to conduct the last phase. The next paragraphs will provide more details on these components of just war.

Any major change or investment into the policy stance of the United States should be evaluated and questioned from a variety of viewpoints. It is a healthy exercise to consider aspects such as budgetary requirements, moral principles and alternative approaches of past, present and proposed future policies in the context of the time they were generated. This may hold particularly true in the case of nuclear modernization. With almost eighty years of historic data and lessons learned, both success and failures, nuclear modernization should be carefully considered. Perhaps nowhere is a critical evaluation required than in the application of just war principles. As the sole superpower and global leader, the path taken by the United States sets an example that influences decisions makers around the world. The principles of just war are introduced will be introduced in order to allow for that application of these principles in American nuclear policy and modernization to be assessed.

Jus ad Bellum

With war comes death, serious injury, starvation, disease and destruction. Wars can impact nearly every aspect of daily lives. Paul Wise's research on the

epidemiological aspects of war, states war “generates death, illness, and hardship through the destruction of the means of human survival.”⁷⁶ Wise dissected data on deaths caused by war. He notes in his research there are many barriers to gathering, maintain and communicating this data in war zones, especially when efforts are made to hide it, but as reporting abilities improve it is possible to improve analysis. Wise notes between 1991 and 1997 twice as many people died from war consequences than from direct fighting, between 2004 and 2007 that number jumped to four times.⁷⁷ Death, however, is not the only cost inflicted upon noncombatants. In addition to death war causes traumatic injury, disability, and developmental disorders particularly in children. Additional details will be provided on combatant versus noncombatant impacts when examining *jus in bello*, however it is critical that those with the authority to initiate war consider this historic data prior to engaging in war.

Jus ad bellum provides guidance on who and under what conditions can war be justly entered. In order to comply with *jus ad bellum* war must be entered into by a legitimate authority, with the right intention, the aim of peace, with a realistic chance of success and only as a last resort after other attempts to resolve conflict failed.⁷⁸ These conditions raise many questions such as what constitutes a legitimate authority, how do you determine if an intention is right, and at what point can attempts at conflict resolution other than war be declared failed. A legitimate authority has been normalized as a head or governing body of a nation. Pablo Kamonvitz notes “a defining feature of states thus conceived is the power to decide on the conduct of foreign affairs, including in the

⁷⁶ Paul H. Wise, “The Epidemiologic Challenge to the Conduct of Just War: Confronting Indirect Civilian Casualties of War,” *Daedalus* 146, no. 1 (2017): 140, https://doi.org/10.1162/daed_a_00428.

⁷⁷ Wise, 143.

⁷⁸ O’Driscoll, “No Substitute for Victory?,” 188.

extreme the use of armed force.”⁷⁹ Right intentions for war include self-defense, maintaining international boundaries, and maintaining sovereignty. Chance of success, last resort and intention may be subjective to international opinion.

Although *jus as bellum* is a critical component in just war, as it pertains to nuclear modernization and nuclear war it is less likely to be a diving factor. It is the view of this work that the application of nuclear weapons is unlikely as a bolt out of the blue or surprise attack. This paper contends that nuclear weapons are less likely to be used as an opening salvo of a war than they are to be used as a result of uncontrolled escalation or as a last act of desperation by a nation on the verge of defeat. Based on this position the next section covering *jus ad bello* is more critical to the inquiry of if just war tradition is being applied to America’s nuclear modernization efforts.

Jus ad Bello

Following the collapse of the Soviet Union the risk of a large-scale global war has reduced. Since this time the United States has engaged in many military actions, most notably the 1991 Gulf war and the decades long War on Terror. These modern wars, in faraway lands, have highlighted the use of smart weapons and minimal impact on civilian populations. Domestically these recent wars have had little impact on the everyday lives of most Americans. These factors could contribute to perception that modern warfare is a fairly sterile and controlled endeavor. This misperception could alter assessments about the risks of entering into a war. However, war remains highly impactful to those living within war zones. The *Civilian Casualty Mitigation Manual* released by the United States

⁷⁹ Pablo Kalmanovitz, “Sovereignty, Pluralism, and Regular War”: Wolff and Vattel’s Enlightenment Critique of Just War,” *Political Theory* 46, no. 2 (2017): 221, <https://doi.org/10.1177/0090591716688047>.

Army in July 2012 notes “In addition to the inherent risks from combat, a society disrupted by armed conflict will have other civilian vulnerabilities, particularly if large numbers of civilians lack food, water, shelter, medical care, and security. Disease, starvation, dehydration, and the climate may be more threatening to civilians than casualties from Army operations.”⁸⁰ Wars, even when carefully orchestrated, reap death and destruction that impacts the local civilian population.

Just War tradition established norms on acceptable actions during war and contributed to the development of modern smart weapons. These in turn have contributed to a reduction in overall unintended destruction. *Jus ad bello* focuses on the conduct of war once initiated. Just war’s origins stem from Christian beliefs in the sanctity of human life. Norms of *jus in bello* “are designed to balance protection of individual and communal life with the legitimate conduct of war.”⁸¹ Components of *jus ad bello* focus on the lives at stake including the proportionate use of force and differentiating between combatants and noncombatants.

The concept of proportionality states that the punishment for an offense should be comparative to the offense committed. In March of 2020 the United States conducted an airstrike in Iraq following a rocket attack that resulted in the death of two American and one British servicemen. The rocket attack was attributed to Iranian backed group. The retaliatory airstrike launched by the United States targeted only “facilities that housed weapons used to target U.S. and coalition troops” and was deemed proportional to the

⁸⁰ “Civilian Casualty Mitigation,” Civilian casualty mitigation (Headquarters, Department of the Army, July 2012), <https://irp.fas.org/doddir/army/attp3-37-31.pdf>, 9.

⁸¹ Dubik, *Just War Reconsidered*, 137.

attack.⁸² The United States managed the escalation of conflict by inflicting approximately equivalent damage in response to the attacks. Regarding proportionality Michael Walzer states that “belligerent armies are entitled to try to win their wars, but they are not entitled to do anything that is or seems to them necessary to win. They are subject to a set of restrictions that rests in part on the agreements of states but that also have an independent foundation in moral principle.”⁸³ A just war cannot be won at any cost and still be just.

Proportionality can be subjective, what one might consider an excess could be viewed by another as appropriate. History offers many examples of military leaders who believed inflicting heavy pain against their enemy would save lives in the long run by causing the overall war to be shorter and thus saving lives in the long run. During World War I Germany followed the philosophy of *kriegsraison*, which “justifies not only whatever it takes to win the war, but also whatever is necessary to reduce the risk of losing...”⁸⁴ One such example of this offered by Walzer is the unrestricted submarine warfare carried out by the German Navy during the war. German naval warfare did not differentiate between military and civilian crews and cargos.⁸⁵ Proportionality, while an accepted norm, can be interpreted in different ways. National leadership must consider how military conduct will be interpreted by the world, which occurs in *jus post bellum* because ultimately actions will be judged on a global stage. Given the significant destruction associated with nuclear weapons, proportionality aspects of just war must be

⁸² Vanessa Romo and Greg Myre, “U.S. Launches Retaliatory Airstrikes in Iraq after Missile Attack,” NPR (NPR, March 12, 2020), <https://www.npr.org/2020/03/12/815210420/u-s-launches-retaliatory-airstrikes-in-iraq-after-missile-attack>.

⁸³ Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations* (New York: Basic Books, 2015), 131.

⁸⁴ Walzer, 144.

⁸⁵ Walzer, 147-152.

factored into any use of these weapons, and thus should be part of the nuclear modernization conversation.

Perhaps the most stringent standard set by just war is the requirement for military actions to differentiate between combatants and noncombatants. Upon donning a uniform, a soldier is expected to carry out the duties of war, one soldier killing an enemy soldier on the battlefield is not only acceptable but expected. However, when a soldier kills a noncombatant, it is considered murder with punishable consequences.⁸⁶ The separation between civilian and combatant is legally referred to as the Principle of Discrimination or Distinction and considered the “grandfather of all principles.”⁸⁷ In order to be considered a combatant one must be directly participating in hostilities, noncombatants, including the civilian population, are those not participating in combat and thus cannot be purposefully targeted.⁸⁸ In modern warfare nations target their opponent’s economy in addition to its military forces. This form of warfare can blur the distinction between combatants and noncombatants. Walzer clarifies this distinction noting civilians that make the tools of warfare can be targeted, but all other civilians cannot be, “workers in a tank factory can be attacked and killed, but not those working in a food processing plant.”⁸⁹

The differentiation between combatant and noncombatant is such a core component to the moral judgement of warfare and just war tradition that considerable thought has been placed on the conditions in which this rule can be violated. There will

⁸⁶ Walzer, 128.

⁸⁷ “Law of Armed Conflict, 2015 - Library of Congress,” accessed February 4, 2022, 136, https://www.loc.gov/rr/frd/Military_Law/pdf/LOAC-Deskbook-2015.pdf.

⁸⁸ “Law of Armed Conflict, 2015,” 137.

⁸⁹ Walzer, *Just and Unjust Wars*, 146.

always be a threat to noncombatants when war is being fought in the areas in which they reside in or depend upon for daily life. The proximity of noncombatants to the battlefield creates the danger of innocent men, women and children being caught in the crossfire between warring factions. This is particularly true with nuclear weapons and poses a challenge to any use of such weapons without an exemption to the principle of differentiation. The double effect provides the means of circumventing differentiation. It is a method of “reconciling the absolute prohibition against attacking noncombatants with the legitimate conduct of military activity.”⁹⁰ Put another way the double effect is used to justify actions that may result in harm or death while pursuing a good end. The understanding that war may at times require the targeting of noncombatants has long been acknowledged. Although Saint Augustine believed noncombatant deaths were never acceptable Thomas Aquinas’ work *Summa Theological*, published in 1485, acknowledged it may be at times a consequence of other actions.⁹¹ Aquinas noted “Nothing hinders one act from having two effects, only one of which is intended, while the other is beside the intention.”⁹² The following conditions, noted in the Stanford Encyclopedia of Philosophy, are defined as when the double effect principle is acceptable:

1. The act itself must be morally good or at least indifferent.
2. The agent may not positively will the bad effect but may permit it. If he could attain the good effect without the bad effect he should do so. The bad effect is sometimes said to be indirectly voluntary.

⁹⁰ Walzer, 153.

⁹¹ Alison McIntyre, “Doctrine of Double Effect,” Stanford Encyclopedia of Philosophy (Stanford University, December 24, 2018), <https://plato.stanford.edu/entries/double-effect/>.

⁹² “St. Thomas Aquinas the Summa Theologica,” accessed February 4, 2022, http://www.documenta-catholica.eu/d_1225-1274-%20Thomas%20Aquinas%20-%20Summa%20Theologiae%20-%20Prima%20Pars%20-%20EN.pdf, 5023.

3. The good effect must flow from the action at least as immediately (in the order of causality, though not necessarily in the order of time) as the bad effect. In other words the good effect must be produced directly by the action, not by the bad effect. Otherwise the agent would be using a bad means to a good end, which is never allowed.
4. The good effect must be sufficiently desirable to compensate for the allowing of the bad effect⁹³

While all aspects of just war are important the differentiation between combatants and noncombatants is perhaps the most well known and most critically judged. The United States' war experience since the Vietnam War has often seen its uniformed soldiers engaging in combat against guerrilla or terrorist forces that do not adhere to norms such as requiring soldiers to wear uniforms. Rosa Brooks details the modern blurring of lines between war and peace that has resulted. "In the years since 9/11, it has grown steadily more difficult to define our enemies."⁹⁴ Brooks notes how the military is being increasingly used for nontraditional military roles in Military Operations Other than War (MOOTW) in which the military is used for tasks traditionally filled by civilian organization, such as humanitarian aid or responding to health crises around the globe.⁹⁵ With these complexities in mind the United States remains committed to minimizing noncombatant casualties by targeting only lawful military targets that will lead to swift victory.⁹⁶

The conduct of war, *jus ad bello*, not only guides how we fight wars but also has societal impacts. Dubik makes clear that failure to adhere to norms or morality in times of

⁹³ Alison McIntyre, "Doctrine of Double Effect."

⁹⁴ Rosa Brooks, *How Everything Became War and the Military Became Everything: Tales from the Pentagon* (New York: Simon et Schuster, 2017), 12.

⁹⁵ Brooks, 79-82.

⁹⁶ "Law of Armed Conflict, 2015 - Library of Congress," 135.

war can mean a war entered into for just reasons can lose their legitimacy due to the conduct of the combatants.⁹⁷ Brooks contends the military is assuming greater authority in more than just combat operations. Ensuring conduct of war remains scrutinized and that military leadership is held to high moral standards will influence military conduct in noncombat roles. According to Brooks, “We prefer to imagine brutal wars and atrocities as events that just happen every now and then, much like tornadoes or lightning strikes... but wars and atrocities do not just happen, societies and individuals slide into them, little by little, one tiny decision or omission at a time.”⁹⁸ Continued focus must be paid to *jus ad bello* to steer clear of the gradual progress toward immoral behavior when innocent lives are at risk. This must be mastered at the conventional level so that they will be equally applied to matters of nuclear war.

Jus Post Bellum

Nearly eighty years have passed since the Nuremberg trials following World War II. Despite the passage of time images of the trial left an indelible impact on society for generations. During the war “some 6 million Jews and 5 million Poles, Roma, Communists and other ‘undesirables’ had been exterminated.”⁹⁹ During the Nuremberg trials, “199 defendants were tried, 161 were convicted, and 37 were sentenced to death.”¹⁰⁰ These trials are representative of the last component of just war, *jus post bellum*. During this phase the reasons for going to war and the conduct within the war

⁹⁷ Dubik, *Just War Reconsidered*, 155.

⁹⁸ Brooks, *How Everything Became War*, 214.

⁹⁹ Samantha Power, *A Problem from Hell: America and the Age of Genocide* (New York: Basic Books, 2013), 47.

¹⁰⁰ “The Nuremberg Trials: The National WWII Museum: New Orleans,” The National WWII Museum | New Orleans, accessed February 4, 2022, <https://www.nationalww2museum.org/war/topics/nuremberg-trials>.

will be assessed. *Jus post bellum* analysis will “parse the responsibilities of both the victors and the vanquished in the aftermath of armed conflict.”¹⁰¹

The continued application and relevance of just war, including the conditions in which a nation enters a conflict and the conduct once engaged, is in part due to the analysis and accountability that occurs during *jus post bellum*. Accountability remains a powerful force. Following his capture in 2003, Saddam Hussein was put on trial for violations conducted while he was President of Iraq. Charges against Hussein included the execution of noncombatants, destruction of civilian infrastructure, and the use of chemical weapons among many other offenses dating back to the 1980’s. For his crimes Hussein was sentenced to death.¹⁰²

Similarly, the United Nations Resolution 1970 imposed an arms embargo and froze assets of Libyan leader Muammar Gaddafi for violence against the civilian population and other crimes.¹⁰³ Ultimately, NATO undertook military actions that led to Gaddafi being killed by his opposition.¹⁰⁴ These examples serve as powerful reminders that even heads of states are not immune from judgement. *Jus post bellum* enables accountability and justice for those violating the long-standing norms of just war.

Critics of Just War

¹⁰¹ O’Driscoll, “No Substitute for Victory?,” 187-188.

¹⁰² Michael A. Newton, “A Near Term Retrospective on the Al-Dujail Trial & the Death of Saddam Hussein,” *Scholarship@Vanderbilt Law*, 2008, 32, <https://scholarship.law.vanderbilt.edu/faculty-publications/822/>.

¹⁰³ “In Swift, Decisive Action, Security Council Imposes Tough Measures on Libyan Regime, Adopting Resolution 1970 in Wake of Crackdown on Protesters | Meetings Coverage and Press Releases,” United Nations (United Nations), accessed February 4, 2022, <https://www.un.org/press/en/2011/sc10187.doc.htm>.

¹⁰⁴ “Death of a Dictator,” Human Rights Watch, November 3, 2020, <https://www.hrw.org/report/2012/10/16/death-dictator/bloody-vengeance-sirte#>.

It is important to note the concept of just war tradition has critics. Some critics contend just war is used not to avoid wars but instead as a means to justify them. The violence, fear, and desperation that war create makes regulating human behavior in desperate situations extremely difficult. Critics argue that there is little room for a moral debate in the mists of the chaos of war. Soldiers actively engaged in battle, fighting for their literal lives do not pause to have philosophical debates with their opponents on what is an acceptable target and what proportionate use of force is acceptable. Michael Walzer notes “to men at war, the rules don’t seem relevant to the extremity of their situation.”¹⁰⁵ Some claim just war does not account for the desire to win, that in the pursuit of victory all activities are fair. Critics offer powerful insights into the meaning and application of just war tradition, including with nuclear modernization.

Societies have long honored their warriors as nobly serving their nation. This was especially true in the wake of the September 11, 2001, attacks against the United States. Within months of the attack American military personnel were engaged in battle in Afghanistan. Reflecting on the 20 years since the start of the War in Afghanistan Justin Ward notes that 70,000 civilians had been killed, “that’s the equivalent to the Sept. 11 attacks happening once a year for 23 straight years.”¹⁰⁶ Ward acknowledges the tragedy of 9/11, and of unfortunate mistakes since that day including the accidental bombing of weddings, detainees killed while being tortured and the killing of families, including young children. In one instance in 2007, “The Shinwar Massacre,” Ward notes Marines, fleeing a car bomb attack, opened fired on a crowd wounding fifty and killing nineteen.¹⁰⁷

¹⁰⁵ Walzer, *Just and Unjust Wars*, 14.

¹⁰⁶ Justin Ward, “Remembering US War Crimes in Afghanistan,” Medium, September 10, 2021, <https://justinward.medium.com/remembering-us-war-crimes-in-afghanistan-be30b32f570e>.

¹⁰⁷ Ward.

The Marines, under attack and under immense stress reacted incorrectly while in the throes of battle. A one second decision, in the most stressful situation most will ever face will be criticized by many who read the story from the safety and comfort of their living room couch. Occurrences like this are tragedies, for those killed and for those who carry the physical and mental scars. The truth is war is scary, and emotions, incomplete information, adrenaline, the will to live, and the fog of war are all very real and can result in tragedy. Liane Hartnett and Cian O’Driscoll address what they believe to be a disconnect between just war and the common soldier stating, “there has not yet been any systematic study of how soldiers – precisely the people tasked with discharging just wars – think about just war theory and the demands it places upon them.”¹⁰⁸ No military force, no matter how well trained is immune to the stress of combat. However, it must be noted that situations like these are relatively rare. The limited occurrences are in large part due to training and the application of rules of engagement that often create pre-determined courses of actions to react to combat situations instead of relying on emotional responses.

Cian O’Driscoll believes that modern day conversations about just war theory fail to adequately address the desire to win. O’Driscoll points out that Sun Tzu, Aristotle, Cicero, Clausewitz, MacArthur and many war commentators have stated that war is all about winning but that modern interpretations avoid discussing at what cost is war acceptable.¹⁰⁹ Clausewitz stated “war is an act of force which theoretically can have no limits.”¹¹⁰ Eisenhower echoed this stating that “when war starts its impossible to know where it will end, force is limitless and will result in continuous escalation”¹¹¹ Whether it

¹⁰⁸ Liane Hartnett and Cian O’Driscoll, “Sad and Laughable and Strange,” 29.

¹⁰⁹ Cian O’Driscoll, “No Substitute for Victory?,” 187-188.

¹¹⁰ Walzer, *Just and Unjust Wars*, 23.

¹¹¹ Walzer, 23.

is the will to win or a desperate last act to not lose, the escalation and use of force is difficult to measure because they are human behaviors. These behaviors differ from person to person and can be heavily impacted by external factors such as stress and sleep deprivation.

War decisions are of course not just made by military leaders, but also national civilian leadership as well. “Senior political and military leaders set war aims, identify strategies and policies and conduct campaigns to achieve those aims.”¹¹² Throughout history nations or military leaders have taken drastic measures in the name of victory. Cicero stated, “In time of war, the law falls silent,” during the Civil War Union General William Sherman stated, “war is cruelty, and you cannot refine it.”¹¹³ In the midst of a presidential election the Union Army need a win to consolidate support. Sherman bombarded Atlanta, including its civilian population, and went on to burn down major portions of the city. Sherman believed that the Confederacy started the war and was subject to any punishment it received, and that the more brutal the war was, the faster it would come to an end. Leadership personalities, the drive to win, acts of desperation, political dynamics and perhaps most difficult to control, societal emotional pressure can all increase the brutality of war.

Another argument states that morality is not constant over time or between cultures. Moral relativism “is the view that moral judgments, beliefs about right and wrong, good and bad, not only vary greatly across time and contexts, but that their correctness is dependent on, or relative to, individual or cultural perspectives and

¹¹² Dubik, *Just War Reconsidered*, 13.

¹¹³ Davida E. Kellogg, “Jus Post Bellum: The Importance of War Crimes Trials” (US Army War College Quarterly, August 16, 2002), 90, <https://press.armywarcollege.edu/cgi/viewcontent.cgi?article=2108&context=parameters>.

frameworks.”¹¹⁴ Walzer states, “between radically separate and dissimilar cultures, one can expect to find radical dichotomies in perception and understanding.”¹¹⁵ In this sense one side playing by a defined set of rules, fighting an opponent that does not hold the same values or standards, could prove to be at a disadvantage on the path to victory. While the United States engages in war with a professional military wearing identifiable uniforms some of its adversaries do not. The Russian invasion of Crimea in 2014 by “little green men” created confusion, President Putin denied Russian involvement claiming the combatants in Ukraine were local separatist, not Russia soldiers.¹¹⁶ Although few found this to be credible this clandestine use of military forces allowed Russia to preposition forces prior to its successful annexation of Crimea. In Vietnam, Afghanistan and Iraq the United States faced not only soldiers lacking uniforms but also an ill-defined enemy without official state sponsorship. During these conflicts the use of schools and hospitals as safe havens for fighting combatants made targeting the enemy harder for the United States. Simply put breaking the rules can give one side an advantage. Such behavior should be anticipated in any form of asymmetric warfare, and it is likely future wars involving the United States will be asymmetric in nature due to the inevitable mismatch in military might.

Critics argue that not only have societal changes reduced the real-world application of just war, so too has the rapid advancement of weapons. When just war emerged a soldier’s combat reach was limited to what they could physically reach with

¹¹⁴ Maria Baghramian and J. Adam Carter, “Relativism,” Stanford Encyclopedia of Philosophy (Stanford University, September 15, 2020), <https://plato.stanford.edu/entries/relativism/#MorRel>.

¹¹⁵ Walzer, *Just and Unjust Wars*, 16.

¹¹⁶ Vitaly Shevchenko, “‘Little Green Men’ or ‘Russian Invaders’?,” BBC News (BBC, March 11, 2014), <https://www.bbc.com/news/world-europe-26532154>.

the weapon in their hand. Modern weapons have greatly extended a soldiers' ability to inflict harm. Take for example the bombing of urban population centers during World War II. Joe McBride noted that "urban areas destroyed in Europe and Japan by aerial bombing ranged from 15% in Leningrad to 90% in Stalingrad."¹¹⁷ The ability to inflict damage has not only grown but also increased asymmetrically. Citing examples like American, Russian, and Israeli wars, Walzer notes most of the wars of the past several decades have been asymmetric, this allows one side to have a significant advantage over their opponent.¹¹⁸ Weapons have changed drastically since the days of Augustine, but the factors leading to war have remained relatively stable. Nuclear weapons add an entirely new dynamic to the ability to inflict damage. One, just one B-2 Spirit bomber is capable of carrying sixteen B83 nuclear warheads, meaning a crew of only two people is capable of devastating any nation.¹¹⁹ Perhaps just as worrisome is that a major unattributed cyberattack could deprive a nation of essentials such as water, electricity, transportation, healthcare, and banking needs without ever having to fire a conventional shot.

Given these arguments some critics believe that just war has become weaponized not to prevent war but to legitimize it. Pablo Kalmanovitz states, "In the hands of skilled lawyers, the hyper-legalized doctrine of *jus in bello* is now becoming predominantly authorizing and legitimating rather than constraining."¹²⁰ An aggressor can manipulate circumstances to enter a war in pursuit of what it perceives to be justice. Michael Doyle addresses the complexities of the adoption of the Bush Doctrine following the terrorist

¹¹⁷ McBride, Joe R., "Bombing of Urban Areas During World War II and the Bosnian War | SpringerLink," *SpringerLink*, 17 Jan. 2021, https://link.springer.com/chapter/10.1007/978-3-030-64938-8_3.

¹¹⁸ Walzer, *Just and Unjust Wars*, xii-xvii.

¹¹⁹ Ellen Ioanes, "The Legendary B-2 Stealth Bomber Made Its First Flight 30 Years Ago Today- Here's Why It's Still One of the World's Most Feared Warplanes," *Business Insider*.

¹²⁰ Pablo Kalmanovitz, "Sovereignty, Pluralism, and Regular War," 219.

attacks of 9/11 in his book *Striking First*. Doyle argues that traditional international law is too restrictive for the global dynamics of the modern world, while also arguing the Bush Doctrine lacked sufficient structure to justify preemptive wars.¹²¹ Interpretation of laws and norms will always be leveraged to one's maximum advantage, this is no different today than it was a thousand years ago. These same disparities in application of international law may prove to be equally true in the application of just war in nuclear strategy.

Critics of just war bring up legitimate points. These critiques are valuable to help continue the evolution of this near two-thousand-year tradition. Hartnett is correct in her assessment that "this field of study has generally been "devoid of people"¹²² The implementation of just war has traditionally been a top-down approach, often leaving out the actual soldiers engaging in combat. Given the nature of most military forces with a relatively small number of career professionals and a larger number of short-term service commitments, leadership will continue to play the most critical role in making just war part of culture and values of military organizations. O'Driscoll notes, "one should not underestimate the practical edge of just war thinking and its significance for international politics. While it was possible in the past to discount the idea of just war as an obscure, recondite hobby pursued by Catholic theologians cloistered in ivy towers, its recent prominence in the discourse of political and military leaders suggests a different story."¹²³ Considering these dynamics, discussion on the application of just war must not only

¹²¹ Michael W. Doyle and Stephen Macedo, *Striking First: Preemption and Prevention in International Conflict (The University Center for Human Values Series)* (Princeton University Press, 2008), xv-xvi.

¹²² Liane Hartnett and Cian O'Driscoll, "Sad and Laughable and Strange," 30.

¹²³ O'Driscoll, "No Substitute for Victory?," 189.

continue, but it must increase, and the nuclear modernization efforts underway globally must be incorporated into this debate.

Chapter VI.

Modern Application of Just War

Despite criticism just war tradition receives, the basic tenets of just war have been codified into formal international law and in policy documents of the United States including the Law of Armed Conflict. “Numerous scholars have shown, just war has become the predominant frame through which Western military and policy elites discuss matters of war and peace.”¹²⁴ Michael Byers, in his book *War Law*, breaks down the complex history and dynamics of international military law. Byers notes that the conduct of war was left largely unregulated until the adoption of the United Nations Charter in 1945.¹²⁵ There are two types of international law, customary international law and treaties. Customary international law is informal and often unwritten set of norms “deriving from a combination of ‘state practice’ and *opinio juris*” or put another way, a combination of state made promises and a belief in the validity of international law.¹²⁶ The second and primary source of international law are treaties which are contractual agreements entered into by more than one nation. Treaties are also referred to as charters,

¹²⁴ O’Driscoll, “No Substitute for Victory?,” 189.

¹²⁵ Michael Byers, *War Law: Understanding International Law and Armed Conflicts* (New York: Grove Press, 2006), 2.

¹²⁶ Byers, 3-4.

conventions, protocols or covenants.¹²⁷ It is important to note that treaties may be acknowledged and adhered to even by non-signatory nations.

The United Nations Charter, created in the aftermath of World War II and ratified by 192 nations, represents both the rules and recourse for international law.¹²⁸ The central military rule of the UN Charter is Article 2 Section 4: “All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.”¹²⁹ The UN Charter provides two means of exemptions from this stipulation, Article 51 states that a nation or group of nations may engage in combat for individual or collective self-defense.¹³⁰ Secondly, Chapter VII allows the UN Security Council to recommend or take measures or military actions that it approves of and that are necessary “to maintain or restore international peace and security.”¹³¹

The UN Charter is only one set of laws governing warfare. The four Geneva Conventions of 1949 represent a set of laws collectively referred to as the law of armed conflict, international humanitarian law or *jus en bello*.¹³² The Geneva Convention formally codifies many of the previously recognized but not legally binding norms of just war. Throughout the Convention it stipulates differentiation between combatants and noncombatants, including the handling of, care to be provided, the treatment of civilian refugees and a number of other categories.¹³³

¹²⁷ Byers, 4.

¹²⁸ Byers, 7.

¹²⁹ “United Nations Charter (Full Text),” United Nations (United Nations), accessed February 4, 2022, <https://www.un.org/en/about-us/un-charter/full-text>.

¹³⁰ “United Nations Charter (Full Text).”

¹³¹ “United Nations Charter (Full Text).”

¹³² Byers, *War Law*, 9.

¹³³ International Committee of the Red Cross, “Updated Commentaries Bring Fresh Insights on Continued Relevance of Geneva Conventions International Committee of the Red Cross.”

While the formalization of just war is not a primary focus of this paper it is important to note the UN Charter and the Geneva Convention are just two examples of instances where the principles of just war have been transformed from non-binding norms to legally codified international law. This is an important fact to counter critics that consider just war to be a flawed or outdated set of norms. For the argument of this paper, it is important to note that just war represents more than an academic exercise. The connections between just war and modern war law continues to apply to military action. Violations of these laws can and have resulted in criminal accountability giving military and civilian national leadership incentive to adhere to them.

Given that formalized laws based on just war principles apply to conventional military forces and factor into the conduct in the battlespace, they should equally apply to the application of nuclear weapons and the ongoing nuclear modernization efforts. Nuclear weapons however add an entirely new set of challenges to the application of these principles. Based on the understanding of just war it would never be acceptable to initiate a war, *jus ad bellum*, using these immensely destructive weapons. The collateral logistic impacts on items such as water, food, medical supplies would create unacceptable humanitarian impacts. War consequences would be far more dramatic than the four to one ratio of noncombatant deaths to combatants deaths previously detailed. This death ratio must also be considered when factoring principles of *jus ad bellum*, which would also fail in both proportionality and the discernment between combatants and noncombatants.

Although nuclear weapons have not been used since the end of World War II, and nuclear nations claim to use them for deterrence purposes only, a nuclear war remains not only possibility, but if given enough time, even probable. Thought and debate on the application of just war to the purpose and uses of nuclear weapons, including modernization strategies, must continue.

Chapter VII.

Nuclear Targeting Strategy

Although the targeting strategy of the United States is classified, historical evidence can provide insight into possible approaches or strategies in use today. The United States developed Single Integrated Operational Plans (SIOP) outlining its nuclear targeting strategy. “A SIOP is among the most sensitive and closely held of official documents; it identified the Soviet and Chinese targets to be attacked, along with the type and number of weapons to be allotted to their destruction.”¹³⁴ Each year a new SIOP was released and approved until the SIOP was replaced by Operations Plan (OPLAN), which take a wider view of deterrence activities.¹³⁵ Throughout the nuclear age targeting has been impacted by a variety of variables including the number of nuclear weapons available, particularly important in the early days when nuclear weapons were very limited, the technological limitations of delivery systems and of course the repercussions of their use due to deterrence efforts.

During World War II the strategic bombing of cities provided insights into the acceptability of killing civilians. The bombing of Dresden killed 135,000, one single fire-bombing attack against Tokyo destroyed sixteen square miles of the city and killed over 80,000 people, “taking innocent lives on a massive scale was being judged as acceptable, even unremarkable.”¹³⁶ The first nuclear weapon used in anger was detonated above the City of Hiroshima. “The blast and fire destroyed 62,000 of the metropolitan area’s 90,000

¹³⁴ Newhouse, *War and Peace in the Nuclear Age*, 162.

¹³⁵ John Pike, “Weapons of Mass Destruction (WMD),” Single Integrated Operational Plan [SIOP], accessed February 4, 2022, <https://www.globalsecurity.org/wmd/ops/siop.htm>.

¹³⁶ Newhouse, *War and Peace in the Nuclear Age*, 42.

buildings. Roughly 30 percent of the population – an estimated 71,000 people – died that day, and many more died later from injury and radiation.”¹³⁷ New technology and weapons often require new strategies to be developed, this is true with the introduction of nuclear weapons.

The United States adopted several nuclear targeting strategies in the nuclear age. At a high level two general strategies exist, counterforce and countervalue targeting. Counterforce targeting seeks to destroy the enemy’s military capabilities such as bomber fleets, missile silos, military bases and command and control sites.¹³⁸ Countervalue targeting likewise focus on enemy military capabilities but also included targets such as industry and economic targets.¹³⁹ Counterforce strategies were more mindful of the noncombatant population however the Air Force noted the difficulties isolating military and economic targets. T. F. Walkowicz, a senior Air Force strategist and proponent of counterforce strategies noted “major air bases are frequently located near cities; troops can be concentrated in cities; and submarine bases are associated with major seaports. Thus, even counterforce operations will inevitably lead to some destruction of Soviet cities.”¹⁴⁰ Due to the destructive power of nuclear weapons and the proximity of military and civilian infrastructure discernment between combatants and noncombatants is impossible.

In 1962 the United States released SIOP-62. SIOP-62 “like its predecessors fancied releasing the entire American arsenal in one horrific spasm intended to eliminate

¹³⁷ Newhouse, 50.

¹³⁸ “Nuclear Matters Handbook 2020 [Revised],” NMHB 2020 [Revised] (Office of the Deputy Assistant Secretary of Defense for Nuclear Matters), accessed February 4, 2022, <https://www.acq.osd.mil/ncbdp/nm//NMHB2020rev/>, 41.

¹³⁹ “Nuclear Matters Handbook 2020 [Revised].”

¹⁴⁰ Freedman, *The Evolution of Nuclear Strategy*, 121.

all or most of the enemy's own nuclear forces.”¹⁴¹ SIOP-62 called for the neutralization of Sino-Soviet nuclear capabilities, military capabilities and major urban-industrial centers required to paralyze the Sino-Soviet economies.¹⁴² At times there have been tensions between American civilian and military leadership on the adoption of nuclear weapons. During the Kennedy and Johnson administrations, in response to SIOP-62, Secretary of Defense Robert McNamara pushed back against the limited options available in the event of a nuclear war.¹⁴³ Some military leadership sought to leverage SIOP-62 as justification to launch a preemptive first strike. “A preemptive first strike under SIOP-62 amounted to releasing the entire force – then over 3,400 weapons – against targets in Russia, China and Eastern Europe. Hundreds of millions would be destroyed. China and Eastern European countries would be struck even if they had no role in the conflict.”¹⁴⁴ Over time as Soviet and American nuclear stockpiles reached parity preemptive strikes gave way to Mutual Assured Destruction, an understanding that in any nuclear exchange both sides would be destroyed.

¹⁴¹ Newhouse, *War and Peace in the Nuclear Age*, 162.

¹⁴² “New Evidence on the Origins of Overkill,” The Nuclear Vault: New Evidence on the Origins of Overkill, accessed February 4, 2022, <https://nsarchive2.gwu.edu/nukevault/ebb236/>, 25.

¹⁴³ Freedman, *The Evolution of Nuclear Strategy*, 215-231.

¹⁴⁴ Newhouse, *War and Peace in the Nuclear Age*, 164.

Chapter VIII.

The Effects of Nuclear Weapons

Like the bombing of London, Berlin and Tokyo that resulted in massive civilian casualties, nuclear weapons can be used to destroy civilian centers. In the years leading up to World War I, German and Italian strategists, led by Giulio Douhet, believed that the strategic bombing of civilian centers would not only present easier targets but would also severely impact a nation's moral and bring the War to a rapid end.¹⁴⁵ Although technology limitations prevented strategic bombing from having a significant impact during World War I, technological advancements since then have made strategic bombing a viable tool of warfare. The immense devastation inflicted on cities during World War II required thousands of bombs, in the nuclear age more significant damage can be inflicted using only one nuclear warhead delivered in a variety of ways, perhaps without any warning. Freedman explained a nuclear detonation "would take its toll in human life for the following weeks and months through radiation sickness and the spread of disease and hunger that can be expected following the breakdown of social organization. Any unborn children subject to irradiation would likely be born deformed."¹⁴⁶ War in any form will create scenes of horror and devastation, however, in order to better understand how nuclear weapons, complicate the application of just war it is important to understand the effects nuclear weapons have on their target including the people within the blast zone. Due to the extreme scale of destruction compared to conventional weapons comprehension of the power of these weapons is difficult to grasp,

¹⁴⁵ Freedman, *The Evolution of Nuclear Strategy*, 5-7.

¹⁴⁶ Freedman, XIII.

not just destruction caused by the initial blast but also by the potential years of ensuing radiation related disease and death.

The effects of a nuclear weapon will not differentiate between combatants and noncombatants. President Harry Truman commented that nuclear weapons are “used to wipe out women, children, and unarmed people, and they are not for military use. So, we have to treat this differently from rifles and cannon and ordinarily things like that.”¹⁴⁷ The following examples will help demonstrate this. In the blast area of a nuclear detonation critical infrastructure is destroyed and electromagnetic energy destroys vital electronics and communications equipment necessary to coordinate rescue efforts. The 2020 Nuclear Matters Handbook describes the effects of a 1kt nuclear blast. While a 1kT blast is used as an example it is important to recall that today’s nuclear weapons, such as the Minuteman III missile armed with a Mark 21 warhead, rated at 300-475kT, will cause hundreds of times more destruction.¹⁴⁸ The immediate fireball reaches temperatures at tens of millions of degrees. Within a quarter of a mile 99% of all people will be killed, all infrastructure will be destroyed. Between one quarter and one half of a mile prompt fatalities and severe injuries. Out to 1.5 miles people will be killed instantly or be severely injured. The clothes being worn by individuals will catch fire contributing to severe burns. The over pressure caused by the blast causes lungs to collapse and creates dangerous flying debris. Radiation will have both immediate and long-lasting effects; even low levels of radiation increase the probably of contracting cancers. The intense light causes temporary or permanent blindness, radiation sickness, both immediate and

¹⁴⁷ Freedman, *The Evolution of Nuclear Strategy*, 49.

¹⁴⁸ “Minuteman III | Missile Threat,” *Missile Threat*, Center for Strategic & International Studies, 2 Aug. 2021, <https://missilethreat.csis.org/missile/minuteman-iii/>.

residual impacts every man woman and child, born and unborn, for generations. Again, this impact data is based on a 1kT blast, modern nuclear weapons impacts will be far more severe. Figure five shows the energy distribution from a nuclear detonation.

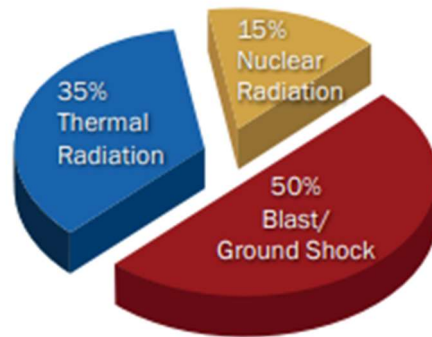


Figure 5. Nuclear Weapons Energy Distribution.¹⁴⁹

While it may seem unusual to discuss the effects of a nuclear detonation it is pertinent to the discussion about just war. In order to assess how the two principles of *jus ad bello*, proportionality and the differentiation between combatants and noncombatants, applies within the use of nuclear weapons first the effects must be understood.

In regard to proportionality, it is the view of this paper that while few circumstances exist that would warrant the use of nuclear weapons, it is possible that conditions could justify their use. As has been the policy of deterrence since the start of the nuclear arms race the use of nuclear weapons by one nation against another would justify a retaliatory nuclear strike in response. It is also possible, if given a case similar in scale to the conventional strategic bombing such as the damage inflicted upon Berlin or Tokyo during World War II, that the use of nuclear weapons could be justified. While not covered in this paper low yield nuclear weapons exist that produce reduced destructive

¹⁴⁹ “Nuclear Matters Handbook 2020 [Revised],” 225.

power. However, the use of any nuclear weapons, low yield or not, is highly likely to result in a nuclear retaliatory strike. The critical component required to ensure nuclear weapons are never used is to closely control the escalation of conflict. If escalation can be managed perhaps the greatest risk to nuclear war would then originate from an accident such as an accidental launch or from a nation acting out as a final act of desperation to prevent losing.

This paper contends that nuclear weapons, given their immense destructive power, are incapable of discerning between combatants and noncombatants. With an understanding that military facilities are often co-located with major civilian centers and that war targets economic centers in addition to military infrastructure it must be understood any use of nuclear weapons would harm noncombatants. Not only do the immediate effects of nuclear weapons impacted the infirmed, women, children and anyone else within proximity to the detonation, but the residual effects of these weapons have lasting effects including radiation poisoning and cancers. The destruction of an urban area would be so great, including significant nuclear fallout, that even if just one city were to be impacted any rescue efforts would be severely lacking. Food and water contamination and shortages would have lasting effects on civilians. Economic and supply chain issues would continue to impact noncombatants for months or years following a nuclear explosion. When considering the discernment between combatant and noncombatant use of nuclear weapons would fail just war principles. It is highly unlikely rules of double effect could create the conditions that would allow for the use of nuclear weapons.

Chapter IX.

Just War and Nuclear Modernization

As previously mentioned, following World War II the United States led an international effort to create a new global world order of interdependent nations. Henry Kissinger noted this community of nations would expand “cooperative order of states observing common rules and norms, embracing liberal economic systems, forswearing territorial conquest... and adopting participatory and democratic systems of governance.”¹⁵⁰ Defending this world order remains pivotal to the success of America’s grand strategy. America’s founding fathers adopted a foreign policy similar to the aims stated by John Winthrop when he arrived in Massachusetts in 1630 to be “a city upon a hill, inspiring the world through the justness of its principles and the power of its examples.”¹⁵¹ Prior to World War II when the United States entered conflicts on the international stage it would mobilize troops and quickly demobilized upon completion of the conflict and return to isolationist policies. The steps taken by President Truman represent a significant departure from American tradition on the international stage, but since that time the United States has played the leading role in global affairs. Global nuclear modernization efforts provide the United States the opportunity again to lead the continued evolution of global norms from a position of strength. This section of the paper analyzes publicly available documentation on the nuclear modernization efforts to determine if components of just war are considered.

¹⁵⁰ Henry Kissinger, *World Order* (New York: Penguin Books, 2015), 1.

¹⁵¹ Kissinger, 6.

The Nuclear Posture Review (NPR), referenced throughout this paper, is a “legislatively- mandated review that establishes U.S. nuclear policy, strategy, capabilities and force posture for the next five to ten years.”¹⁵² Since 1994 each presidential administration has revised the NPR to reflect the administration’s policy on deterrence. As one of the few publicly released policy documents pertaining to nuclear deterrence it must be analyzed to gain insight. President Biden’s NPR is expected to be released within the next few months in early 2022, until that time the most current NPR is the Trump Administrations’ that was released in 2018. The 2018 NPR “affirms the modernization programs initiated during the previous Administration to replace our nuclear ballistic missile submarines, strategic bombers, nuclear air-launched cruise missiles, ICBMs, and associated nuclear command and control.”¹⁵³ This document was analyzed for incorporation of just war or its associated principles. Throughout the document the term “budget” appears eighteen times, but it makes no reference to the morality of nuclear war. This focus on budget is likely due to the NPR being used to sell or justify the significant expense into nuclear modernization by comparing it to far higher costs during the Cold War. The NPR does however highlight several statements aligning to just war concepts.

The NPR places significant emphasis on the need to modernize the nuclear systems. “Over the past several decades, the U.S. nuclear weapons infrastructure has suffered the effects of age and underfunding. Over half of NNSA’s infrastructure is over 40 years old, and a quarter dates back to the Manhattan Project era.”¹⁵⁴ In addition to highlighting the vulnerabilities associated with aging systems the NPR provides a threat

¹⁵² “Legacy Homepage,” Legacy Homepage (United States Department of Defense), accessed February 4, 2022, <https://dod.defense.gov/News/Special-Reports/NPR/>.

¹⁵³ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” II.

¹⁵⁴ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” XIV.

assessment on potential adversaries, highlighting the significant investments other nations, in particular Russia and China, are making to revamp their own nuclear capabilities. The overall tone of the document is one that is reactionary, it creates an image of the United States falling behind potential peer adversaries and the requirement to keep pace with growing threats.

The NPR is not without any reference to just war tradition. It highlights the significant reduction in the number of global deaths since the introduction of the nuclear age. The NPR notes “During the first half of the 20th century and just prior to the introduction of U.S. nuclear deterrence, the world suffered 80—100 million fatalities over the relatively short war years of World Wars I and II, averaging over 30,000 fatalities per day. Since the introduction of U.S. nuclear deterrence... the subsequent absence of Great Power conflict has coincided with a dramatic and sustained reduction in the number of lives lost to war globally.”¹⁵⁵ The graphical representation of the decline of deaths since the dawn of the nuclear age is shown in figure six.

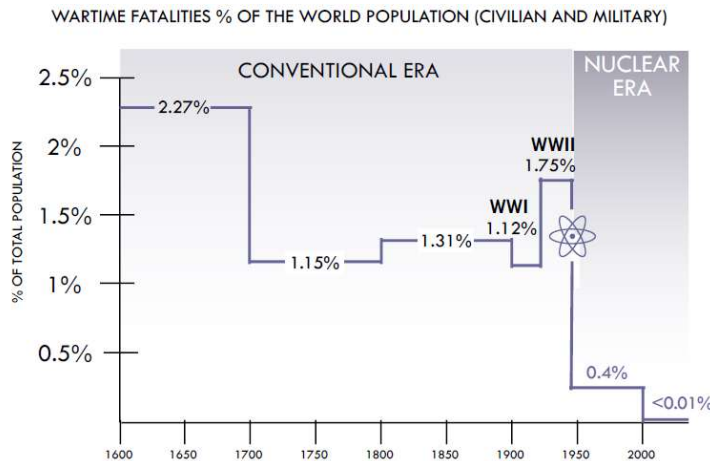


Figure 6. Wartime Fatalities.¹⁵⁶

¹⁵⁵ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” 17.

¹⁵⁶ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” 17.

In addition to the reduction in global deaths the NPR also references the continued goal of nuclear nonproliferation. This is done both by affirming the commitment of the United States to nuclear nonproliferation through the use of extended deterrence commitments in which the United States provides a nuclear umbrella over its allies.¹⁵⁷

The NPR highlights diplomatic efforts as a means to manage risk and mitigate potential security challenges.¹⁵⁸ However, should nuclear weapons have to be employed it acknowledges the dangers posed to noncombatants. As a means to mitigate civilian deaths the NPR highlights the accuracy of weapon systems to minimize unintended effects. The NPR states:

If deterrence fails, the initiation and conduct of nuclear operations would adhere to the law of armed conflict and the Uniform Code of Military Justice. The United States will strive to end any conflict and restore deterrence at the lowest level of damage possible for the United States, allies, and partners, and minimize civilian damage to the extent possible consistent with achieving objectives.¹⁵⁹

In 2003 SIOPs gave way to Operation Plans (OPLAN), OPLAN 8010-12, released in July of 2012, is the latest in a series of nuclear strategy documents with any declassified information. “Details of OPLAN 8010-12 are highly classified and it is yet unclear why a new plan has been issued at this point... Minor adjustments are made to war plans all the time but new plan numbers are thought to reflect more significant changes.¹⁶⁰ It is possible emerging external threats such as the first North Korean nuclear

¹⁵⁷ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” 35.

¹⁵⁸ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” 39.

¹⁵⁹ “Nuclear Posture Review, 2018 - U.S. Department of Defense,” 23.

¹⁶⁰ Hans M. Kristensen, “US Nuclear War Plan Updated amidst Nuclear Policy Review,” Federation of American Scientists, accessed February 4, 2022, <https://fas.org/blogs/security/2013/04/oplan8010-12/>.

weapons advancements, advancements in Iranian missile technology, the threat of nuclear terrorism, or perhaps all of these contributed to the adoption of OPLAN 8010-12, however this is purely speculative. The Federation of American Scientist created a list of possible internal reasons for its adoption as seen in figure seven.

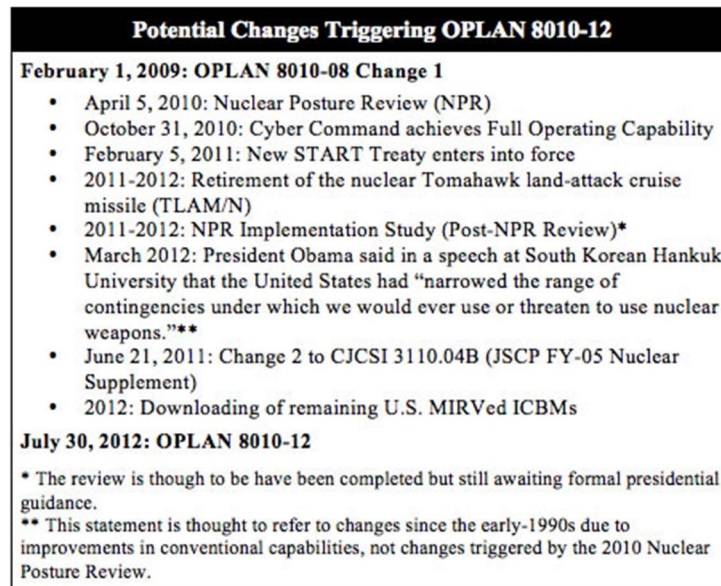


Figure 7. Operations Plan Update Drivers.¹⁶¹

Information on OPLAN 8010-12 is highly limited in part due to redactions on the released portions following a freedom of Information Act request. General Daniel Karbler stated regarding the portions that were released in response to this request “I am totally denying 1,170 pages of OPLAN 8010-08 and 1,070 pages of OPLAN 8010-12.”¹⁶² This paper simultaneously respects the need to keep sensitive information secure while acknowledging it makes analysis of nuclear strategy in the context of just war difficult.

¹⁶¹ Kristensen.

¹⁶² “OPLAN 8010-12: Strategic Deterrence ... - Governmentattic.org,” accessed February 4, 2022, 2, https://www.governmentattic.org/38docs/USSTRATCOMopplans8010-08_8010-12.pdf.

OPLAN 8010-08 highlights emerging threats including non-state actors pursuing weapons of mass destruction and for the need for a new concept of deterrence that provides a wider range of options.¹⁶³ Redacted data “contains enemy courses of action, and desired regional end-states and strategic objectives originating from USG policy and reflect combatant command collaboration. These appendices translate strategic objectives into desired effects tailored to potential political/military contexts.”¹⁶⁴

Although only sparse data is available OPLAN 8010-08 and 8010-12 appear to emphasize flexible response options including methods of de-escalation and the avoidance of “unintended second and third order effects.”¹⁶⁵ Throughout the OPLAN the threat focus remains on a more generalized weapons of mass destruction, creating a broader focus than just traditional Cold War era nuclear deterrence and also assigns cyber as an area of responsibility for Strategic Command.¹⁶⁶

The legalities of war along with treaty obligations are also defined. OPLAN 8010 states that actions will be executed in compliance to the Constitution, international treaties, the Law of Armed Conflict and customary international law or norms.¹⁶⁷ The document calls for de-escalatory actions, and the avoidance of unnecessary suffering via the application of proportionality and discrimination between combatants and noncombatants.

The content released in OPLAN 8010-08 is nearly identical to that of OPLAN 8010-12 in terms of speaking to the morality of nuclear war. Although information is

¹⁶³ “OPLAN 8010-12: Strategic Deterrence ... - Governmentattic.org,” V-VI.

¹⁶⁴ “OPLAN 8010-12: Strategic Deterrence ... - Governmentattic.org,” VII.

¹⁶⁵ “OPLAN 8010-12: Strategic Deterrence ... - Governmentattic.org,” IX.

¹⁶⁶ “OPLAN 8010-12: Strategic Deterrence ... - Governmentattic.org,” X.

¹⁶⁷ “OPLAN 8010-12: Strategic Deterrence ... - Governmentattic.org,” VIII.

limited, due to the heavy redactions in the publicly released content, what is available incorporates principles of both *jus ad bellum* and *jus in bello*, including recognizing both formally codified law and accepted international norms of conduct.

Chapter X.

Conclusion

Henry Kissinger noted “the nuclear age posed the dilemma of how to bring the destructiveness of modern weapons into some moral or political relationships with the objectives that were being pursued.”¹⁶⁸ Given the destruction these weapons are capable of - just war tradition must continue to be a consideration for civilian and military planners. Although this paper has focused on American modernization efforts it is important to remember there are nine global nuclear powers, any of which are capable of initiating a nuclear war. The effects of these weapons, presented earlier in this paper, must be understood in order to understand how nuclear weapons create new complexities to the just war tradition, that when initially conceived over two thousand years ago knew only hand to hand combat.

Just war principles are far from an academic exercise lacking real world applicability. The tenets of just war have been formally defined and agreed upon by the 192 signatory nations of the United Nations Charter as well as in a number of other treaties, conventions and agreements by other names. The basic concepts of *jus ad bellum*, *jus in bellow* and *jus post bellum* remains a relevant and important moral compass providing direction on when war is appropriate to enter, how wars are to be fought and holding military and civilian leadership accountable for deviations from established norms.

¹⁶⁸ Kissinger, *World Order*, 332.

It is clear based on analysis of publicly available information from the Nuclear Posture Review and Operation Plan 8010-08 and OPLAN8010-12 that principles of just war remain relevant to both nuclear strategy and nuclear modernization. The extent to which these principles appear in the heavily redacted OPLAN provides a highly encouraging view of the future just war in America's nuclear modernization approach. However, the lack of just war principles in Nuclear Posture Review, the primary means of communicating American nuclear strategy to the world, is concerning. While not entirely lacking in ties to just war, the NPR fails to provide moral insights into American strategy. The lack of values in the NPR and only generic alignment to international law allows for adversaries of the United States to view the document as more aggressive than perhaps it is. Often the 2018 NPR conveys a message that comes across as a reactionary sales pitch to justify expenditures on nuclear modernization due to the investments of other nuclear nations.

Given the wide domestic and global audience of the NPR, the failure to make stronger connections to just war represents a lost opportunity. The United States should adhere to principles of just war and publicly acknowledge it in order to set an example for other nuclear nations to follow. The NPR represents the primary insight into America's thinking on matters of nuclear strategy. Although the length of an OPLAN, at over one thousand pages, allows for more room for just war principles to be incorporated than the NPR, weighing in at only one hundred pages, the NPR receives a wider audience. Failing to incorporate more values into the NPR given this wider audience represents a miss in light of the increasing global spend on nuclear modernization.

Nuclear modernization efforts incorporate new technologies and weapon systems capable of destabilizing long standing nuclear status quos. Disruptions to the nuclear balance and could result in a renewed nuclear arms race. The United States must reflect on its nearly eighty years of being a nuclear power, including the hard learned lessons of the Cold War. Crises, accidents, and budgeting of funds that could have been directed elsewhere resulted in a balance, although somewhat uncomfortable one. Today a balance is maintained by the New START Treaty, limiting the nuclear arms of the United States and Russia. This is the latest of decades of nuclear arms limitation and reduction treaties which have resulted in the reduction of America's nuclear stockpile by over 85 percent.¹⁶⁹

It is important to note that much of these arms reductions came during the Cold War, when the United States remained locked in a battle for global influence against the Soviet Union. Nuclear arms reductions have decisively demonstrated that the reduction of nuclear warheads has not degraded the credibility of America's nuclear deterrence. The 2010 NPR stated concluded that the United States can maintain a credible nuclear deterrence "at significantly lower nuclear force levels and with reduced reliance on nuclear weapons" while "working to reduce the salience of nuclear weapons in international affairs and moving step-by-step toward eliminating them..."¹⁷⁰ Nuclear weapons represent not only a moral standing but also a significant investment.

The cost of developing and maintaining this enormous destructive capacity has been huge. The most thorough estimate, in 1996 dollars, suggests that it had consumed \$409.4 billion on construction, \$3,241 billion on deployment, \$831.1 billion on targeting and controlling, \$937.2 billion on defenses and even \$31.1 billion on dismantling elements of the arsenal with

¹⁶⁹ "Nuclear Posture Review, 2018 - U.S. Department of Defense," 6.

¹⁷⁰ Kristensen, "US Nuclear War Plan Updated amidst Nuclear Policy Review."

another \$365.1 billion on waste management, making for a grand total of \$5,821 billion.¹⁷¹

These costs have only increased since 1996 when these figures were generated. The United States modernization efforts will cost up to \$1.5 trillion.¹⁷² Such a significant expense warrants not only a conversation on the application of just war, but also on American military strategy. Considering global challenges the United States faces today, including Chinese expansionist policies in the Pacific Ocean and repeated challenges by Russia in Ukraine and Syria, perhaps a portion of this investment would be better spent to confront these challenges. The \$1.5 trillion planned for nuclear modernization could purchase 112 *Ford Class* aircraft carriers which cost \$13.3 billion each.¹⁷³ If modernization budget was solely directed towards the purchase of *Virginia Class* submarines it could buy 441 of them.¹⁷⁴ With the understanding reducing nuclear stockpiles does not degrade the credibility of deterrence, perhaps reducing nuclear investments and redistributing some of the budget to conventional military forces would better serve American strategy.

This paper contends that nuclear modernization efforts are required based on aging Cold War era systems. However, the examples in the previous paragraph put into perspective the cost of such an undertaking. Where a nation decides to dedicate its resources is a reflection of the moral values of that nation. At this pivotal moment of

¹⁷¹ Freedman, *The Evolution of Nuclear Strategy*, XIV.

¹⁷² “Fact Sheet: U.S. Nuclear Weapons Modernization: Costs & Constraints,” Center for Arms Control and Non-Proliferation, February 10, 2021, <https://armscontrolcenter.org/fact-sheet-u-s-nuclear-weapons-modernization-costs-constraints/>.

¹⁷³ Kevin Reilly, “The True Cost of the Most Advanced Aircraft Carrier,” Business Insider (Business Insider, September 27, 2021), <https://www.businessinsider.com/cost-of-navy-uss-ford-aircraft-carrier-2021-9>.

¹⁷⁴ Brad Howard, “Quiet, Deadly and Expensive: The Navy's Costly Plan to Upgrade Aging Submarines,” CNBC (CNBC, June 4, 2021), <https://www.cnbc.com/2021/06/04/quiet-deadly-and-expensive-the-navys-costly-plan-to-upgrade-aging-submarines.html>.

nuclear modernization, the United States has the opportunity to lead the world in the continuation of nuclear arms reduction and reawaken conversations on the moral use of these weapon systems.

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