National Defence Défense nationale

Canadian Forces College

Collège des Forces Canadiennes

THE NEED FOR A DETERRENCE THEORY UPDATE: DON'T LEAVE IT TO CHANCE

LCdr T.J.T. Thurston

JCSP 41

Exercise *Solo Flight*

Disclaimer

Opinions expressed remain those of the author and do not represent Department of National Defence or Canadian Forces policy. This paper may not be used without written permission.

PCEMI 41

Exercice *Solo Flight*

Avertissement

Les opinons exprimées n'engagent que leurs auteurs et ne reflètent aucunement des politiques du Ministère de la Défense nationale ou des Forces canadiennes. Ce papier ne peut être reproduit sans autorisation écrite.

Canada

CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES
JCSP 41 – PCEMI 41
2014 – 2015

EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

THE NEED FOR A DETERRENCE THEORY UPDATE: DON'T LEAVE IT TO CHANCE

LCdr T.J.T. Thurston

Word Count: 4794

Compte de mots : 4794

INTRODUCTION

On October 27, 1962 the Soviet Submarine B-59 patrolling in the Caribbean Sea had been forced to remain deep. Batteries were running low, a two day old message indicated impending hostilities, the coldest portions of the submarine reached 45C. In a fit of rage combined with exhaustion, Captain Savitski ordered a nuclear torpedo assembled to battle readiness, "We're gonna blast them now! We will die, but we will sink them all – we will not become the shame of the fleet."[1]

This was the picture of tensions at the height of the Cold War with the United States and the Soviet Union practicing brinksmanship, straight jacketed to each other in mutual assured destruction (MAD). A little over 29 years later, Mikhail Gorbechev said in his farewell speech, "The threat of a world war is no more."[2] This paper will prove that the nuclear deterrence theories and policies developed for the Soviet Union are no longer valid for the Russian Federation and should be modified to represent the contemporary global security environment. For the purposes of this paper, the discussion of deterrence will be limited to addressing the Soviet Union and follow on Russian Federation. The timeframe for discussing the Soviet Union will be after nuclear parity had been achieved (approximately 1961) with the United States. When referring to the Russian Federation, this pertains to the state as it exists as of the completion of this writing. This paper will also limit discussion to nuclear deterrence vice conventional deterrence although at points it is necessary to discuss both as they are interrelated. The paper will start with a brief description of MAD in order to lay the foundation for the next section which will

[1] Svetlana Savranskaya, "New Sources on the Role of Soviet Submarines in the Cuban Missile Crisis," *Journal of Strategic Studies* 28, no. 2 (April 2005): 246.

[2] Mikhail Gorbachev (speech, Moscow, Russian Federation, December 25, 1991).

describe inadequacies in the assumptions of MAD that reduce its relevance to the current political environment. Specifically, the areas of the fallacy of game theory, the complex nature of decision making, and the relevance of extended deterrence and MAD will be explored. Counterarguments will be presented where appropriate with responses from the original argument. Finally, some policy recommendations will be provided as suggestions for improvements to the deterrence framework.

DETERRENCE THEORY

There are inherent difficulties in developing strategy concerning nuclear weapons. Understandably, early stigmas arose with atomic weapons due to their sheer destructive power. With these stigmas also arose the concept of a nuclear threshold for use, which once passed signified the open use of nuclear weapons in total war. Thus the nuclear revolution had a unique character to it in that the development of strategy was dominated largely by civilians rather than the military. This was due to the brinksmanship associated with crossing the nuclear threshold. Nuclear strategy was concerned with international relations, crisis decision making, and cognitive process more than it was military means to achieve political ends. Another nuance of the nuclear revolution that made strategy formulation by the military problematic is that there were no campaigns on which to build experience in the use of nuclear weapons. The formulation of doctrine, or more precisely effective doctrine, requires experience and iterative refinement. Without engagements to evaluate the effectiveness of doctrine, military experience in the nuclear age was limited. In this way, the classical Clausewitzian definition of strategy, “the use of

engagement for the purpose of war" loses salience in the nuclear realm.[3] An admission is that Clausewitz was discussing what we would call today military strategy. Indeed, Herman Kahn's seminal 1960 work, "On Thermonuclear War" was an attempt at outlining a nuclear war winning strategy and was titled appropriately with reference to Clausewitz's "On War." However, nuclear deterrence as a strategy is one that exists at the political level. It is not so much concerned as Herman Kahn was with how to win a war as it was with how to avert a war. It is this political crisis decision making that is the essence of deterrence.

Although nuclear deterrence theory and policy experienced a series of evolutionary transformations, the concept that dominated the majority of the Cold War was that of assured destruction or MAD as it was coined by John von Neumann. With a penchant for humorous acronyms, von Neumann envisioned an equilibrium strategy predicated on miniaturized hydrogen bomb technology delivered by the intercontinental ballistic missile (ICBM).[4] MAD is an adaptation of the Nash Equilibrium as a tenet of Game Theory. The Nash Equilibrium can be best exemplified by the thought experiment of the 'prisoner's dilemma'. It demonstrates that under certain conditions, people are pressured into making decisions based on rationality that are not in their best interest. The game describes two suspects (prisoners) that are interrogated in separate rooms for a crime they committed together. If one suspect implicates the other then the first goes free and the other receives a heavy sentence. If both implicate each other then they both get heavy sentences although slightly lighter for cooperation. If both remain silent then both

---

[3] John Shy, "Jomini," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, ed. Peter Paret, (New Jersey: Princeton University Press, 1986): 177.

[4] Norman MacRae, *John von Neumann: The Scientific Genius Who Pioneered the Modern Computer, Game Theory, Nuclear Deterrence, and Much More* (New York: Pantheon Press, 1992), 362-363.

get a light sentence.[5] The outcome of the game for rational actors is that both implicate each other in seeking maximum personal gain while the best overall outcome (not pursued) is to cooperate and remain silent. The 'prisoner's dilemma' is often used to describe assured destruction and the arms race, the former being an iterative and ongoing process of armament to compete with one's opponent. That is, it is rational to arm oneself because the expectation is that your opponent will betray you and also arm himself. Conversely, it is foolish to disarm because surely your opponent will not and then be able to dominate. The MAD theory (although officially as the theory of assured destruction) was championed as a policy by the Kennedy administration, chiefly by Secretary of Defense Robert McNamara. In 1961, the so called Hickey Study commissioned by McNamara defined the objective of assured destruction as:

> To deter a deliberate nuclear attack upon the United States or its allies by maintaining 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 surprise first strike.[6]

Therefore a necessary component to assured destruction is a launch-on-warning and/or second-strike capability. This was initially realized by maintaining Strategic Air Command (SAC) bombers on alert and in some cases airborne in order to reduce or eliminate their targetability. Later it was realized in the accurate submarine launched ballistic missile (SLBM) weapon system. Thus the United States and the Soviet Union found themselves in the 'prisoner's dilemma' together. It is widely considered that this relationship fully developed when each had developed the hydrogen bomb and a credible second strike capability; this also marks the maturity of the nuclear revolution. Kennedy

---

[5] Azar Gat, *War in Human Civilization* (New York: Oxford University Press, 2006): 95.

[6] Alain Enthoven and K. Wayne Smith, "How Much is Enough?: Shaping the Defense Program 1961-1969," RAND Corporation Report (1971): 174.

and McNamara did not relish the concept of MAD; instead they were simply describing a situation that already existed. Theorists subsequently began to fit different policy options as either stabilizing or destabilizing for the deterrence equilibrium. Pursuits that were considered destabilizing included major civil defense, air defense, and ballistic missile defense.[7] Assured destruction therefore also required assured vulnerability; an assurance that the Soviet Union could, through its nuclear capabilities, hold the United States at risk.

WHAT IS DIFFERENT TODAY

The presumptions that underlined the stability of deterrence during the Cold War have dubious applicability to today's security environment. Proponents of deterrence theory credit it with preventing war between the superpowers during the Cold War. Opponents of deterrence contend that even during the Cold War, the primary assumption of rational actors was in itself flawed. For the purposes of this paper, the assumption will be made that deterrence and equilibrium did in fact play a part in preventing total war between the superpowers. Given that deterrence did have considerable value during the Cold War, changes in the political environment from 1991 onward call into question the presumptions of the deterrence equilibrium.

The Fallacy of Game Theory

[7] Keith Payne, *The Great American Gamble: Deterrence Theory and Practice From the Cold War to the Twenty-First Century*, (Virginia: National Institute Press, 2008), 124.

Robert McNamara was presented with seemingly unsolvable problems of national security. How could the United States guarantee its survival in the face of nuclear weapons with massive destructive potential? How could one peer into the mind of Soviet leaders to discern their true intentions? Although flawed, game theory and related theories of nuclear deterrence proposed by Albert Wohlstetter and Thomas Schelling, among others, proposed some answers to these questions. Under game theory, the organization culture and decision psychology of its leaders need not be considered. Reductionist theories and statistical models could be constructed to predict outcomes. The result was stategic analyses that lacked any moral proportionality. McNamara himself eventually characterized assured destruction as killing 20-25 per cent of the Soviet population and crippling 50 per cent of its industrial base which when matched by the Soviets against the United States, subsequently became the basis of a stable deterrence condition.[8] This questionable morality behind assured destruction made sense in the sphere of game theory but unravels in the context of reality. Unfortunately, once the United States was set down the policy path of assured destruction, any deviation could have constituted a sign of weakness and thus would be dubbed 'destabilizing'. In this way, United States foreign policy became a captive of game theory. As game theory was derived from the mathematics of economics, it had more to do with statistical models and maximizing outcomes than it did with the law of war and international politics. Former National Security Adviser MacGeorge Bundy criticized United States policy:

> Think-tank analysts can set levels of 'acceptable' damage well up in the tens of millions of lives. They can assume that the loss of dozens of great

[8] Andrew Brown and Lorna Arnold, "The Quirks of Nuclear Deterrence," *International Relations* 24, no. 3 (September 2010): 299.

> cities is somehow a real choice for sane men. They are in an unreal world. In the real world of real political leaders – whether here or in the Soviet Union – a decision that would bring even one hydrogen bomb on one city of one's country would be recognized in advance as a catastrophic blunder; ten bombs on ten cities would be a disaster beyond history; and a hundred bombs on a hundred cities are unthinkable.[9]

Here Bundy refers to what would become known as Minimum Deterrence (MD) which has gained saliency in current arms reduction talks. MD does not place artificial accuracy on quantities of deterrence as game theory supposes. Instead, the greatest criticism of MD is that the levels of deterrence required are not quantified and are largely subjective. Thus the 'How much is enough?' question enters into today's arms reduction debates. The only conclusion that can be drawn empirically in a disarmament context is that previous levels were too much and current levels are greater than or equal to enough. Follow on START negotiations will determine more.

The Complex Nature of Decision Making

The assumption of the rational actor is the basis of game theory. Again, as game theory was resident in economics then decisions could be distilled down into a cost and benefit analysis. This also has the convenient function of being able to indirectly affect an opponent's decision. By controlling the cost that a particular decision incurs on an opponent then you can also control his most likely decision path unless the opponent acts irrationally. As Thomas Schelling put it:

> You can sit in your armchair and try to predict how people will behave by asking how you would behave if you had your wits about you. You get, free of charge, a lot of vicarious, empirical behavior.[10]

---

[9] McGeorge Bundy, "To Cap the Volcano," *Foreign Affairs* 48 no. 1 (October 1969): 20.
[10] Keith Payne, "Understanding Deterrence," *Comparative Strategy* 30, no. 5 (Special 2011): 396.

This transposition of Western values upon the Soviet actors was dubious at best. A multitude of other factors affect decision making including culture, history, religion, ideology, parenting, and what the particular leader had for breakfast. As an example, Jerrold Post explores in *Dreams of Glory: Narcissism and Politics*, how narcissistic qualities shaped the behavior of Saddam Hussein. He describes a relationship between the narcissist leader and his followers:

> Kohut's delineation of pathways to the wounded self, and his delineation of the transferential postures of the mirror-hungry personality as well as the ideal-hungry personality, are especially useful in understanding psychodynamic foundations of political relationships. Indeed, the mirror-hungry leader and the ideal-hungry follower can be seen as forming a lock-and-key relationship, thus leaders need followers who, in turn, need leaders.[11]

The comparison of President Vladimir Putin to a mirror-hungry leader is almost irresistible. Images in the media of the Putin riding stallions bare-chested or hunting lions immediately come to mind. As a young man he was drawn to the KGB by dreams of glory: "One spy could decide the fate of thousands of people." He has also arranged for himself to be in power for up to 24 years because he cannot conceive of anyone else leading his country. He is sensitive to slight; journalists who criticize him end up in prison or dead. Post's final point on Putin is that insecurity underlies his grandiose facade. The rational actor model may assert that despite all of these character flaws, President Putin is still governed by the principles of maximizing benefit while minimizing cost. He most certainly is, as are most people. However, these rational actor motivations are just a piece in the puzzle of complete understanding of a leader of a society. President Putin's decisions are almost certainly also colored by the qualities of

[11] Jerrold Post, "Dreams of Glory: Narcissism and Politics," *Psychoanalytic Inquiry: A Topical Journal for Mental Health Professionals* 34, no. 5 (Special, 2014): 479.

what Post calls 'the quintessential narcissist'.[12] Additionally a slightly less poigniant, less colorful but certainly still plausible comparison of the Russian people to the ideal-hungry follower can be made.

The Relevance of Extended Deterrence and MAD

The greatest difference between the Russian Federation of today and the Soviet Union of the Cold War is the question of intentions in Europe. During the Cold War, the widely conceived notion in the West was that the Warsaw Pact was prepared to march across Europe in a manner similar to "Seven Days to the River Rhine". In the secret Soviet military simulation, the Red Army conducted a seven day nuclear war as it progressed across Europe. Today, it is safe to say that the Russian Federation has no such aspirations or at least capability. The United States policy for the extended deterrence of the Soviet Union (and now the Russian Federation) was predicated on such a contingency. In fact, the genesis of the Cold War can be traced back to such a posture. At its base, extended deterrence sought to offset the asymmetry of massively superior Soviet armor divisions from conducting just such a war in Europe. Although allied force numbers outweighed Soviet forces at the end of the Second World War, the allies massively demobilized following the war in order to lick the economic and infrastructure wounds that were incurred. In contrast, not only did the Soviet Union not demobilize but it also continued conventional arms buildup. The allies quickly found themselves at a severe disadvantage in conventional arms. The counterbalance was leveraging the atomic

[12] Jerrold Post (speech, 2014 Deterrence Symposium, La Vista, Nebraska, United States, August 14, 2014).

bomb in which the United States had a clear lead and was expected to maintain that lead for quite some time (although in reality the Soviet Union closed this technological gap in a much shorter time than originally predicted).

In turn, the requirement for nuclear deterrence to provide sufficient levels for a MAD type equilibrium with Soviet force levels stemmed from making the United States extended deterrent credible in the eyes of the Soviet Union. The first round of extended deterrence began with the Eisenhower administration and the 'New Look' policy of massive retaliation. As codified in a 1953 report to the National Security Council (NSC-162/2), in the face of the Soviet threat, the security of the United States required, "A strong military posture, with emphasis on the capability of inflicting massive retaliatory damage by offensive striking power."[13] This policy was further reinforced by a speech before the Council of Foreign Relations by Secretary of State John Foster Dulles on January 12, 1954 in which he stated, "Local defense will always be important. But there is no local defense which alone will contain the mighty landpower of the Communist world. Local defenses must be reinforced by the further deterrent of massive retaliatory power."[14] Soviet conventional military forces in Europe in the 1960s numbered 140 active divisions and 400 more that could be mobilized in 30 days. The NATO *goal* of 30 divisions paled in comparison.[15] According to Enthoven and Smith:

> "A conventional option was automatically assumed to require major increases in defense budgets, which politicians on both sides of the Atlantic were unwilling to make, particularly since nuclear weapons were

[13] National Security Council, *NSC-162/2* (Washington: National Security Council, 1953), 5.

[14] John Foster Dulles (speech, Council on Foreign Relations, New York, United States, January 12, 1954).

[15] Alain Enthoven and K. Wayne Smith, "How Much is Enough?: Shaping the Defense Program 1961-1969," RAND Corporation Report (1971): 120.

> assumed to be a substitute for manpower and therefore a viable alternative."[16]

However, the United States policy of massive retaliation received skepticism from Europe due to the credibility of retaliation. Was the United States willing to risk an existential nuclear exchange with the Soviet Union over conventional aggression in Europe? In preparation for an action against Western Europe, could the Soviet Union first strike United States nuclear forces to preclude retribution? Part of ensuring the credibility of extended deterrence was the assurance of a second strike capability through survivable nuclear forces.

This conventional asymmetry between the Warsaw Pact and NATO persisted throughout the Cold War until the late 1970s when senior Soviet military leaders became increasingly alarmed by the advancements in what Marshall Nikolai Ogarkov, Chief of the General Staff termed as the 'Military-Technical Revolution'. Ogarkov observed that advancements by the United States in conventional warfare in the areas of precision guided munitions (PGMs) and timely detection and recognition of targets were approaching the effectiveness of tactical nuclear weapons.[17] This progression continued through the end of the Cold War. The 1991 Persian Gulf War served as proof positive of Ogarkov's 'Military-Technical Revolution' and what subsequently came to be known in the United States as the 'Revolution in Military Affairs'. This serves to demonstrate the point that even before the end of the Cold War, the United States began to gain parity or even supremacy over Soviet conventional military power. This was achieved not through

---

[16] Alain Enthoven and K. Wayne Smith, "How Much is Enough?: Shaping the Defense Program 1961-1969," RAND Corporation Report (1971): 157.

[17] Dima Adamsky, "Through the Looking Glass: The Soviet Military-Technical Revolution and the American Revolution in Military Affairs," *The Journal of Strategic Studies* 31 no. 2 (April 2008): 265.

sheer numbers of tanks but a fundamental revolution in the manner that conventional engagements were fought by capitalizing on technological advances. The discussion above showed the action-reaction dynamic that linked Soviet conventional land forces to United States extended deterrence and finally to MAD. If the original driving force for the chain of offsetting measures, Soviet land-based conventional supremacy, no longer exists then the demand chain is severed from its origin. The current state of antiquation and disrepair in the Russian military aside, it is without contention that today United States conventional military supremacy is unmatched. This then begs the question; what is the need for extended deterrence in Europe? This paper asserts that there is little or none.

Although the Cold War is over two decades gone, the concept of assured destruction still exists within the strategies of both the United State and the Russian Federation. This MAD relationship was predicated on the fundamental incompatibility of the two political structures and the ensuing existential threat that each posed to each other. In an article written celebrating Thomas Schelling's 2005 Nobel Prize in Economic Sciences, Michael Kinsley (Washington Post columnist and former student of Schelling's) recalled Schelling's contribution to game theory:

> So you're standing at the edge of a cliff, chained by the ankle to someone else. You'll be released, and one of you will get a large prize, as soon as the other gives in. How do you persuade the other guy to give in, when the only method at your disposal – threatening to push him off the cliff – would doom you both? Answer: You start dancing, closer and closer to the edge. That way, you don't have to convince him that you would do something totally irrational: plunge him and yourself off the cliff. You just have to convince him that you are prepared to take a higher risk than he is of accidentally falling off the cliff. If you can do that, you win.[18]

[18] Michael Kinsley, "A Nobel Laureate Who's Got Game," *The Washington Post*, 12 October 2005.

At some point during the Cold War, the United States and the Soviet Union may have been engaged in such a dance toward the precipice of nuclear war. Since 1991 and onward not only have the two parties distanced themselves from the cliff but they may have also unchained themselves as well. The United States and the Russian Federation are no longer engaged in a mutual existential threat posture. On the topic of minimum deterrence Stephen Cimbala writes, "US nuclear strategic planning for limited or extended nuclear wars against an ideological superpower opponent with global military ambitions, regardless of past enthusiasms or distaste, is clearly passe´ now."[19] This is not to say that relations between the United States and Russia haven't encountered difficulties. Neither the Russian intervention in Crimea nor the alleged Russian violation of the Intermediate-Range Nuclear Forces (INF) Treaty has been particularly favorable for further diplomacy. However, not even the most pessimistic critics can go as far as to say that the two states came to the brink of war over any recent issue.

An argument against the diminished relevance of MAD in the current security environment can be seen in the sheer number of weapons remaining in the arsenals of the United States and the Russian Federation. As Figure 1 below shows, the Russia and the United States certainly retain sufficient nuclear arsenals to make existential threats reality. Despite the destructive potential possessed by the two former superpowers, possession does not of course indicate a desire for use. As an aside, the numbers also do not take into account the state of disrepair of Russia's strategic delivery forces. Although

[19] Stephen Cimbala, "Minimum Deterrence and Missile Defenses: What's New, What's True, What's Arguable," *Defense & Security Analysis* 29, no. 1 (March 2012): 75.

the last decade has seen an increase in the deployments of bombers and submarines, the viability of a Russian complete nuclear release must be questioned.

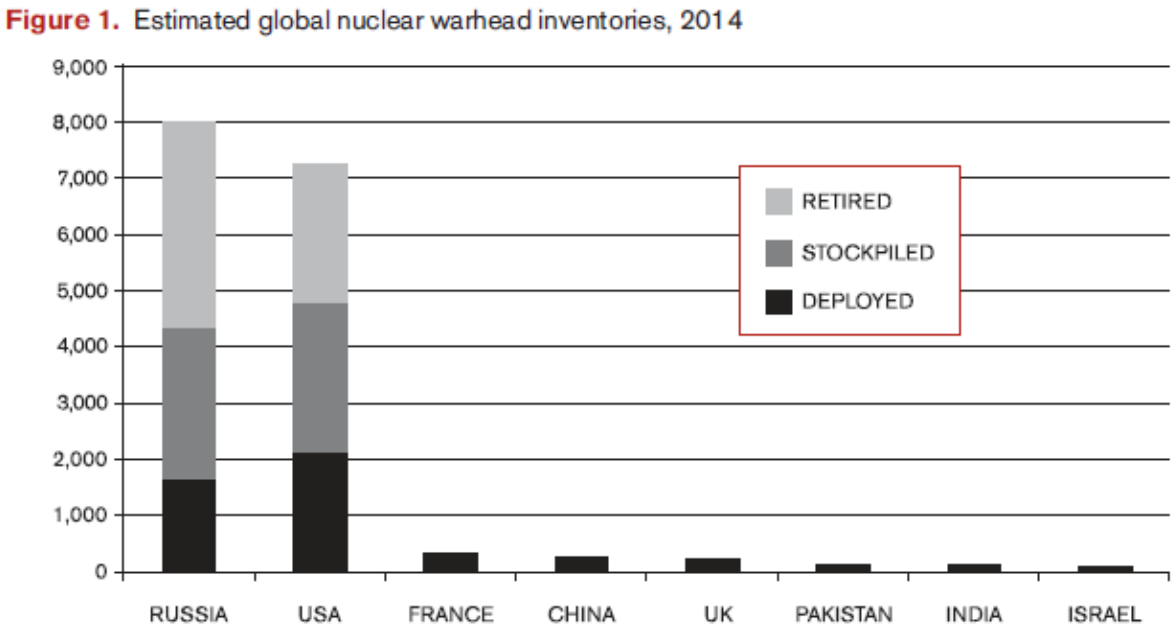

Figure 1 – Estimated Global Nuclear Warhead Inventories, 2014

Source: Bulletin of Atomic Scientists

A counterpoint to the argument above for the outdated nature of European extended deterrence is the recent Russian aggression in Ukraine. Critics of President Vladimir Putin's aggressive stance compare him to a modern day Czar; pointing to the Ukraine intervention as a harbinger for future expansionism into former Soviet republics. This has also understandably led to apprehension and trepidation within NATO of a return to a Cold War threat environment. As Daryl Kimball put it, "The Ukraine crisis has sent already chilly relations between Moscow and the West to the lowest point in

more than a quarter century."[20] The conflict also sparked discussion in the United States Congress to suspend funding for the implementation of New START and stepping up nuclear force modernization. These sentiments would indicate a threat to strategic stability. However, these arguments still do not account for United States continued asymmetric conventional superiority. Russian action in the Ukraine was far from overt and in no way a move against NATO in the manner of a Cold War march across Europe. Indeed, the nature of the Russian intervention took a form akin to salami tactics rather than a conventional assault. Despite the obligations of the United States under the 1994 Budapest Memorandum that provided security assurances to Ukraine in exchange for the return of Soviet nuclear forces to the Russian Federation, the United States did not militarily intervene against Russia. Although it never came to the forefront of any discourse on the Ukraine intervention, this may suggest that the Russian nuclear deterrent continues to function; if there is a perception in both the West and Russia that MAD functions then it may have played a back seat role for NATO inaction.

Another case for extended deterrence is the problem of nuclear proliferation. The presence of United States extended deterrence in both Europe and Asia exists to provide security assurances to those states under the 'nuclear umbrella'. It has been argued that absent that umbrella, those states may be inclined to develop their own nuclear capability. This argument has particular salience in the cases of Japan, Taiwan, and South Korea. Some of the states under United States extended deterrence previously had active nuclear weapons programs that they subsequently abandoned and acceded to the Non-proliferation Treaty (NPT) as non-nuclear weapon states. But it is difficult to speculate on how a removal of the umbrella would affect those states that extended deterrence

[20] Daryl Kimball, "Russia and the Big Chill," *Arms Control Today* (March 2015): 3.

currently provides security guarantees to. Particularly in light of the recent Fukushima Daiichi nuclear accident which heightened nuclear stigma, it may be difficult for those states to garner public support for a nuclear weapons program. Additionally, those states may be satisfied with a conventional military deterrent guarantee. As a counter-counter argument, Kenneth Waltz suggests that slow nuclear proliferation may even be a stabilizing factor in a multipolar nuclear system.[21]

RECOMMENDATIONS

Improve Policy Coherence

The United States must begin the revolution of nuclear strategy with policy coherence. A reduction in adversarial approaches to nuclear strategy surviving from the Cold War must be predicated on clear intentions. Communication of clear intentions fosters an atmosphere of transparency, stability and security. The most recent 2010 Nuclear Posture Review Report as well as the 2015 National Security Strategy made ambitious efforts toward deemphasizing the importance of nuclear weapons in national defense and incorporating some tenets of President Obama's 2009 Prague goal of a world free of nuclear weapons. However, the report fell short in several key areas in terms of clarity and reconciling fundamental discrepancies in policy. First, there is a noticeable avoidance of the "no first use" policy. Second, to the dismay of arms control proponents, the review states that, "The United States is therefore not prepared at the present time to

[21] Kenneth Waltz, *The Spread of Nuclear Weapons: More May Better*, Adelphi Paper 171 (London: International Institute for Strategic Studies, 1981).

adopt a universal policy that the 'sole purpose' of U.S. nuclear weapons is to deter nuclear attack on the United States and our allies and partners."[22] Second, the report elevates deterring nuclear terrorism to a top priority along with nuclear proliferation but does not propose how non-state actors, with nothing to hold at risk, can be deterred. Third, the review singles out North Korea and Iran as violators of the NPT but fails to put forth an official extended deterrence policy for the Middle East. In addition, it would be beneficial to define specific red lines for Iran, for example the use of conventional or nuclear forces beyond its borders to be met with whatever means necessary to defeat them.[23] Lastly, the report lacks a fundamental approach to North Korea which is paramount to East Asian security. Doubts exist in Japan and South Korea as to how extended deterrence and conventional intervention would work in practice. The remaining recommendations do not make hard judgments or specifications for which way any of these issues should be addressed. The point here is to demonstrate that certain policies are not clear and they should be in order to properly communicate United States intentions to its adversaries and allies.

Reduce Tactical Nuclear Weapons and United States Deployed Weapons

Similar to the collective defense assurances that United States nuclear forces extended to NATO during the Cold War to counter superior Soviet conventional forces, Russia is now placing greater emphasis on tactical nuclear weapons to counter superior

[22] Department of Defense, *Nuclear Posture Review Report* (Washington: Department of Defense, 2010), 16.

[23] Steven Pifer, *U.S. Nuclear and Extended Deterrence: Considerations and Challenges*, Brookings Arms Control Series 3 (Washington: Brookings Institution, 2010), 41.

NATO conventional forces. The New START Treaty was successful in furthering talks on strategic nuclear weapons but START has never addressed tactical weapons. Particularly in the face of alleged Russian violation of the INF Treaty, future disarmament talks need to address nuclear weapons as a whole rather than piece meal. A potential bargaining chip that the United States may use in future tactical nuclear weapons reduction negotiations may be removal of the B-61 nuclear gravity bombs believed to be deployed in Belgium, Germany, Italy, the Netherlands and Turkey.[24] The United States had reportedly deployed nuclear weapons in Korea but withdrew them by 1992 as a result of unilateral initiatives of the George H. W. Bush administration. Similar efforts could be made to remove the weapons in Europe for reciprocal reductions in deployed Russian tactical nuclear weapons.

Acknowledge Deterrence Deficiencies and Sponsor Evolution of Theory

There are many criticisms of deterrence theory that began during the Cold War and many more have emerged since the end of the Cold War. Some of these include the underlying assumption in game theory of the rational actor model, undeterrability of non-state actors, imperfect detection methods, and incomplete intelligence. Some theorist argue that both conventional and nuclear general deterrence and threats need to be tailor-made to the specific leadership and entity that is acted upon. Still others argue that deterrence does not function or is at least infinitely complex in a multipolar nuclear world. The end result is that deterrence is imperfect but by its nature demands zero

[24] Steven Pifer, *U.S. Nuclear and Extended Deterrence: Considerations and Challenges*, Brookings Arms Control Series 3 (Washington: Brookings Institution, 2010), 19.

defect. Just as the Cold War ended, so did the majority of theorizing toward nuclear deterrence. Toward that end, sponsorship and grants should be made to higher learning institutions to ignite renewed discussion of deterrence concepts in order to further the body of knowledge.

Develop Nuanced Psychological Profiles for Leaders to be Deterred

The "one size fits all" assumption of deterrence is widely thought to be a fallacy. The blind categorization of the rational actor was perhaps not even applicable to the Soviet Union. In order for deterrence, coercion, compellence, assurance, and negative assurance to function one requires a nuanced profile of the state and party that it desires to act upon. This requires an in-depth knowledge of leadership, power structures, and cultures among a plethora of other factors in the entity to be acted upon. The ways that these entities conduct crisis decision making is also of fundamental importance. The current framework of universal deterrence is vitally flawed; to assume that deterring Iran is the same as deterring the Soviet Union.

Further Reductions in Alert Posturing

Several events have shown that mistakes and misinterpretation of intentions may be one of the failure mechanisms of deterrence. In 1983, the Soviet Union placed bomber assets in East Germany and Poland on alert in response to an all too realistic NATO nuclear conflict escalation exercise called ABLE ARCHER, believed to be preparation

for a first strike.[25] In 1995 the so-called 'Norwegian Rocket Incident' involved Russian forces to be placed on full alert and the activation of President Boris Yeltsin's nuclear briefcase to authorize nuclear launch. This was in response to the launch of a rocket designed to study the aurora borealis over Svalbard whose flight path happened to follow the corridor from a Minuteman-III silo in North Dakota to Moscow. The scientists that launched the rocket had informed thirty countries of the experiment but the information was somehow lost in the communication chain to the Russian radar technicians.[26] Bilateral reductions in launch-on-warning forces could provide additional time buffering to future accidents or miscommunications. As arms reductions proceed and subsequent choices are made on which forces to preserve, the natural tendency will be to retain survivable forces. This will lessen the immediacy of nuclear force preservation retaliatory strikes (intended to get missiles out of their silos or bombers off the ground before a first strike hits) as nuclear triads give way to dyads.

CONCLUSION

This paper has proven that the nuclear deterrence theories and policies developed for the Soviet Union are no longer valid for the Russian Federation and should be modified to represent the contemporary global security environment. The areas of the fallacy of game theory, the complex nature of decision making, and the relevance of

[25] Benjamin Fischer, "A Cold War Conundrum: The 1983 Soviet War Scare," last accessed 12 May 2015, https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/a-cold-war-conundrum/source.htm#HEADING1-13.

[26] EUCOM History Office, "This Week in EUCOM HIstory: January 23-29, 1995," last accessed 12 May 2015, http://www.eucom.mil/media-library/article/23042/this-week-in-eucom-history-january-23-29-1995.

extended deterrence and MAD were explored. Counterarguments to the main arguments against deterrence theory were provided with the important exception of disproving a negative (deterrence worked because a total war between the United States and the Soviet Union did not occur) which is impossible. The area of missile defense was not explored but is acknowledged here. An adequate analysis of missile defense and its status as a stabilizing or destabilizing measure could warrant an entire thesis in itself. Several recommendations were presented on how deterrence theory can be modernized and valuable contributions to the body of knowledge on the subject can be furthered.

BIBLIOGRAPHY

Adamsky, Dima. "Through the Looking Glass: The Soviet Military-Technical Revolution and the American Revolution in Military Affairs." *The Journal of Strategic Studies* 31 no. 2 (April 2008): 257-294.

Brown, Andrew and Lorna Arnold. "The Quirks of Nuclear Deterrence." *International Relations* 24, no. 3 (September 2010): 293-312.

Bundy, McGeorge. "To Cap the Volcano." *Foreign Affairs* 48 no. 1 (October 1969): 1-20.

Cimbala, Stephen. "Minimum Deterrence and Missile Defenses: What's New, What's True, What's Arguable." *Defense & Security Analysis* 29, no. 1 (March 2012): 65-80.

Cimbala, Stephen. *Nuclear Strategy in the Twenty-First Century*. London: Praeger, 2000.

Dulles, John Foster. Speech, Council on Foreign Relations, New York, United States, January 12, 1954.

Enthoven, Alain and K. Wayne Smith. "How Much is Enough?: Shaping the Defense Program 1961-1969." *RAND Corporation Report* (1971): 1-366.

EUCOM History Office. "This Week in EUCOM HIstory: January 23-29, 1995." Last accessed 12 May 2015. http://www.eucom.mil/media-library/article/23042/this-week-in-eucom-history-january-23-29-1995.

Fischer, Benjamin. "A Cold War Conundrum: The 1983 Soviet War Scare." Last accessed 12 May 2015. https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/a-cold-war-conundrum/source.htm#HEADING1-13.

Freedman, Lawrence. "The First Two Generations of Nuclear Strategists." *Makers of Modern Strategy: From Machiavelli to the Nuclear Age.* Oxford: Oxford University Press, 2015: 735-778.

Gat, Azar. *War in Human Civilization.* New York: Oxford University Press, 2006.

Gorbachev, Mikhail. Speech, Moscow, Russian Federation, December 25, 1991.

Gray, Colin. *Strategy for Chaos: Revolutions in Military Affairs and the Evidence of History*. London: Frank Cass, 2002.

Jervis, Robert. “The Nuclear Revolution and the Common Defense.” *Political Science Quarterly* 101, no.5 (1986): 689-703.

Khan, Herman. *On Thermonuclear War*. New Jersey: Princeton University Press, 1960.

Kimball, Daryl. “Russia and the Big Chill.” *Arms Control Today* (March 2015): 3.

Kinsley, Michael. “A Nobel Laureate Who’s Got Game.” *The Washington Post*, 12 October 2005.

Krepinevich, Andrew. "Cavalry to Computer; the Pattern of Military Revolutions." *The National Interest* 37 (Fall 1994): 30-43.

Krepinevich, Andrew. “The Military-Technical Revolution: A Preliminary Assessment.” Report for the United States Office of Net Assessment, July 1992.

MacRae, Norman. *John von Neumann: The Scientific Genius Who Pioneered the Modern Computer, Game Theory, Nuclear Deterrence, and Much More.* New York: Pantheon Press, 1992.

Metz, Steven and James Kievit. “Strategy and the Revolution in Military Affairs: From Theory to Policy.” Report for the United States Army Strategic Studies Institute, June 1995.

Murray, Williamson and MacGregor Knox. “Thinking About Revolutions in Warfare.” *The Dynamics of Military Revolutions in Warfare, 1300-2050.* New York: Cambridge University, 2001: 1-14.

Parker, Geoffrey. “The ‘Military Revolution,’ 1560-1660-a Myth?” *The Journal of Modern History* 48, no. 2 (June 1976): 195-214.

Payne, Keith. *The Great American Gamble: Deterrence Theory and Practice From the Cold War to the Twenty-First Century*. Virginia: National Institute Press, 2008.

Payne, Keith. “Understanding Deterrence.” *Comparative Strategy* 30, no. 5 (Special 2011): 393-427.

Pifer, Steven. *U.S. Nuclear and Extended Deterrence: Considerations and Challenges*. Brookings Arms Control Series 3. Washington: Brookings Institution, 2010.

Post, Jerrold. “Dreams of Glory: Narcissism and Politics.” *Psychoanalytic Inquiry: A Topical Journal for Mental Health Professionals* 34, no. 5 (Special, 2014): 475-485.

Post, Jerrold. Speech, 2014 Deterrence Symposium, La Vista, Nebraska, United States, August 14, 2014.

Paul, T.V., Patrick Morgan, and James Wirtz. *Complex Deterrence: Strategy in the Global Age*. Chicago: Chicago University Press, 2009.

Rogers, Clifford. "The Military Revolutions of the Hundred Years' War." *The Journal of Military History* 57, no. 2 (April 1993): 241-278.

Savranskaya, Svetlana. "New Sources on the Role of Soviet Submarines in the Cuban Missile Crisis." *Journal of Strategic Studies* 28, no. 2 (April 2005): 233-259.

Schelling, Thomas. *Arms and Influence.* London: Yale University Press, 2008.

Shy, John. "Jomini." In *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, edited by Peter Paret, 143-185. New Jersey: Princeton University Press, 1986.

United States. Department of Defense. *Nuclear Posture Review Report.* Washington: Department of Defense, 2010.

United States. National Security Council. *NSC-162/2*. Washington: National Security Council, 1953.

Waltz, Kenneth. *The Spread of Nuclear Weapons: More May Better*. Adelphi Paper 171. London: International Institute for Strategic Studies, 1981.

Watts, Barry. "The Maturing Revolution in Military Affairs." Report for the United States Center for Strategic and Budgetary Assessments, 2011.