

The 2018 Nuclear Posture Review: A Return to Nuclear Warfighting?

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Abstract

The 2018 Nuclear Posture Review (NPR) represents a significant shift in US nuclear weapons policy. Using Cold War vintage theory, this paper assesses whether the NPR signals a return to nuclear warfighting. The NPR is assessed against five primary drivers for warfighting strategy: enhanced deterrence; to deal with deterrence failure; to maximize damage limitation; to provide a theory of victory; adherence to Just War. The paper concludes that although the NPR represents a step in the direction of warfighting, it does not fully embrace it. This is primarily because the NPR fails to endorse an unrestrained theory of victory.

Key Words

Nuclear strategy, warfighting, deterrence, nuclear weapons, nuclear policy

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Introduction

The Trump administration's 2018 Nuclear Posture Review (NPR) signals a significant change in nuclear weapons policy for the United States. Although there are undoubtedly elements of both continuity and change from previous administrations, the overall tenor of Trump's nuclear policy is sufficiently different to warrant strategic attention. ¹ *The Washington Post* describes it as 'a marked reversal from the strategy of Trump's predecessor'. ² The previous NPR, published by the Obama administration in 2010, had a clear policy focus of nuclear disarmament. ³ For sure, Obama maintained the Triad of delivery systems as the basis for nuclear deterrence and stability. ⁴ His administration also reluctantly came to the conclusion that substantial investment was required to maintain the viability of US nuclear weapons and infrastructure. ⁵

Nonetheless, Obama desired a shift in policy limiting US nuclear forces to the sole role of deterring nuclear attack. It was only the force of domestic opposition that prevented this aspiration, alongside no first-use, making it into doctrine or declaratory policy. ⁶ As the 2010 review indicates though, this ambition remained: 'The United States is therefore not prepared at the present time to adopt a universal policy that deterring nuclear attack is the sole purpose of nuclear weapons, but will work to establish conditions under which such a policy could be safely adopted.' ⁷

More pointedly, the 2010 NPR regarded US nuclear weapons policy as a means to promote global nuclear abolition. ⁸ According to a senior state department official, the 2010 NPR's "first step" involved 'develop[ment of] a nuclear force

structure and posture for use in the negotiations' of the successor agreement to START I'.⁹ This was to be achieved primarily through de-emphasizing nuclear weapons in US security policy and declaring a moratorium on the development of new weapon systems. In this sense, the Obama administration sought to use the U.S. nuclear arsenal as a means to pursue a policy of disarmament towards the overall goal of nuclear abolition. Despite considerable force modernization by America's main adversaries in nuclear matters,¹⁰ some analysts still cling to the ideals of the 2010 NPR. On this basis, they criticize the Trump administration for fueling further competition in nuclear arms.¹¹

Reflecting a more Realist perspective, and in sharp contrast to the cautious idealism of the 2010 review, the 2018 NPR rejects the prospects for nuclear abolition: 'the Nuclear Weapons Ban Treaty, opened for signature at the U.N. in 2017, is fuelled by wholly unrealistic expectations of the elimination of nuclear arsenals without the prerequisite transformation of the international security environment.'¹² Or, as Paul Bracken starkly notes, 'Getting rid of the bomb isn't going to happen anytime soon.'¹³ As a consequence of the existential reality of nuclear weapons and increased nuclear threats, nuclear strategy is afforded a prime position in US national security strategy: 'The United States will replace its strategic nuclear triad and sustain the warheads it carries – there is no higher priority for national defense.'¹⁴ This refocusing on nuclear weapons is manifested in the language of the NPR – which is far more robust from a deterrence threat perspective, and extensive and enhanced plans for force modernization. The latter includes enhanced Nuclear Command, Control and Communications (NC3), a new Intercontinental Ballistic Missile (ICBM), new

long-range bomber, nuclear-powered ballistic missile-carrying submarine (SSBN), Submarine Launched Ballistic Missile (SLBM), and the development of low-yield weapons for increased flexibility.¹⁵

Reflecting the significance of the change from the previous administration, both the language and enhanced force modernization plans of the 2018 NPR have already drawn criticism from Russia, China and Iran. Indeed, China has condemned the US for returning to a 'Cold War mentality'.¹⁶ This is meant as a criticism by China, but as this paper will argue, a return to some elements of Cold War nuclear strategy, especially warfighting, is necessary.

Yet, despite these seemingly radical changes, the 2018 NPR continues to commit the US to nuclear arms control and disarmament. This includes upholding the terms of the 2010 New START, 1987 INF and NPT treaties. This continued commitment to arms control comes despite the fact that the 2018 NPR acknowledges increased modernization and proliferation amongst many of the US' nuclear rivals. This includes, specifically, the accusation that Russia has breached the INF Treaty and continues to field a substantial advantage in tactical nuclear weapons.¹⁷ More significant than the commitment to arms control, however, is that the NPR explicitly rules out a return to nuclear warfighting: 'this is not intended to enable, nor does it enable, "nuclear war-fighting".'¹⁸ This is an interesting statement given that we are led to believe that one of the principle architects of the 2018 NPR is Keith Payne, the co-author of the seminal 1980 article on nuclear warfighting, *Victory is Possible*.¹⁹

We are left, therefore, with something of a paradox. On the one hand, the new US administration seeks to develop capabilities that provide the basis for a modern warfighting posture. On the other hand, the authors of the NPR have explicitly ruled-out a change in nuclear strategy to actively embrace warfighting. To help resolve this paradox, this paper explores the 2018 NPR from the perspective of nuclear warfighting theory. It begins by detailing nuclear warfighting theory, and the rationale behind it. This primarily involves a return to some of the discourse of the later Cold War. Warfighting is here defined as ‘engagement with enemy forces to attain military objectives in the pursuit of policy goals.’ For conventional forces, such a statement would be axiomatic and non-controversial. Yet, mention of warfighting in a nuclear context is often regarded as dangerous and ill-placed.²⁰

With a conceptual warfighting framework in place, the paper uses documentary analysis of the 2018 NPR to ascertain whether it represents the basis for a warfighting posture. In approach, the article takes a normative stance and suggests further developments in US nuclear posture that will enable it to fully exploit the advantages of nuclear warfighting. For, when faced with the statement that the NPR does not intend or enable warfighting, the obvious strategic response is ‘why not?’ As will be argued below, warfighting enhances deterrence credibility, provides options should deterrence fail, seeks damage limitation, provides the wherewithal to comply with the Just War tradition, and seeks to ensure that nuclear weapons are used in a controlled rational manner to achieve policy objectives.²¹

Nuclear Warfighting: A Conceptual Framework

Deterrence has dominated nuclear strategy from the inception of the nuclear age. Bernard Brodie set the tone for nuclear strategy discourse in 1946: 'Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them.'²² And yet, as a form of strategy deterrence cannot be viewed in isolation. It must be considered in relation to the actual use of force in military operations, when deterrence has failed. In this sense, warfighting and deterrence go hand-in-hand. Indeed, the efficacy of the latter is dependent upon the former. Unfortunately, when it comes to nuclear weapons, discourse is often restricted to considerations of pre-war deterrence. As Colin S. Gray notes, this leads to the neglect of operational strategy.²³

As the Cold War developed, deterrence theory became ever more sophisticated, moving beyond the initial basic threat of Massive Retaliation during the Eisenhower administration. Albert Wohlstetter's 1959 RAND study, 'The Delicate Balance of Terror', which identified vulnerabilities in Strategic Air Command's retaliatory capability, began an intellectual movement that added important details and texture to nuclear strategy.²⁴ Likewise, Herman Kahn explored how deterrence would function in different contexts; what we refer to today as 'tailored deterrence'. But Kahn went beyond deterrence, exploring, often controversially, what nuclear war would be like, and how it must be fought.²⁵ These early forays into warfighting theory enabled nuclear strategy to escape the limits of existential deterrence and Mutually Assured Destruction (MAD).

For warfighting theorists, MAD was never satisfactory. It lacked credibility, and restricted strategic options, especially when confronted with the challenges of extended deterrence.²⁶ Moreover, it failed to adequately address a key strategic question: what happens if deterrence fails? Warfighting theory compelled the defense and policy communities to think more rationally, more strategically, about deterrence and post-deterrence options.²⁷ As the warfighting literature developed it explored countervailing strategies, and most controversially explored the concept of victory in nuclear war.

Theories of victory demand that strategy not stop at deterrence. Strategy is too restricted if it is solely concerned with the prevention of war or the re-establishment of deterrence should conflict occur. Strategy, and therefore deterrence, even nuclear deterrence, is underpinned by battle (for the purposes of policy). Clausewitz, in an often-overlooked statement, is persuasive when he notes 'it is inherent in the very concept of war that everything that occurs *must originally derive from combat*' [emphasis in the original].²⁸ To understand the perception engendered by a warfighting mind-set, we need only look to the incredulous response of the Duke of Wellington when asked about his campaign objectives for 1815; he simply replied: 'Why, to beat the French.'²⁹ Should nuclear weapons ever be used again, the US will need to defeat whomever stands in the way of achieving their policy objectives. That is, as described below, the US will need the forces and doctrine required to defeat enemy forces in nuclear combat. To cite Clausewitz's definition of strategy, this is 'the use of engagements for the object of the war.'³⁰

It may be tempting to suggest that in the event of a nuclear war, national survival should be the only goal. Under such a premise, damage limitation and intra-war deterrence would be appropriate strategies and the limits of warfighting. No theory of victory beyond this would be required. However laudable, such a restrictive approach could leave a state at the mercy of an enemy willing to fight in a more unrestrained manner. This will be discussed in more detail later.

The development of warfighting was part of a quest to regain strategic authority over a seemingly astrategic instrument.³¹ It was an attempt to enforce the supremacy of policy over military capabilities. Strategic mastery of nuclear weapons, if that was ever to be achieved, demanded a more flexible, mature capability. This included Limited Nuclear Options (LNOs), offensive counterforce weapons, limited defensive measures, and a developing understanding of how the enemy thought and functioned (the strategic culture debate).³² Although MAD was never abandoned as the basis upon which US nuclear strategy rested, modern diversified forces provided the means to pursue countervailing and prevailing strategies. Whilst the 2018 NPR does not explicitly countenance prevailing strategies, it seems to be striving to make US nuclear forces more relevant after the strategic hiatus of the Obama years.

There are five primary motivations that underpin warfighting strategy: to enhance the credibility of deterrence; to deal with deterrence failure; to maximize damage limitation; to provide a theory of victory; and to adhere to the moral obligations of the Just War tradition. The paper will discuss each one of these in turn, and in doing so will construct a conceptual framework against

which we can assess the 2018 NPR. Although warfighting clearly requires the acquisition of certain capabilities; it is just as much about having the will and the right mind-set to perceive nuclear strategy from the perspective of battle; to regard nuclear weapons as just another category of weapons within the orbit of strategy.

Enhanced Credibility

A deterrence threat must be credible. Potential enemies must be convinced that there is a good chance that threats will be fulfilled. Warfighting gives a threat substance; it becomes more tangible. Credibility, though, must operate not just in the abstract; it must apply to various specific contexts and levels of threat. As described by Lawrence Freedman, deterrence operates in a general and immediate sense.³³ The former works in the background of a security relationship, deterring provocative actions without the expressed intention of doing so. Immediate deterrence is more focused, designed to deal explicitly with an existential threat. Echoing Kahn's various 'types' of deterrence, the 'fourth wave' of deterrence theory, which has developed in the post-Cold War period, is focused on tailored deterrence.³⁴ In this way, credibility is built upon a flexible deterrence posture; which in turn is built upon a valid range of operational capabilities. As noted by Keith Payne, this reflects the changing security environment and the resultant increased number of deterrence variables.³⁵ As will be discussed later, 'tailored deterrence' has a certain prominence in the new NPR.

One of the most challenging deterrence contexts is extended deterrence. It is one thing to persuade an adversary that you will engage in nuclear conflict in response to an attack on your homeland; it is quite another to credibly make the same claim in response to an attack on an ally. This is especially the case when nuclear exchange could result in rapid escalation to central nuclear war against the homelands of the major powers. Such a scenario existed in the Cold War, but is equally relevant today in relation to certain non-nuclear allies of the US, the security of which is ultimately guaranteed by the US nuclear umbrella.³⁶ To enhance the credibility of extended deterrence, then, a state needs the capabilities to fight a controlled limited form of nuclear war, whereby escalation can be managed. In this way, warfighting makes resort to the ultimate weapon more probable. Escalation is still exploited for strategic effect though, because whilst LNOs make the deterrent threat more likely, the potential for nuclear Armageddon underwrites the whole deterrence posture.

One of the strengths of conventional forms of deterrence is that conventional forces are procured with combat in mind.³⁷ In contrast, and as exemplified by Brodie's aforementioned comment, nuclear weapons are disadvantaged by their association with war avoidance. Warfighting helps alleviate this problem. In the absence of warfighting (which includes an understanding of how war will be terminated on favorable terms) conflict threatens costs without order or purpose. In consequence, a deterrence threat constructed without the foundation of warfighting looks empty, or at best reckless. In contrast, a threat supported by the means to wage meaningful battle has more validity, is more tangible.

Here it is important to return to our definition of warfighting. It is important to emphasize that the latter is not solely concerned with military plans and operations, which would of course be required even in a relatively straightforward countervalue strike against an enemy society (as envisaged under MAD). Rather, warfighting, which is Clausewitzian in nature, is concerned with the use of military operations in support of policy objectives. That being the case, under a full warfighting posture, nuclear weapons would be used with positive policy direction. Arguably, this makes nuclear conflict more viable and legitimate, which is obviously important for how the enemy perceives the threat. Moreover, the state making the threat can do so with more confidence in its ability to fight a controlled war and achieve its objectives, should deterrence fail.

What If Deterrence Fails?

Many of the leading theorists of the Cold War prioritized deterrence. Even the controversial warfighting theorist, Herman Kahn, explored how to shore-up deterrence and avoid war in the nuclear age.³⁸ Yet, these same theorists, including the leading advocate of deterrence, Bernard Brodie, recognized that deterrence could fail.³⁹ That being the case, it is vital that strategy goes beyond deterrence and embraces warfighting.⁴⁰ Even if the overwhelming objective is to avoid conflict, the strategist must plan for a post-deterrence world. That means planning for battle; even nuclear battle. To do otherwise would be an act of strategic negligence. As Brodie wrote, 'So long as there is a finite chance of war, we have to be interested in outcomes; and although all outcomes would be bad, some would be very much worse than others.'⁴¹ Once deterrence has failed, war

must be prosecuted in a controlled manner in the pursuit of policy objectives. Strategy demands nothing less. Moreover, the ability to wage limited and controlled forms of nuclear war increases the viability of intrawar deterrence. More measured nuclear operations provide the wherewithal for intrawar signaling for coercion and attempts to re-establish general deterrence.

Deterrence can fail for a variety of reasons.⁴² The enemy may be beyond deterrence. His policy objectives may be so grand and/or so tied to vital national interest that he will accept any costs in their pursuit. Alternatively, his rational decision-making may be constrained by organizational culture, psychological limitations or intelligence failures.⁴³ Even in the face of a robust and well-communicated deterrence threat, the aggressor may perceive a chance for victory. He may identify a technological or operational opportunity that can be exploited. This is an apparent weakness of conventional deterrence.⁴⁴

Additionally, and although it may jar against the Clausewitzian paradigm that war should always be a rational choice used in the pursuit of policy, we cannot discount the possibility of war by accident, and even more so by miscalculation. During the Cold War the military technological situation was such that accidental nuclear war was a genuine danger.⁴⁵ In terms of historical examples, the Falklands War and the 1990 invasion of Kuwait both display a failure of general deterrence. In these cases the aggressor miscalculated the will of other powers. Warfighting is thus a method to enhance the credibility of deterrence, and at the same time a vital means to cope with the real possibility of deterrence failure. Without warfighting, strategy ceases to function fully at the point of deterrence

failure. At best, it is limited to damage limitation and intrawar deterrence. To reiterate, this is too restrictive a basis for strategy.

Damage Limitation

Should deterrence fail, especially in a nuclear setting, one of the main objectives for warfighting is damage limitation. In any conflict, the state has both an interest and duty to minimize harm to the nation-state. Damage may be reduced either by defensive measures and/or by depleting the offensive capabilities of the enemy. Against a nuclear-armed foe, advanced counterforce capabilities are essential. Specifically, this requires nuclear forces that can penetrate enemy defenses, such as stealth bombers and hypersonic Submarine Launched Cruise Missiles (SLCM); accurate ICBMs and SLBMs, perhaps loaded with Multiple Independently Targetable Re-entry Vehicles (MIRV), to destroy hardened enemy missile silos; and survivable follow-on forces, including difficult to detect SSBNs and mobile ICBMs, that continue to fight after the initial salvos. Even with modern counterforce capabilities, it is unlikely that all of the enemy's nuclear weapons will be neutralized.⁴⁶ Thus, active (air and missile defense) and passive (civil defense) defenses provide an extra layer of damage limitation. In consequence, the most potent nuclear warfighting stance merges offensive and defensive measures.⁴⁷ Put simply, defensive measures can cope more easily with enemy forces that have been depleted by initial counterforce strikes. It is noteworthy then, from a warfighting perspective, that the Trump administration has increased spending on missile defense by 25%. This increase raises missile defense spending to just under \$10 billion in fiscal year 2019. This will fund an

extra 20 interceptor missiles and silos and a new homeland defense radar in Hawaii. ⁴⁸

Damage limitation has utility beyond ensuring a better conflict outcome. It can also enhance the effectiveness of deterrence. If the enemy perceives that his offensive forces are vulnerable, both to counterforce and defensive measures, then deterrence by denial is enhanced. Moreover, threats to his military power may also deter via the threat of punishment, especially if his military forces buttress the maintenance of political power. Additionally, the co-location of military and civilian assets ensures that punishment against his socio-economic infrastructure is also likely to occur as a result of counterforce operations. This is described as counterforce plus bonus damage.

Unrestrained Theory of Victory

Important though damage limitation is, it cannot be the whole strategic story once nuclear war has been initiated. A theory of victory also has to be present. Yet, some notable writers on the subject reject the validity of victory in nuclear war. ⁴⁹ The quest for victory implies searching for rational positive outcomes; but is this possible within the desolation of a nuclear holocaust? The first response to this query is to note that nuclear use does not in all cases have to result in Armageddon levels of destruction. ⁵⁰ As previously noted, warfighting is designed to provide more limited and controlled operations, thereby avoiding the worst extremes of nuclear warfare. Moreover, and perhaps more controversially, it can be argued that the quest for victory has a place even in large-scale nuclear exchanges. This is not to deny that victory is likely to be

pyrrhic in a large nuclear conflict. Pyrrhic or not, though, victory must still guide strategy.⁵¹ Absent a theory of victory, war has little direction, little positive purpose. Forces cannot be procured solely for deterrence; they must be able to execute war-winning missions should deterrence fail. A theory of victory provides a guiding strategy for these forces, in that it identifies policy objectives to be sought in the face of the enemy, and the military goals to achieve them. In the later Cold War, for example, US nuclear strategy increasingly focused on targets associated with the political control of the Soviet state.⁵²

Despite the logic of the above analysis, it is reasonable to question whether strategy can continue to function in a large-scale nuclear exchange. In his seminal work, *The Evolution of Nuclear Strategy*, Lawrence Freedman concludes that nuclear weapons are astrategic; that is, without rational policy utility.⁵³ From this perspective, although damage limitation is a valid objective, the quest for victory is absurd. This is because the destructive potential of nuclear weapons is so vast; there are no objectives that would warrant the costs of attaining them. Moreover, the inability to adequately control nuclear conflict, as a consequence of rapid and potentially uncontrolled escalation, prevents the pursuit of limited goals. Freedman's position has recently garnered support from one of the leading Cold War warfighting theorists, Colin Gray. In his most recent work, *Theory of Strategy*, Gray rejects the notion of nuclear strategy. Rather starkly, he argues '[T]here can be no meaningful nuclear strategy. If used in warfare, nuclear weapons would be most likely too powerful to serve political purposes.'⁵⁴

And yet, and assuming deterrence fails; to reject the positive guiding influence of victory is simply to condemn oneself to mindless violence, or limited negative objectives with the associated risk of having to acquiesce to enemy demands. As Kahn noted, there has to be an alternative to the wholly negative choice between oblivion and surrender.⁵⁵ Strategy must be enforced even in the most inauspicious of circumstances. Thus, driven by the need to prevail and retain rational purpose to nuclear conflict, warfighting is the answer. Additionally, the prospect for victory further strengthens deterrence. With a plausible theory of victory in place, deterrence has three pillars: punishment, denial, and fear that the other side will achieve its objectives. The former two are negative in nature, whereas the latter is a more positive basis for deterrence. Thus, the enemy may be deterred from acting because of the costs he will endure, because he will fail to achieve his objectives, and because he fears we will achieve ours.

Just War

Just War has a prohibitive impulse.⁵⁶ It seeks to minimize the harm caused by war. At the same time, moral concerns do not rule out the use of force. Indeed, as Gray notes, the Just War tradition requires that war be fought for a better future, with reasonable prospects for success, using discrimination and proportionality.⁵⁷ All four of these moral principles require a warfighting approach. In the absence of the latter, destruction would have its own unguided dynamic, and in its nuclear guise perhaps fulfilling Clausewitz's concept of absolute or abstract war.⁵⁸

Moreover, the moral legitimacy of deterrence (avoiding war) can be extended to warfighting, because the primary intention to deter requires a secondary intention to use. One can take this position further, and argue that deterrence based on warfighting is morally superior to other forms of deterrence. This is especially the case in comparison to MAD, which was favored on the somewhat erroneous assumption that it was the most 'stable' of deterrence postures. The efficacy of MAD was premised on massive countervalue strikes to 'assuredly destroy' the enemy as a functioning socio-political entity.⁵⁹ In the absence of a comprehensive warfighting posture, nuclear deterrence has to be based on more rudimentary massive countervalue punishment strikes against population centers. Even if MAD is underpinned by strikes against economic recovery, as was proffered in the later Cold War, the impact on population centers still would be catastrophic. Contrastingly, warfighting for deterrence rests on counterforce strikes to degrade enemy forces and nuclear C3. The objective of these attacks would be to achieve victory; namely 'to compel our enemy to do our will' by removing his ability to resist via the destruction of his military capability.⁶⁰ The intention is to defeat enemy forces, not to attack civilians and the infrastructure upon which their welfare depends.

This is not to claim that warfighting is absent of ethical concerns. Actively threatening and preparing for nuclear operations, especially considering the short flight times and scale of destruction, could make war more likely.

Deploying advanced counterforce capabilities threatens the survivability of the enemy's retaliatory capabilities. This is what Thomas C. Schelling described as 'the reciprocal fear of surprise attack'.⁶¹ As a result, tensions rise, and war by

miscalculation may become more likely. More philosophically, it has been argued that the moral relationship between deterrence and warfighting is not as straightforward, or as favorable to warfighting, as argued above. Michael Novak claims that warfighting must be assessed on its own merits and not given moral leeway because of its relationship to deterrence.⁶² There may be some philosophical logic to this argument, but strategically Novak's position is unconvincing. To disassociate the threat of force from its use completely ignores the strategic basis upon which deterrence functions. There can be no effective deterrent without the real threat of force to back it up. Additionally, even if one were able to convincingly decouple threat from use, the active threat of force has moral consequences. Under the wrongful intentions principle, moral judgments about the enactment of a threat must also be applied to the latent threat.

Clearly, the moral discourse surrounding nuclear warfighting is complex. However, there is enough of a moral argument in favor of warfighting to further justify its position in nuclear strategy. Despite concerns over the impact on stability, warfighting at least proffers the possibility of nuclear conflict fought for a better future, with some prospects for success, and guided by the principles of discrimination and proportionality. Thus, we can add a moral incentive to the list of other factors that support a warfighting posture. To reiterate, these other factors are: to enhance the credibility of deterrence; to deal with the real prospect of deterrence failure; to contribute to damage limitation; and to provide a theory of victory.

2018 Nuclear Posture Review: A Step Towards Warfighting

As reasoned above, there is a strong strategic argument in favor of nuclear warfighting. However, this important component of nuclear strategy has been neglected, and indeed rejected, in recent years. The paper will now undertake a documentary analysis of the 2018 NPR to assess whether it represents a reprieve for warfighting. The 2018 NPR, a 74-page document, is divided into nine substantive chapters. It begins with an assessment of the evolving threat environment; identifies the need for US nuclear weapons capabilities; discusses the changing role of nuclear weapons in US National Security Strategy; provides a general justification for tailored strategies and flexible capabilities; discusses these in relation to specific challenges (Russia, China, North Korea, Iran, Extended Deterrence, Hedging); details current capabilities and the need for rapid modernization; identifies the poor state of US Nuclear Infrastructure and the need for significant investment; countering nuclear terrorism; and finishes with a commitment to non-proliferation and qualified support for Arms Control.

The review begins with a statement that would not have been out of place in Obama's NPR: 'The United States remains committed to its efforts in support of the ultimate global elimination of nuclear, biological, and chemical weapons.'⁶³ This is a curious opening statement in a review that is quick to point out, with supporting graphs and tables, that the age of nuclear weapons has coincided with the end of devastating great power wars. Why would a document that so vividly underscores the deterrent effect of nuclear weapons advocate for their abolition? One wonders if this is the expected default position of a modern western state – is it impolitic to perceive nuclear weapons as positive

instruments of policy? As Payne notes, '[M]ost discussions of deterrence and nuclear forces must pay homage to the goal of negotiated nuclear reductions lest they seem unsophisticated.'⁶⁴ Whatever the motivation for this pro-disarmament stance, it speaks to certain dichotomy within the review. As will become evident, this dichotomy is especially evident on the subject of nuclear warfighting.

A Deteriorating Security Environment

Having nailed its colors to the default disarmament mast, the review sets about in its efforts to justify a more robust approach to nuclear weapons policy. In this endeavor, the 2018 NPR makes a strong case for arguing that the threat environment has deteriorated since Obama's 2010 NPR. Specifically, the NPR notes that we are witnessing 'The Return of Great Power Competition', citing substantial Russian and Chinese nuclear force modernization.⁶⁵ To take the former as an example, Russian force modernization is considerable, and includes: the RS 28 SARMAT superheavy ICBM, PAK DA Stealth Bomber, Status-6 nuclear torpedo, Avangard hypersonic glide vehicle, and a nuclear powered cruise missile. As Colin S. Gray notes, this has resulted in a situation in which the West 'has fallen perilously behind Russia in development and deployment of ... strategic forces.'⁶⁶ The change in the nuclear balance, certainly with regards to force modernization, is striking when we consider that only twelve years ago there was serious discussion of imminent US primacy in nuclear weapons.⁶⁷ In some cases, force modernization in the arsenals of US competitors is allied to a more aggressive nuclear doctrine. This is exemplified by Russia's so-called doctrine of 'escalation to de-escalate', in which non-strategic nuclear weapons

could be used to control a conflict that is getting beyond Russian conventional capabilities.⁶⁸ Moreover, the review also notes that Russia, in its efforts to enhance its non-strategic nuclear weapons, has produced a Ground-Launched Cruise Missile that places it in breach of its INF Treaty obligations; although Russia denies that the missile has intermediate range.⁶⁹ These developments are placed within the context of Russian aggression in the Crimea and Ukraine, and increasing Chinese military assertiveness in the East and South China Seas.⁷⁰

These developments in the security environment are considered alongside the nuclear threat from North Korea, the specter of nuclear terrorism, and the potential for rapid nuclear proliferation in Iran. It is noted, for example, that the latter could procure a nuclear weapon within a year of the decision to do so.⁷¹ Finally, the NPR cites the need to hedge against two areas of uncertainty that could transform the threat environment: rapid geopolitical or technological change. Geopolitical change is discussed in relation to significant power shifts in the international system, or the collapse of a nuclear armed state. Unanticipated technological change could result, for example, in increased vulnerability of US nuclear forces and/or nuclear command and control. Alternatively, the NPR cites the appearance of a new highly lethal biological weapon as a possible example.⁷²

Considered together, the range of current, developing, and possible future threats, does seem to justify the argument for a shift in US nuclear weapons policy. Even in 2010, Obama's disarmament-led NPR looked naively optimistic. From the perspective of 2018, the nuclear weapons policy of the Obama years can be judged to be verging on negligent. Although Obama eventually committed

the US to a necessary modernization programme, his disarmament-focused nuclear weapons policy may have emboldened the nuclear ambitions of competitor states. Moreover, arguably his administration squandered the opportunity to grasp nuclear primacy.

In contrast to Obama's disarmament-fuelled agenda, the 2018 NPR paints a convincing picture of a security environment that needs a robust US nuclear posture, supported by modern, flexible, tailored nuclear forces. This echoes the thoughts of some established modern theorists, who call for prudence in nuclear strategy, force modernization, diversity in capabilities, and an end to force reductions.⁷³

Nuclear Weapons in US National Security Strategy

One area in which there has been a notable shift in policy is the sole-use criterion. As previously noted, to all intents and purposes, under Obama US nuclear weapons served one purpose: to deter nuclear attack on the US and its allies. It is true that the 2010 NPR contained the possibility of nuclear response in the face of chemical, biological, and conventional attack by states not in compliance with the nuclear nonproliferation regime. However, this was less an element of US nuclear strategy, than it was 'an attempt to entice proliferating actors back into the nonproliferation regime'.⁷⁴ The 2018 NPR extends the utility of the US nuclear arsenal. To be sure, deterrence of nuclear attack is still given priority. However, 'deterring nuclear attack is not the sole purpose of nuclear weapons.'⁷⁵ This is a subtle, but important change. How important that change is, however, is open to question. Other functions of the US nuclear arsenal

specifically mentioned are deterrence of non-nuclear strategic attack (substantial attacks against US or allied population, infrastructure, nuclear forces, nuclear command and control and early warning systems); to assure allies (extended deterrence) in the face of nuclear or non-nuclear threats; to hedge against an uncertain future (see above); and to achieve US objectives if deterrence fails.⁷⁶

This expansion in the role of nuclear weapons has raised concerns about stability, blurring the distinction between conventional and nuclear forces, and lowering the threshold for nuclear use.⁷⁷ However, all three concerns can be addressed using strategic logic. In thinking about nuclear weapons, especially from an arms control perspective, stability is afforded a privileged position.⁷⁸ Stability, it is assumed, helps maintain deterrence. As a consequence, anything that apparently threatens stability is frowned upon. Problematically, too often stability is narrowly considered in technological or operational terms. Under such an approach, certain weapon systems (MIRVed ICBMs, for example) or operational plans are dismissed for their perceived destabilizing effects. Most often, this is related to the vulnerability of retaliatory forces. Yet, if we accept Clausewitz's core theory, that war is a continuation of political intercourse, then politics lies at the heart of stability, not weapons or operational plans.⁷⁹ It is true that weapons procurement, deployment, and operational plans may reflect political intentions, and can thereby have an effect on stability. Moreover, and as previously noted, certain capabilities and postures may enhance the potential for accidental war or war by miscalculation. In which case, force structures and strategic postures require careful consideration. Nonetheless, the basic point

remains that it is politics that ultimately enhances or reduces stability. Weapons do not make war. This strategic truism is also evident in the cyber domain, where geostrategic tensions reflect the politics of the physical world rather than creating a new virtual political reality.⁸⁰

Strategically, it is a mistake to decouple nuclear weapons from conventional forces. As a consequence, it is counterproductive to give undue emphasis to the nuclear threshold. This is not to deny the strategic utility of escalation, or to say that the nuclear threshold does not have signaling value. One can threaten or indeed breach the nuclear threshold for coercive effect. That being said, in a varied threat environment, in which security challenges come in many different shapes and sizes, military planning must be able to move seamlessly across the spectrum of operations. If deterrence is to be credible in the face of foes with both conventional and nuclear capabilities, then a deterrence posture has to be unified and flexible. This was, after all, the basis for NATO's contested Flexible Response posture during much of the Cold War.⁸¹ To reiterate a core tenet of the warfighting position, a potential aggressor must believe you will use nuclear weapons. To overplay the sanctity of the nuclear threshold risks giving the impression of self-deterrence.

Aimed, one assumes, primarily at Russia, the NPR takes a countervailing approach (deterrence by denial), stating that US nuclear weapons will prevent enemy nuclear escalation from reaching its objectives.⁸² Echoing, although not explicitly, Cold War concerns about the need to deter limited war, Trump's nuclear weapons policy seeks to integrate a range of nuclear and non-nuclear

forces to create a flexible deterrence posture.⁸³ The NPR also eschews a no first use policy, and indeed clarifies that the US maintains some of its nuclear forces on a day-to-day alert status.⁸⁴ All of these measures and announcements provide a much-needed boost to the credibility of US nuclear deterrence, which, it will be remembered, is a core rationale behind nuclear warfighting. However, from a warfighting perspective, reference to achieving objectives in the post-deterrence environment is the most intriguing.

The important question is: what objectives would the US pursue within a nuclear conflict, and how would they be achieved? It appears that the primary objectives sought would be damage limitation (an important component of warfighting) and the re-establishment of deterrence. This fits with the preliminary qualifying statement to this section of the review, in which it is stated that the US would use nuclear weapons in compliance with the Law of Armed Conflict.⁸⁵ Indeed, the NPR is at pains to note that nuclear forces would only be used for defensive purposes. One assumes that this rules out countervalue targeting (deliberate attacks against enemy population centers). This leaves counterforce operations as the only option. Strikes against enemy nuclear forces and their command and control, in conjunction with active Ballistic Missile Defenses (BMD), would help ensure damage limitation for the US and its allies.⁸⁶ A focus on counterforce options is reminiscent of later Cold War strategy, when the US increasingly procured weapon systems with increased accuracy and penetrative capability designed for warfighting. Indeed, Lieber and Press argue that increases in accuracy and remote sensing have enhanced the potency of counterforce

options, to the point that low casualty counterforce options are possible for the first time.⁸⁷

One can reasonably assume, although it is not explicitly noted in the review, that the restoration of deterrence would be achieved through a combination of intrawar deterrence by denial (as noted above in relation to counter-escalation strategies) and punishment for coercive purposes. Inclusion of the latter is premised on references to 'unacceptable consequences' resulting from nuclear attack elsewhere in the NPR.⁸⁸ However, in the face of no countervalue targeting, it is reasonable to question how these costs would be inflicted. There are three possible answers, although none of them is discussed in the NPR. First, it may be that the enemy values highly their nuclear forces; so that the loss of them would inflict unacceptable costs. Alternatively, there may be an unwritten assumption that counterforce strikes would inevitably produce 'bonus' countervalue damage. Much of the nuclear force infrastructure (including command and control, airbases etc.) is within or near population centers. Thus, even a limited counterforce strike is likely to have a significant detrimental affect on countervalue targets. This assumption, however, is somewhat thrown into question by the stated desire to procure accurate limited yield weapons and to operate within the norms of the War Convention. Low-yield accurate weapons would be ideal for counterforce missions and would minimize damage to countervalue target sets. Thus, bonus damage is likely to be limited. Finally, although again not explicitly noted in the NPR, perhaps there is a return to the notion of attacking targets associated with political control. Yet again, though,

concerns over collateral damage would likely restrict a campaign aimed at the means of political control.

We are, thus, left with many questions concerning how the coercive effects of nuclear weapons would be administered. This is problematic, for as Thomas C. Schelling eloquently noted, 'The Power to Hurt can be counted among the most impressive attributes of military force.'⁸⁹ It has to be concluded that the uncertainties in this area of strategy reflect either a paradox or incomplete strategic thinking in the NPR. Clarity on these matters would be welcome, especially as it would enhance deterrence credibility still further.

Although countervailing is back on the agenda in the 2018 NPR, there is no mention of prevailing in a nuclear conflict. Indeed, the review quotes Defense Secretary Mattis, echoing the early thoughts of Brodie, that nuclear war can never be won, and thus must never be fought.⁹⁰ This is both curious and disappointing from a warfighting perspective, and speaks to the need for the further development of strategic thinking in US nuclear strategy under Trump. Damage limitation and the re-establishment of deterrence are perfectly admirable goals within the context of nuclear conflict. However, if the US is to achieve its objectives in a post-deterrence environment, it must have a comprehensive theory of victory. Damage limitation and the re-establishment of deterrence are limited negative objectives. They do not provide a positive driving force for the use of nuclear weapons. To reiterate, victory refers to a policy objective that must be achieved in the face of the enemy. And, as

Clausewitz reminds us, the will of the enemy must be broken by destroying his ability to resist, or putting him in such a position as his defeat is inevitable.⁹¹

If we consider the conditions under which US nuclear weapons could be used, as stipulated by the 2018 NPR, then we can assume that an enemy power (likely Russia, China, North Korea, or a state-sponsored terror group) has launched a substantial attack on either the US or one of its allies. We can think in terms of a Russian assault on the Baltic States, a North Korean attack on South Korea, or perhaps a Chinese invasion of Taiwan. Alternatively, the US may have been subjected to a substantial strategic attack, involving either weapons of mass destruction (including biological or chemical) or a crippling cyber attack. In any of these scenarios, more expansive objectives would be required. As Lieber and Press note, 'in some cases, wars may be triggered by events that compel U.S. leaders to pursue decisive victory, conquest, and/or regime change'.⁹² Thus, in order to achieve its objectives the US would variously need to: punish an aggressor to reinstate deterrence; defeat enemy forces for damage limitation or to reclaim lost territory; and in the North Korean case presumably overthrow a communist regime. In some of these cases, damage limitation and the re-establishment of deterrence would not be enough. Enemy forces would have to be defeated, removed, destroyed, or coerced (to withdraw from allied territory). Any operations in pursuit of these goals would need a theory of victory built on a detailed understanding of the use of nuclear weapons in the service of military objectives; i.e. nuclear warfighting. This could include defeating enemy nuclear forces for force protection of US and allied conventional forces. Alternatively, US nuclear forces may be required to defeat regionally superior enemy conventional

forces. And yet, as previously noted, the NPR rules out a return to nuclear warfighting. This is a significant disjuncture in US nuclear strategy. It is even more curious when one considers the range of modern forces the Trump administration seeks to acquire under the 2018 NPR.

US Nuclear Forces

Despite its declaration against nuclear warfighting, the Trump administration appears to be developing a range of capabilities that would support a warfighting stance. In particular, and again reminiscent of the later Cold War, the 2018 NPR seeks flexible forces for tailored deterrence. This reflects the diversity of threats in the contemporary and near-future security environment. Of particular significance, and signaling a definite shift away from existential or minimum forms of deterrence, the NPR identifies the need for limited and graduated options.⁹³ But how are these strategic requirements going to be realized from a capability perspective? Reassuringly, the Trump administration continues the long-standing commitment to the nuclear triad of delivery systems (Bombers, ICBMs, SLBMs). Indeed, as is described below, the administration is pushing ahead rapidly with a major modernization of all three legs of the triad. The aim is to create flexible and resilient nuclear forces with the following attributes: survivable; forward deployable; diverse and graduated options; accurate delivery; penetrating; responsive; diversity of ranges; diversity of trajectories; visible; and weapon reallocation. Alongside a modern and robust C3 infrastructure (which performs five crucial functions: detection, warning, and attack characterization; nuclear planning; decision-making conferencing; receiving Presidential orders; and enabling the management and direction of

forces), it is difficult not to conclude that the US is acquiring a very potent nuclear warfighting capability.⁹⁴

In order to ensure that the US has the required capabilities, a substantial replacement and modernization programme is outlined in the NPR. The Minuteman III ICBM, first deployed in 1970, is due to be replaced by Ground-Based Strategic Deterrent (GBSD), in 2029. There are no plans to increase the number of warheads on Minuteman III, which were reduced from three to one under Obama. However, the 2018 NPR notes that the ICBM force can be upgraded (increased warheads per missile) as part of the hedging strategy. The current bomber force, made up of the B-52H and B-2A, is to be replaced by the B-21 Raider, due to enter service in 2025. In terms of armaments, the aging Air Launched Cruise Missile (ALCM) will be replaced by the Long Range Stand Off weapon (LRSO), and the B61-12 (due for deployment in 2021) Life Extension Programme (LEP) will ensure that the US has a precision-strike gravity bomb for its air-based nuclear forces. The Ohio Class SSBN is to be replaced by Columbia Class SSBNs, beginning in 2031. Whereas, the Trident D5 SLBM, undergoing a LEP, will continue in service until 2042.⁹⁵

Much of the above, whilst welcome from a warfighting perspective, was already in the pipeline and necessary to maintain a workable 'deterrent' for the foreseeable future. Of more interest to the warfighting discourse are the proposed developments in so-called non-strategic nuclear weapons. The air-component of the non-strategic forces will naturally be upgraded with the

introduction of the F-35. However, the 2018 NPR announces a programme for the near-term deployment of a low-yield SLBM. This will provide the US with an effective, high-penetration capability for limited response options.

⁹⁶Additionally, and reversing a 2010 NPR policy, the Trump administration will pursue a new nuclear-armed SLCM. ⁹⁷ These new non-strategic weapon systems will provide greater flexibility across the spectrum of escalatory dynamics, enhancing the credibility of deterrence (by increasing the likelihood of successful response) and warfighting potency. As previously noted, counterforce strikes are more likely to be successful, and have increased legitimacy, if they are carried out with precision, low-yield weapons. Moreover, enhanced theatre nuclear forces will go some way towards plugging the perceived gap in US nuclear deterrence posture; a gap that Payne believes is currently being exploited by Russia with its threat to escalate-to-de-escalate. ⁹⁸

Whilst much of the 2018 NPR is focused on dealing with state adversaries, the review does address the threat of nuclear terrorism, which ‘remains among the most significant threats to the security of the United States, allies, and partners.’ ⁹⁹ As one would expect, much emphasis is placed on preventing terrorist groups from acquiring WMD in the first instance. However, the NPR is conscious of the role played by detection and interdiction of nuclear devices, and civil defense in mitigating the effects of nuclear terrorism. In this way, the NPR is communicating deterrence by denial. Moreover, whilst acknowledging the limited role of US nuclear weapons in this area, the section of the review devoted to nuclear terrorism ends with an explicit threat of potential retaliation against terror groups and/or their state sponsors (deterrence by punishment). ¹⁰⁰

Although it is true that nuclear warfighting has a less obvious role in countering nuclear terrorism, the capabilities identified above would provide the US with the ability to launch limited precision strikes to prevent a nuclear terror incident, manage damage limitation, and engage in proportional retaliatory strikes.

By way of conclusion to this section of the paper, it is worth mentioning how the 2018 NPR addresses the nuclear weapons infrastructure. This is an important subject for warfighting, since it speaks to the ability of the US to maintain and develop effective warheads for the missions outlined in the review, especially in light on the emphasis on flexibility and hedging against future threats. The most startling facts about the infrastructure are related to its age and levels of underfunding and neglect in recent decades: ‘Over half of NNSA’s infrastructure is over 40 years old, and a quarter dates back to the Manhattan Project era’.¹⁰¹ Again, Paul Bracken is stark in his assessment, ‘Nuclear weapons were left to rot, technologically and intellectually.’¹⁰² As a result, the commitment outlined in the 2018 NPR is essential to maintain effective nuclear forces for the coming decades. This is especially evident when one considers the amount of projects involved, which include: completing the W76-1 and B-61-12 LEP; completing W88 alterations; completing the W80-4 LEP and synchronizing it with the LRSO program; advancing the W78 warhead replacement to support fielding on the GBSD by 2030; and sustaining the B83-1 past its currently planned retirement date until a suitable replacement is identified. Finally, and seeking to achieve a balance between arms control and the realities of the threat environment, the Trump administration will not seek Senate ratification of the Comprehensive

Nuclear Test Ban Treaty, will continue to observe a nuclear test moratorium that began in 1992, but will resume testing should circumstances require it. ¹⁰³

The NPR as a Basis for Warfighting

Having outlined, and provided initial analysis on, the main talking points in the 2018 NPR, it is now time to assess the entire review from a warfighting perspective. Specifically, we are interested in whether or not the Trump NPR signals a return to warfighting in US nuclear strategy. This will be achieved using the warfighting framework identified earlier in this paper. To reiterate, the warfighting framework is constructed of the following five criteria: enhanced credibility; dealing with deterrence failure; damage limitation; theory of victory, and moral obligations. The NPR will be assessed on the weapons capabilities proposed, the missions envisaged for US nuclear forces, and the language and theory used.

The 2018 NPR is certainly very strong on the need to *enhance the credibility* of US nuclear deterrence. The retention and modernization of the nuclear triad, alongside the development of enhanced low-yield non-strategic weapons, provides increased, and more effective, response options for future presidents. Moreover, the language of the NPR, including discussion of counter-escalation strategies, graduated response, first use options, possible resumption of weapon testing, and the definitive rejection of sole use, adds commitment credibility to US nuclear posture. This is enhanced further by the detailed discussion of competitor nuclear forces, and how US weapons would be used to counter them. This contrasts sharply with the 2010 NPR, in which the US appeared as a

reluctant nuclear power intent on pursuing nuclear abolition. Although still committed to the New Start and INF treaties, under Trump the US looks like a power that values the strategic utility of its nuclear forces. This is evident, certainly from a deterrence perspective, within the section discussing the absence of major power war. Moreover, the fact that the main nuclear rivals of the US were quick to criticize the new NPR suggests that the deterrent effect may already be working. That being said, the reluctance to go beyond damage limitation and the re-establishment of deterrence is the one fly in the ointment. By not fully exploiting the credibility effect of nuclear warfighting, the 2018 NPR sells itself short in terms of deterrence.

On another positive note, it is encouraging to witness an NPR that discusses the possibility of *deterrence failure* and operations beyond that. In contrast to the naive optimism of existential deterrence and the 2010 NPR, the 2018 review actually contemplates objectives to be achieved once nuclear weapons are in use. It is true that those objectives are limited in scope, but at least the US is now thinking about nuclear weapons with a more Clausewitzian mind-set (the use of engagements for the object of the war) – although it erroneously refuses to use the term warfighting. Despite the reluctance to call a spade a spade, the NPR's focus on *damage limitation* demands an approach that requires a mind-set and set of capabilities akin to warfighting. Specifically, enemy nuclear forces must be engaged in a measured manner, with the intention to deplete their capabilities and/or stop them from functioning as an effective fighting force. This would include attacks against their fielded forces and strikes against nuclear C3. Assuming the enemy is reasonably advanced in nuclear terms, and has a decent

arsenal of forces, the goal of damage limitation would require on-going operations to ensure success. In anyone's book, such operations would resemble a military campaign (albeit a relatively short one), and would certainly go well beyond limited warning shots for the purpose of re-establishing deterrence.

As positive as these developments are, from a warfighting perspective there are two major problems with the 2018 NPR. The first is that it explicitly rejects nuclear warfighting. This is likely to have a negative effect on deterrence credibility and the military culture of US nuclear forces. To be effective in war, any military force needs to be imbued with an appropriate combat-focused military culture.¹⁰⁴ The second problem is that it fails to discuss a comprehensive *theory of victory*. Without a theory of victory there exists the real danger that the use of force lacks positive guidance.¹⁰⁵ Damage limitation and the re-establishment of deterrence would provide some focus for the use of nuclear weapons. However, depending upon the context, these limited goals may leave the US unable to achieve its broader policy objectives. For example, without a theory of victory in place, an aggressive enemy may feel they can still make gains in the face of US nuclear forces. If US nuclear strategy is driven exclusively by damage limitation and the re-establishment of deterrence, then accepting ill-gotten gains may be a price the US has to pay to bring an end to nuclear conflict. In contrast, a more expansive and unlimited approach to the use of nuclear weapons would enable the US to adapt to the circumstances in play. If deterrence has failed, and nuclear forces are to be used, then surely it would be strategically negligent not to seek to defeat the enemy (destroy their resistance physically and/or morally) and achieve the stated policy objectives. Damage

limitation and the re-establishment of deterrence are admirable goals, but they cannot be the sum total of objectives sought in a nuclear conflict. As Clausewitz noted, war must have positive policy effect. To do otherwise would be limited or ineffective strategy.

There is, thus, a strategic rationale for adopting a robust and comprehensive warfighting stance on nuclear strategy. There is also a *moral obligation* to do so. Engagement with the moral dimension of nuclear weapons is limited in the 2018 NPR. Discussion of military ethics is limited to the comment that ‘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.’¹⁰⁶

As previously stated, the Just War tradition, which forms the core of the modern War Convention, requires that war be fought for a better future, with reasonable prospects for success, using discrimination and proportionality to minimize harm to non-combatants. All of these moral criteria require nuclear warfighting. Much of the above statement from the NPR chimes effectively with the Just War tradition. This is supported by the capabilities envisioned in the review. Low-yield and precision weapons maximize the prospects for maintaining proportionality and discrimination. Moreover, an effective fighting force, composed of modern weapons and resilient C3, is required to end conflict in a favorable and efficient manner. And yet, once again, the absence of a

comprehensive theory of victory is troublesome. For war to be fought for a better future, and with a reasonable prospect of success, victory conditions must be identified and striven for. To cite once again possible scenarios: if allied territory is left occupied, or if an aggressive totalitarian regime is left intact, it may be difficult to identify a better future. Likewise, if enemy forces are left intact as a functioning and effective force, any military success or cessation of hostilities may be temporary. If nuclear war were to happen, then certainly, from a moral standpoint the US would be beholden to minimize civilian suffering and the long-term consequences of nuclear use. However, according to the Just War tradition, it would also be obliged to achieve positive policy objectives. The latter requires a different mind-set from that which seeks merely damage limitation and the re-establishment of deterrence.

Conclusion: Curtailed Nuclear Warfighting.

From a warfighting perspective, the 2018 NPR is a step in the right direction. If enacted, the latest nuclear review will provide the US with modern, flexible, precise nuclear weapons, capable of operating effectively across the spectrum of nuclear operations. Just as importantly, the 2018 NPR signals a commitment to developing, maintaining, and using these ultimate instruments of policy. As a result, deterrence credibility will be enhanced in the face of current and developing diverse threats. And, should nuclear war occur, the US will be better placed to prosecute damage limitation operations. In this sense, the Trump administration is giving the Pentagon almost everything it needs for a return to nuclear warfighting operations.

However, the review is stymied by a serious dichotomy. Whilst seeking what is essentially a warfighting capability, it explicitly eschews a warfighting posture. This apparent contradiction becomes manifest in the absence of a full commitment to a theory of victory. We are thus left with a review that does not fully provide the basis for a comprehensive nuclear strategy. The authors of the NPR recognize that deterrence may fail, and that nuclear weapons may have to be used in anger. Ultimately, however, they refuse to acknowledge that nuclear weapons, in their use, must have positive policy effect. The focus on damage limitation and the re-establishment of deterrence reveals a belief that nuclear weapons are instruments of non-use, or at most, instruments designed to reassert deterrence. Thankfully, the sole-use criterion has been definitively abandoned, but the implications of that stance have not been fully explored. We may have to wait for the next review, and perhaps a further deterioration of the security environment, to acknowledge that nuclear war, however terrible, still needs to be fought with a winning mentality. Absent a comprehensive theory of victory, strategy cannot function properly or can only function partially.

¹ For a detailed discussion of continuity and change in the new NPR, see Steven E. Miller, *Nuclear Battleground: Debating the US 2018 Nuclear Posture Review*, Policy Brief No. 63, Asia Pacific Leadership Network for Nuclear Non-Proliferation and Disarmament/Toda Peace Institute, June 2018, <https://www.belfercenter.org/publication/nuclear-battleground-debating-us-2018-nuclear-posture-review> and Francis J. Gavin, 'Introduction: Must We Mean What We Say? Making Sense of the Nuclear Posture Review', Policy Roundtable: The Trump Administration's Nuclear Posture Review, *Texas National Security Review*, 13 February 2018, https://tnsr.org/roundtable/policy-roundtable-trump-administrations-nuclear-posture-review/#_ftn108

² Ishaan Tharoor, 'Trump's nuclear policy is taking us back to the Cold War', *The Washington Post*, 6 February 2018, https://www.washingtonpost.com/news/worldviews/wp/2018/02/06/trumps-nuclear-policy-is-taking-us-back-to-the-cold-war/?utm_term=.f49b3e4916a2

See also John Gower, *The Dangerous Illogic of Twenty-First-Century Deterrence Through Planning for Nuclear Warfighting*, Carnegie Endowment for International Peace, <http://carnegieendowment.org/2018/03/06/dangerous-illogic-of-twenty-first-century-deterrence-through-planning-for-nuclear-warfighting-pub-75717> 6th March 2018

³ Paul I. Bernstein, 'Post-Cold War US Nuclear Strategy', in Jeffrey A. Larsen & Kerry M. Kartchner (eds), *On Limited Nuclear War in the 21st Century*, (Stanford: Stanford University Press, 2014), pp. 80-98. Scott D. Sagan & Jane Vaynman 'Introduction', *Nonproliferation Review*, Special Edition, 18:1 (2011), pp. 17-37, Aiden Warren, *The Obama Administration's Nuclear Weapon Strategy: The Promises of Prague*, (Abingdon: Routledge, 2014), Lawrence Freedman, 'Disarmament and Other Nuclear Norms', *The Washington Quarterly*, 36:2 (2013), pp. 93-108.

⁴ The nuclear triad comprises Intercontinental Ballistic Missiles (ICBMs), Submarine Launched Ballistic Missiles (SLBMs) and long-range bombers.

⁵ Hans M. Kristensen, "Remarks on Nuclear Modernization," available at <http://www.fas.org/programs/ssp/nukes/publications1/2012BASICmodernization111312.pdf>

⁶ See Rebecca Hersman, 'Nuclear Posture Review: The More Things Change, The More They Stay the Same', *Center for Strategic and International Studies*, February 6 2018, <https://www.csis.org/analysis/nuclear-posture-review-more-things-change-more-they-stay-same>. Resultantly, and alongside force modernization plans and a lack of progress on further force reductions, the arms control community was left somewhat disappointed by the Obama years. See, for example, James E. Doyle, 'Nuclear Weapons: A Record That Falls Short of Lofty Ambitions', *Arms Control Today*, (December 2016), https://www.armscontrol.org/ACT/2016_12/Features/Nuclear-Weapons-A-Record-That-Falls-Short-of-Lofty-Ambitions, Ramesh Thakur, 'Why Obama Should Declare a No-First-Use Policy for Nuclear Weapons', *Bulletin of the Atomic Scientists*, (19 August 2016), <https://thebulletin.org/why-obama-should-declare-no-first-use-policy-nuclear-weapons9789> and Loren Thompson, 'Obama Backs Biggest Nuclear Arms Build-up Since Cold War', *Forbes*, (December 15 2015), <https://www.forbes.com/sites/lorenthompson/2015/12/15/obama-backs-biggest-nuclear-arms-buildup-since-cold-war/#1e726b02a0f5>

⁷ Department of Defense, *Nuclear Posture Review Report*, April 2010, [https://www.defense.gov/Portals/1/features/defenseReviews/NPR/2010 Nuclear Posture Review Report.pdf](https://www.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf), p. viii

⁸ *ibid*, pp. v-vi

⁹ Quoted in Anna Loukianova, 'The Nuclear Posture Review Debate,' available at http://www.nti.org/e_research/e3_nuclear_posture_review_debate.html

¹⁰ Eric Heginbotham, Michael S. Chase, Jacob L. Heim, Bonny Lin, Mark R. Cozad, Lyle J. Morris, Christopher P. Twomey, Forrest E. Morgan, Michael Nixon, Cristina L. Garafola, Samuel K. Berkowitz, *China's Evolving Nuclear Deterrent: Major Drivers and Issues for the United States*, (Santa Monica: RAND, 2017). Hans M. Kristensen & Robert S. Norris, 'Chinese nuclear forces, 2016', *Bulletin of the Atomic Scientists*, 72:4, (2016), pp. 205-211, Zachery Keck, 'The Big China Nuclear Threat No One is Talking About', *The National Interest*, 2 June 2017, <http://nationalinterest.org/blog/the-buzz/the-big-china-nuclear-threat-no-one->

[talking-about-20983](#) On Russia see Hans M. Kristensen & Robert S. Norris, 'Russian Nuclear Forces, 2017', *Bulletin of the Atomic Scientists*, 73:2, (2017), pp. 115-126, Adam Lowther & Michaela Dodge, 'The Threat Environment Demands Nuclear Weapons Modernization', *Air and Space Power Journal*, Fall 2017, pp. 4-17, Malcolm Davis, 'The R 28 SARMAT and the Future US Nuclear Triad', *Australian Strategic Policy Institute*, 16 February 2017,

<https://www.aspistrategist.org.au/rs-28-sarmat-future-us-nuclear-triad/> Dave Majumdar, 'Russia's Killer Mach 20 Avangard Hypersonic Weapon Is About to Enter Production', *The National Interest*, 13 March 2018, <http://nationalinterest.org/blog/the-buzz/russias-killer-mach-20-avangard-hypersonic-weapon-about-24884>

¹¹ Adam Mount, 'Trump's Troubling Nuclear Plan', *Foreign Affairs*, 2 February 2018, <https://www.foreignaffairs.com/articles/2018-02-02/trumps-troubling-nuclear-plan> Daryl G. Kimball, 'Trump's More Dangerous Nuclear Posture', *Arms Control Today*, January/February 2018,

<https://www.armscontrol.org/act/2018-01/focus/trumps-more-dangerous-nuclear-posture>, Lynn Ruston, 'The Trump Administration's Wrong Track Nuclear Policies', *Arms Control Today*, March 2018, <https://www.armscontrol.org/act/2018-03/features/trump-administrations-wrong-track-nuclear-policies>

¹² Office of the Secretary of Defense, *Nuclear Posture Review*, February 2018, available at <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF> p. 72.

¹³ Paul Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics*, (New York: St Martin's Griffin, 2013), p. 2.

¹⁴ Nuclear Posture Review, p. 48. This reading of the change in emphasis on nuclear weapons is also noted by Michael E. O'Hanlon, *Trump's Nuclear Plan Mostly Makes Sense*, *Brookings Institute*,

<https://www.brookings.edu/blog/order-from-chaos/2018/02/06/trumps-nuclear-plan-mostly-makes-sense/> 6th February 2018.

¹⁵ It should be noted that the US was already engaged upon a 30-year \$1.25 trillion modernization programme. See Miller, 'Nuclear Battleground', p. 6. The state of US C3 is discussed in James Acton, 'Command and Control in the Nuclear Posture Review: Right Problem, Wrong Solution', Policy Roundtable: The Trump Administration's Nuclear Posture Review, *Texas National Security Review*, 13 February 2018, https://tnsr.org/roundtable/policy-roundtable-trump-administrations-nuclear-posture-review/#_ftn108

¹⁶ Christopher Carbone, 'China Accuses US of Cold War Mentality over Nuclear Policy', *Fox News*, 4 February 2018, available at

<http://www.foxnews.com/world/2018/02/04/china-accuses-us-cold-war-mentality-over-nuclear-policy.html> and 'Russia Condemns US Nuclear Bomb Plans', *BBC News*, 3 February 2018, available at

<http://www.bbc.co.uk/news/world-europe-42931269>

¹⁷ Nuclear Posture Review, p. 9.

¹⁸ *Ibid.*, p. 12.

¹⁹ Mark Perry, 'Trump's Nuke Plan Raising Alarms Among Military Brass', *The American Conservative*, 2 February 2018,

<http://www.theamericanconservative.com/articles/trumps-new-nuke-nuclear->

[plan-npr-raising-alarms-among-military-brass-war/](#) In a 2017 report, for which Payne was the study director, warfighting is similarly not advocated. Rather, emphasis is given to deterrence, assurance for allies, and damage limitation. See Keith B. Payne, et al., *A New Nuclear Review for a New Age*, National Institute for Public Policy, April 2017, <http://www.nipp.org/wp-content/uploads/2017/06/A-New-Nuclear-Review-final.pdf>

²⁰ See, for example, Gower, *The Dangerous Illogic*, and Geoff Wilson & Will Saetren, 'Quite Possibly the Dumbest Military Concept Ever: A 'Limited' Nuclear War', *The National Interest*, <https://nationalinterest.org/blog/the-buzz/quite-possibly-the-dumbest-military-concept-ever-limited-16394?page=0%2C1> 27th May, 2016. In the latter, the authors starkly declare: "The notion that nuclear weapons can be used for anything "beyond deterrence" is reckless and dangerous thinking.'

²¹ As a general point, it is worth noting Francis J. Gavin's observation that nuclear strategy is rather elusive, and that accurately measuring the effects, let alone the success, of any particular strategy is almost impossible. Consequently, as Gavin concludes, we should approach the subject with humility and rigor. See Gavin, 'Introduction'. That being said, we should also take seriously Colin S. Gray's point that although nuclear strategy may be extremely challenging, strategy still has to function in the nuclear realm. See Colin S. Gray, *Modern Strategy* (Oxford: Oxford University Press, 1999). In which case, nuclear weapons, destructive though they may be, must still be harnessed for positive policy effect.

²² Bernard Brodie, *The Absolute Weapon*. (New York: Harcourt Brace, 1946) p. 76.

²³ Colin S. Gray, 'Nuclear Strategy: The Case for a Theory of Victory', *International Security*, 4:1, (1979), p. 62.

²⁴ Albert J. Wohlstetter, 'The Delicate Balance of Terror', *Foreign Affairs*. 37, (1959), pp. 211-234.

²⁵ Herman Kahn, *On Thermonuclear War*. (Princeton, NJ: Princeton University Press, 1960), Herman Kahn, *On Escalation: Metaphors and Scenarios*. (London: Pall Mall Press, 1965).

²⁶ Gray, 'Nuclear Strategy'.

²⁷ Colin S. Gray & Keith B. Payne, 'Victory is Possible'. *Foreign Policy*. 39, (1980), pp. 14-27.

²⁸ Carl von Clausewitz, *On War*. (Princeton, NJ: Princeton University Press, 1978), p. 87.

²⁹ Colin S. Gray, 'War-fighting for Deterrence'. *Journal of Strategic Studies*. 7:1, (1984), pp. 5-28.

³⁰ Clausewitz, *On War*, p. 128.

³¹ See, for example, Lawrence Freedman, *The Evolution of Nuclear Strategy*. (London: The Macmillan Press, 1989).

³² Jeffrey A. Larsen notes that attempts to develop flexible and controlled options, to enhance credibility and enable damage limitation, can be traced back to the Kennedy and Johnson administrations, reaching their zenith in the Schlesinger doctrine of the late 1970s. Jeffrey A. Larsen, 'Limited War and the Advent of Nuclear Weapons', in Jeffrey A. Larsen & Kerry M. Kartchner (eds), *On Limited Nuclear War in the 21st Century*, (Stanford: Stanford University Press, 2014), p. 13.

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- ³³ Lawrence Freedman, *Deterrence*. (Cambridge: Polity Press, 2004), pp. 40-42.
- ³⁴ J. W. Knopf, 'The Fourth Wave in Deterrence Research'. *Contemporary Security Policy*. 31:1, (2010), pp. 1-33.
- ³⁵ Keith B. Payne, 'Nuclear Deterrence in a New Age', *Comparative Strategy*, 37:1, (2018), pp. 1-8. See also Keith B. Payne & John S. Foster Jr., Chairman, 'Nuclear Force Adaptability for Deterrence and Assurance: A Prudent Alternative to Minimum Deterrence', *Comparative Strategy*, 34:3, 2015, pp. 247-309, in which the authors call for an adaptable nuclear force built upon flexibility and resilience.
- ³⁶ The US extends its deterrence guarantee over more than 30 countries. See Austin Long, 'Nuclear Strategy in an Era of Great Power Competition', Policy Roundtable: The Trump Administration's Nuclear Posture Review, *Texas National Security Review*, 13 February 2018, https://tnsr.org/roundtable/policy-roundtable-trump-administrations-nuclear-posture-review/#_ftn108
- ³⁷ J. Stone, 'Conventional Deterrence and the Challenge of Credibility'. *Contemporary Security Policy*. 33:1, (2012), pp. 108-123.
- ³⁸ Herman Kahn, *Thinking about the Unthinkable in the 1980s*, (New York: Simon and Schuster, 1984).
- ³⁹ Brodie's relationship with deterrence failure is complex and somewhat unsatisfactory. For a discussion on this, see Barry H. Steiner, *Bernard Brodie and the Foundations of American Nuclear Strategy*, (Lawrence: University of Kansas Press, 1991), pp. 241-244.
- ⁴⁰ Gray & Payne, 'Victory is Possible', p. 19.
- ⁴¹ Bernard Brodie, *Strategy in the Missile Age*, (Princeton: Princeton University Press, 1959), p. 278.
- ⁴² Keith B. Payne, *The Fallacies of Cold War Deterrence and a New Direction*. (Lexington, KY: University of Kentucky Press, 2001). B. Wolf, *When the Weak Attack the Strong: Failures of Deterrence*. (Santa Monica: RAND, 1991). L. Wieseltier, 'When Deterrence Fails'. *Foreign Affairs*. (Spring 1985).
- ⁴³ P. M. Morgan, *Deterrence: A Conceptual Analysis*. (London: Sage, 1977).
- ⁴⁴ Stone, 'Conventional Deterrence'.
- ⁴⁵ Blair, B. *The Logic of Accidental Nuclear War*. (Washington, DC: The Brookings Institution, 1993).
- ⁴⁶ For a discussion of the challenges to damage limitation in the contemporary security environment see Brendan Rittenhouse Green, Austin Long, Matthew Kroenig, Charles L. Glaser, and Steve Fetter, 'Correspondence: The Limits of Damage Limitation,' *International Security*, 42:2 (Summer 2017), pp. 193-207.
- ⁴⁷ This argument is made persuasively in Gray, 'War-fighting for Deterrence' and Gray, 'Nuclear Strategy', p. 84.
- ⁴⁸ Anthony Capaccio, 'Trump's Defense Plan Would Boost Navy, Missile Defense, Boeing Plane', *Bloomberg Politics*, 12 February 2018, <https://www.bloomberg.com/news/articles/2018-02-12/trump-s-defense-plan-boosts-navy-missile-defense-boeing-plane-jdkgs7wa>
- ⁴⁹ Michael Howard, *The Causes of War and Other Essays*. (Cambridge, MA: Harvard University Press, 1983), pp. 142-144.
- ⁵⁰ Jeffrey A. Larsen & Kerry M. Kartchner, 'Preface', in Jeffrey A. Larsen & Kerry M. Kartchner (eds), *On Limited Nuclear War in the 21st Century*, (Stanford: Stanford University Press, 2014), p. xx.

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- ⁵¹ Gray & Payne, 'Victory is Possible'.
- ⁵² This approach is outlined in Gray, 'Nuclear Strategy'.
- ⁵³ Lawrence Freedman, *The Evolution of Nuclear Strategy*.
- ⁵⁴ Colin S. Gray, *Theory of Strategy*, (Oxford: Oxford University Press, 2018) p. 123. In email conversations with the author, Gray argued that it is unlikely that strategists (political and military leadership) would be able to control nuclear war in a rational and limited manner.
- ⁵⁵ Kahn, *On Thermonuclear War*, pp. 96-116.
- ⁵⁶ R. R. Dipert, 'The Ethics of Cyberwarfare.' *Journal of Military Ethics*. 9:4, (2010), p. 394.
- ⁵⁷ Gray, 'War-fighting for Deterrence', p. 17.
- ⁵⁸ Clausewitz, *On War*, pp. 75-78.
- ⁵⁹ So wedded was the arms control community to the concept of stability, it restricted the development and deployment of warfighting weapons, including MIRVed launchers and BMD.
- ⁶⁰ Clausewitz, *On War*, p. 75.
- ⁶¹ Thomas C. Schelling, *The Strategy of Conflict*, (Cambridge: Harvard University, 1980), pp. 207-229.
- ⁶² Michael Novak, *Moral Clarity in the Nuclear Age*. (Nashville: Thomas Nelson, 1983), pp. 37 & 97.
- ⁶³ Nuclear Posture Review, p. 2.
- ⁶⁴ Payne, 'Nuclear Deterrence in a New Age'.
- ⁶⁵ *ibid*, p. 5. Great power competition is in addition to the broader, complex multipolar nuclear security environment. As Vipin Narang identifies, all of the different regional nuclear weapon states have made various and specific choices in how they operationalize their nuclear forces. Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Power and International Conflict*, (Princeton: Princeton University Press, 2014).
- ⁶⁶ Colin S. Gray, *Strategic Sense and Nuclear Weapons Today*, Information Series, National Institute for Public Policy, (December 2017), <http://www.nipp.org/2017/12/11/gray-colin-s-strategic-sense-and-nuclear-weapons-today/>
- ⁶⁷ See, for example, Keir A. Lieber and Daryl G. Press, 'The Rise of US Nuclear Primacy', *Foreign Affairs*, (March/April 2006), pp. 42-54.
- ⁶⁸ Joshua Stowell, 'The Problem with Russia's Nuclear Weapons Doctrine', *Global Security Review*, (April 24, 2018), <https://globalsecurityreview.com/nuclear-de-escalation-russias-deterrence-strategy/> It is important to note that the existence of escalate-to-deescalate has been questioned. Specifically, it has been noted that this concept does not appear in any Russian doctrine. This is discussed in Miller, 'Nuclear battleground', p. 5. See also Olga Olikier and Andrey Baklitskiy, 'The Nuclear Posture Review and Russian De-Escalation: A Dangerous Solution to a Nonexistent Problem,' *War on the Rocks*, February 20, 2018, <https://warontherocks.com/2018/02/nuclear-posture-review-russian-de-escalation-dangerous-solution-nonexistent-problem/> and Kristin Ven Bruusgaard, 'The Russian Rogue in the New Nuclear Posture Review, Policy Roundtable: The Trump Administration's Nuclear Posture Review, *Texas National Security Review*, 13 February 2018, https://tnsr.org/roundtable/policy-roundtable-trump-administrations-nuclear-posture-review/#_ftn108

⁶⁹ Nuclear Posture Review, p. 9. Steven Pifer, 'The Looming End of the INF Treaty', *Brookings*, 8 December 2017, <https://www.brookings.edu/blog/order-from-chaos/2017/12/08/the-looming-end-of-the-inf-treaty/>

⁷⁰ For an assessment of the nuclear security environment, see Keith B. Payne, et al., *A New Nuclear Review*, pp. 19-40.

⁷¹ Nuclear Posture Review, p. 13.

⁷² *Ibid.*, p. 24.

⁷³ Payne, 'Deterrence', p. 5, Gray, 'Strategic Sense and Nuclear Weapons Today', p. 3, Keir A. Lieber and Daryl G. Press, *Coercive Nuclear Campaigns in the 21st Century; Understanding Adversary Incentives and Options for Nuclear Escalation*, Center on Contemporary Conflict, (Monterey: Naval Postgraduate School, 2013) p. 6, and Keir A. Lieber and Daryl G. Press, 'The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence', *International Security*, 41:4 (Spring 2017), pp. 9-49.

⁷⁴ David J. Lonsdale, 'Obama's Second Term: Time for a New Discourse on Nuclear Strategy', *Comparative Strategy*, 32:5, (2013), p. 460. Trump also promises, with a caveat, not to threaten or use nuclear weapons against non-nuclear states in compliance with the NPT.

⁷⁵ Nuclear Posture Review, p. 20.

⁷⁶ *Ibid.*, p. 20.

⁷⁷ See Miller, 'Nuclear Battleground', p. 9-11, Fred Kaplan, 'Nuclear Posturing: Trump's Official Nuclear Policy isn't that Different from His Predecessors'. That's What Makes it so Scary', *Slate*, January 22 2018, <https://slate.com/news-and-politics/2018/01/trumps-official-nuclear-policy-reaffirms-the-terrifying-status-quo.html> and Austin Long, 'Nuclear Power in an Era of Great Power Competition', and James B. Steinberg, 'Expanding the Options and Lowering the Threshold for Nuclear Weapons', Policy Roundtable: The Trump Administration's Nuclear Posture Review, *Texas National Security Review*, 13 February 2018, https://tnsr.org/roundtable/policy-roundtable-trump-administrations-nuclear-posture-review/#_ftn108

⁷⁸ Classic works in this genre include Thomas Schelling and Morton Halperin, *Strategy and Arms Control* (New York: Twentieth Century Fund, 1961). For a discussion of the relationship between arms control and stability see Robert Jervis, 'Arms Control, Stability and Causes of War', *Political Science Quarterly*, 108/2 (1993), pp. 239-253 and Colin S. Gray, 'Strategic Stability Reconsidered', *Daedalus*, 109/4 (1980), pp. 135-154.

⁷⁹ This Clausewitzian argument is made most forcibly in Colin S. Gray, *House of Cards: Why Arms Control Must Fail*, (Ithaca: Cornell University Press, 1992).

⁸⁰ Brandon Valeriano and Ryan C. Maness, *Cyber War Versus Cyber Realities*, (Oxford: Oxford University Press, 2015), p. 9.

⁸¹ John S. Duffield, 'The Evolution of NATO's Strategy of Flexible Response: A Reinterpretation', *Security Studies*, 1:1 (1991), pp. 132-156. The operational reality of Flexible Response has been questioned in recent years. For example, see Francis J. Gavin, 'The Myth of Flexible Response: United States Strategy in the 1960s', *The International History Review*, 23:4 (Dec., 2001), pp. 847-875

⁸² Nuclear Posture Review, p. 21.

⁸³ *Ibid.*, p. 21.

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- ⁸⁴ Ibid., p. 22.
- ⁸⁵ Ibid., p. 23.
- ⁸⁶ Keith B. Payne has highlighted the growing importance of BMD for both damage limitation and deterrence by denial. See Payne, 'Nuclear Deterrence in a New Age', p. 6.
- ⁸⁷ Lieber and Press, 'The New Era of Counterforce'.
- ⁸⁸ Nuclear Posture Review, p. 21.
- ⁸⁹ Thomas C. Schelling, *Arms and Influence*, (New Haven: Yale University Press, 1966).
- ⁹⁰ Nuclear Posture Review, p. 16.
- ⁹¹ Clausewitz, *On War*, p. 90.
- ⁹² Lieber and Press, 'Coercive Nuclear Campaigns', p. 46.
- ⁹³ Nuclear Posture Review, p. 31.
- ⁹⁴ Ibid., p. 44.
- ⁹⁵ Ibid., pp. 44-51.
- ⁹⁶ A low-yield SLBM raises some concerns about unintended escalation. Specifically, Vipin Narang notes, not unreasonably, that a limited low-yield SLBM strike could be mistaken for a multiple warhead strategic strike. Vipin Narang, 'The Discrimination Problem: Why Putting Low-Yield Nuclear Weapons on Submarines is so Dangerous', Policy Roundtable: The Trump Administration's Nuclear Posture Review, *Texas National Security Review*, 13 February 2018, https://tnsr.org/roundtable/policy-roundtable-trump-administrations-nuclear-posture-review/#_ftn108 That being said, sea-based weapons do complicate the enemy's operational planning, and get around the potential vulnerability of air-launched systems. See Al Mauroni, 'Maintaining the Course – For the Most Part', Policy Roundtable: The Trump Administration's Nuclear Posture Review, *Texas National Security Review*, 13 February 2018, https://tnsr.org/roundtable/policy-roundtable-trump-administrations-nuclear-posture-review/#_ftn108
- ⁹⁷ Nuclear Posture Review, pp. 54-55.
- ⁹⁸ Payne, 'Deterrence', p. 3.
- ⁹⁹ Nuclear Posture Review, pp. 66.
- ¹⁰⁰ Ibid., pp. 65-68.
- ¹⁰¹ Ibid., p. 61.
- ¹⁰² Bracken, *The Second Nuclear Age*, p. 5.
- ¹⁰³ Nuclear Posture Review, p. 63.
- ¹⁰⁴ Williamson Murray, 'Does Military Culture Matter', *Orbis*, 43:1, (1999) pp. 27-42.
- ¹⁰⁵ For a discussion on the importance of victory, see Brian Bond, *The Pursuit of Victory: From Napoleon to Saddam Hussein*, (Oxford: Clarendon Press, 1998).
- ¹⁰⁶ Nuclear Posture Review, p. 23.