



# China's Evolving Nuclear Posture

## *Part I – Background and Benchmark*

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DRDC CORA TM 2011-148  
September 2011

**Defence R&D Canada**  
Centre for Operational Research and Analysis

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Sponsor: Strategic Joint Staff



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## **Defence R&D Canada – CORA**

Technical Memorandum

DRDC CORA TM 2011-148

September 2011

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This paper has been produced under Thrust 10a as part of the China/Asia ARP.

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## **Abstract**

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This paper is the first part of a larger study the goal of which is to determine the trajectory of China's nuclear weapons policy, strategy, capability and doctrine. It discusses the origins, scope and methodology of the proposed study, and provides an overview of the evolution of US nuclear strategy in order to establish a baseline for discussing why, and to what extent, China's nuclear evolution has differed from US nuclear thinking. In doing so it sets the stage for further papers examining the evolution of China's nuclear strategy; the status of its strategic nuclear forces; and the drivers of China's declaratory policy, nuclear strategy, and nuclear doctrine. The study will terminate with a comprehensive report discussing the apparent trajectory of Chinese nuclear strategy and capability and the implications thereof for Canada and its allies, and will suggest directions for future research.

## **Résumé**

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Ce document est le premier volet d'une étude plus vaste dont le but principal est de déterminer la trajectoire de la Chine en matière de politique des armes nucléaires, de la stratégie, la capacité et la doctrine. Il examine les origines, la portée et la méthodologie de l'étude proposée, et donne un aperçu de l'évolution de la stratégie nucléaire américaine afin d'établir une base pour discuter de pourquoi, et dans quelle mesure, l'évolution nucléaire de la Chine a été différent de la pensée américaine nucléaire. Ce faisant, il ouvre la voie à des documents supplémentaires examinant l'évolution de la stratégie nucléaire de la Chine; le statut de ses forces nucléaires stratégiques, et les pilotes de la politique déclaratoire de la Chine, la stratégie nucléaire, et la doctrine nucléaire. L'étude se terminera avec un rapport complet discuter de la trajectoire apparente de la stratégie nucléaire chinoise et des capacités et de leurs implications pour le Canada et ses alliés, et suggérer des orientations pour de futures recherches.

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## Executive summary

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### China's evolving nuclear posture: Part I - Background and Benchmark

D.A. Neill; DRDC CORA TM 2011-148; Defence R&D Canada – CORA;  
September 2011.

**Introduction:** This paper is the first part of a larger study derived from the broader investigation of China's emergence as a great power under the aegis of the Applied Research Programme (ARP) 10aa16 project established under Partner Group (0), entitled "The Rise of China: Strategic Assessment and Implications for Canadian Security". A preliminary strategic assessment of China published in May 2010 identified the scope and strategic intent of China's nuclear force modernization programme as topics requiring further investigation and analysis.

**Results:** This paper is the first part of a larger study, the principal purpose of which is to determine the trajectory of China's nuclear weapons policy, strategy, capability and doctrine. As a point of departure, it is helpful to examine how nuclear strategy is generally understood to have evolved since the first nuclear explosion in 1945. The purpose of doing so is three-fold: to establish a timeline for comparison; to introduce the concepts and ideas against which China's nuclear thinking, rightly or wrongly, tends to be compared and contrasted; and to delineate the Western, which is to say the American, baseline of nuclear strategy – a crucial consideration given that China's strategic development, especially over the past twenty years, has been undertaken largely with the US in mind. This paper, as the first part of a larger study, will discuss briefly how the nuclear ideation of the US evolved, both in advance of and later in response to Soviet nuclear thinking, in order to establish a baseline for discussing why and to what extent China's nuclear evolution has differed from US nuclear thinking.

**Significance and Future plans:** This paper sets the stage for an examination of the evolution of China's nuclear strategy, with the ultimate goal of divining the role of nuclear weapons in its national security strategy at present, and suggesting how that role is likely to change in the near future. The next study in this project will examine the evolution of China's nuclear strategy, with special reference to its sources in classical military thought as embraced and modified by the military theories derived from Marxist and Soviet strategic thinking, and the far more extensive conceptual and doctrinal modifications initiated by Mao Zedong and his successors. Subsequent studies will examine and assess the current status of China's strategic nuclear forces, and attempt to divine the factors and influences that constitute the fundamental drivers of China's nuclear declaratory policy, strategy and doctrine. All of these studies will be compiled into a final report that will assess the likely near-term trajectory of China's nuclear thought and its strategic forces; propose recommendations for Canada and its allies as they attempt to come to grips with the challenges and opportunities offered by China in the years ahead; and identify useful directions for further research into China's strategic intentions and capabilities.

# Sommaire

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## China's evolving nuclear posture: Part I - Background and Benchmark

D.A. Neill; DRDC CORA TM 2011-148; R & D pour la défense Canada – CARO;  
Septembre 2011.

**Introduction ou contexte:** Ce document est la première partie d'une vaste étude proviennent de l'enquête plus large sur l'émergence de la Chine comme une grande puissance sous l'égide du Programme de recherche appliquée (PRA) 10aa16 projet établi en vertu Partner Group (0), intitulé «La montée de la Chine: évaluation stratégique et implications pour la sécurité canadienne ». Une évaluation préliminaire stratégique de la Chine, publié en mai 2010 a identifié l'intention portée et stratégique de la Chine au programme de modernisation nucléaire comme la force des sujets nécessitant une enquête plus approfondie et l'analyse.

**Résultats:** Ce document est le premier volet d'une étude plus vaste, le but principal est de déterminer la trajectoire de la politique de la Chine des armes nucléaires, de la stratégie, la capacité et la doctrine. Comme point de départ, il est utile d'examiner comment la stratégie nucléaire est généralement compris ont évolué depuis la première explosion nucléaire en 1945. Le but de cette démarche est triple: établir un échancier pour la comparaison, d'introduire les concepts et les idées contre lesquelles la pensée nucléaires de la Chine, à tort ou à raison, tend à être comparés et contrastés, et pour délimiter les occidentaux, ce qui veut dire l'Américain, base de la stratégie nucléaire - une considération cruciale étant donné que le développement stratégique de la Chine, surtout au cours des vingt dernières années, a été entrepris en grande partie avec les Etats-Unis en tête. Ce document, comme la première partie d'une vaste étude, discutera brièvement comment l'idéation nucléaire de l'évolution des Etats-Unis, deux en avance sur et plus tard en réponse à la pensée nucléaire soviétique, en vue d'établir une base pour discuter pourquoi et dans quelle mesure l'évolution nucléaire de la Chine a été différent de la pensée américaine nucléaire.

**Importance et Perspectives:** Ce document ouvre la voie à un examen de l'évolution de la stratégie nucléaire de la Chine, avec le but ultime de deviner le rôle des armes nucléaires dans sa stratégie de sécurité nationale à l'heure actuelle, et en suggérant la manière dont ce rôle est susceptible de changer dans un proche avenir. La prochaine étude de ce projet permettra d'examiner l'évolution de la stratégie nucléaire de la Chine, avec une référence particulière à ses sources dans l'armée classique, pensé comme adopté et modifié par les théories militaires issus de la réflexion stratégique marxiste et soviétique, et le conceptuel bien plus étendue et des modifications doctrinales initiée par Mao Zedong et ses successeurs. Des études ultérieures examinera et évaluera l'état actuel de la Chine forces nucléaires stratégiques, et tenter de deviner les facteurs et les influences qui constituent les facteurs fondamentaux de la politique de la Chine déclaratoire nucléaire, la stratégie et la doctrine. Toutes ces études seront compilés dans un rapport final qui évaluera les chances à court terme la trajectoire de pensée nucléaires de la Chine et de ses forces stratégiques; proposer des recommandations pour le Canada et ses alliés comme ils tentent de venir à bout des défis et des opportunités offertes par la Chine dans les années à venir, et déterminer les orientations utiles pour d'autres recherches sur les intentions stratégiques de la Chine et ses capacités.

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# 1 Introduction

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*Many analysts have portrayed Chinese longer-range missile and nuclear forces as modernizing very slowly, but recent developments, including advances in technology, increasingly realistic training, and doctrinal evolution, underscore the necessity of updating the conventional wisdom on China's theatre and strategic missile capabilities...China is currently enhancing the striking power and survivability of its theatre and strategic missile forces and rethinking its nuclear doctrine in ways that may pose serious challenges for the United States.<sup>1</sup>*

It is an unavoidable consequence of the intimate and enduring security, economic and cultural linkages between Canada and the United States (US) that any development likely to pose a serious challenge to the latter is equally likely to pose a serious challenge to the former. For this reason alone, the status and potential trajectories of China's evolving nuclear posture are of interest to the Government of Canada, the Department of National Defence (DND), and the various Defence agencies and organizations charged with describing the manner in which the global security environment is likely to evolve in coming years.

This paper is the first part of a larger study the principal purpose of which is to determine whether China's nuclear weapons policy, strategy, capability and doctrine should be matters of concern to DND, as well as of interest.

## 1.1 Project genesis

This study is derived from the broader investigation of China's emergence as a great power under the aegis of the Applied Research Programme (ARP) project 10aa16 established under Partner Group (0), entitled *The Rise of China: Strategic Assessment and Implications for Canadian Security*. A preliminary strategic assessment of China published in May 2010 identified the scope and strategic intent of China's nuclear modernization programme as topics in need of further investigation and analysis. This study, of which this present paper is the first part, aims to do so.

## 1.2 Project concept and definitions

As the fifth state to achieve a nuclear weapons capability and the last to obtain a permanent seat on the UN Security Council (UNSC), the People's Republic of China (hereafter PRC or China; Taiwan will be referred to throughout this study either as such, or as the Republic of China, or ROC) offers a unique case study in the evolution of nuclear policy, strategy, capability and doctrine. Unlike the US and Union of Soviet Socialist Republics (USSR), China did not participate as such in either the bilateral arms race between the two superpowers, or in the deterrent relationship characterized by thousands of cross-targeted strategic nuclear weapons that constituted the strategic state of affairs commonly known as Mutual Assured Destruction, or

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<sup>1</sup> Michael S. Chase, Andrew S. Erickson and Christopher Yeaw, "Chinese Theatre and Strategic Missile Force Modernization and its Implications for the United States", *The Journal of Strategic Studies*, Vol. 32, No. 1 (February 2009), 67-68.

MAD. Unlike Britain and France, respectively the third and fourth nuclear powers, however, China also did not occupy a subordinate position in a formal defensive alliance with one of the superpowers; China's period of rapprochement vis-à-vis the Soviet Union was a matter of strategic convenience rather than fraternal sentiment between Marxists, and it endured only as long as Moscow remained willing to rattle its nuclear and conventional sabres to underwrite China's foreign policy objectives. By the time of Beijing's first nuclear detonation on 16 October 1964, such cooperation as remained between the two principal communist states was largely cosmetic; substantive cooperation between the USSR and the PRC was long over.

Finally, as a state with both an enormous land mass and an even more enormous population (and – as a consequence of Mao's 'People's War', the Chinese communist version of the Napoleonic *levée en masse* – and equally enormous conventional army), China has never in modern times faced a serious threat of invasion. Beijing's military rationale for joining the nuclear club has always been obscure and open to question, and thus its political rationale has more often been the principle subject of decryption and analysis – the more so because the regime's dogged opacity naturally encourages speculation.

While a good deal of attention has been paid to China's nuclear weapons, power and propulsion technologies, most of the strategic analysis surrounding China's nuclear thinking has focussed on the diverse but intimately interconnected domains of policy, strategy and doctrine. Each of these areas of study poses different challenges, and each, as a necessary first step, demands definition. Policy, for the purposes of this study, will be understood to be the stated intent of government – a concept that, where nuclear weapons are concerned, is usually articulated as declaratory policy, because our understanding of it is derived almost exclusively from declarations made by the government that is the subject of our investigation. Policy is generally easy to investigate and analyze, because governments make a point of telling us what their policy is, often in great and wearying floods of detail. The principal difficulties with analysis of policy are two-fold: first, the government in question may be lying, which is to say, its policy, which is by definition produced for public consumption, may not reflect its actual intent; and second, even if its policy *does* reflect the government's intent, that intent may be misunderstood by an analyst ignorant of the cultural and historical roots of policy, or its purpose as a mechanism for internal communication of a specific government message. Also, policy may change without warning, either as a result of a conscious decision by the government, or by a change in the nature of the government. As a guide to future behaviour, therefore, policy is deceptively mercurial.

Focussing less on policy and more on doctrine, however, does not solve or even simplify the problem. In its proper military context, doctrine as a rule describes how a military force *intends* to fight, and is primarily derived from its theory for conducting operations and its capabilities, which are in turn a function of its structure, manpower and equipment. How that force *does* fight, however, is always situation-dependent and is subject to innumerable external influences (among which the actions of the enemy are not always the most important), not the least of which is policy itself, i.e., constraints resulting from political decisions taken without reference to the dictates of doctrine or even the operational situation. Moreover, actual military doctrine – especially doctrine for sensitive military endeavours like covert surveillance, the activities of Special Forces personnel, and operations involving nuclear forces – tends to be highly classified. As a result, any doctrine that is *not* classified is – like policy – more likely to be either patently obvious, unimportant, intended for public consumption, or intended to deceive a potential adversary. Thus doctrine, too, is a fickle and imprecise guide to analysis.

The key frailty of studies aimed solely at policy and doctrine lies in the obscure, insubstantial and often transitory nature of the subject matter, and analysis thereof is vulnerable to governmental opacity, rapid and unpredictable change, prevarication, deception, and situational ad-hocery imposed upon a combatant *par la force des choses*. Moreover – and this is a point that will be investigated further in the course of this study – both policy and doctrine are highly subjective topics that owe far more to the historical and cultural contexts and antecedents of their imaginers than is generally acknowledged. Accordingly, while this study will examine both China’s nuclear weapons *policy* and its nuclear weapons *doctrine*, its principal focus – and, indeed, the point of reference against which conclusions relating to policy and doctrine will be checked for relevance and accuracy – will be China’s nuclear weapons *strategy*.

The benefits of focussing on strategy derive from its grounding in objective rather than subjective factors. This is especially true where nuclear strategy is concerned. What a nuclear weapon state (NWS) is or is not likely to do in time of crisis is determined to a large extent by what it *can* and *cannot* do – and these in turn derive largely from constraints imposed by the state of technology and shape and characteristics of the physical world. By examining what is known, what is probable, and what is possible in terms of a state’s technological capacity, force structure and posture, weapons systems, and military R&D in the context of its location and geography, its people and resources, its neighbours, and its past and present conduct, it is possible to define a variety of probable strategic trajectories for that state, and select therefrom those (or even the one) most likely to describe its preferred path towards its desired end-state. Furthermore, by comparing that path to policy and doctrine as articulated by the target state, it is possible to validate (or falsify) the inferred strategic trajectory – cognizant always, of course, of the fact that elements of policy and doctrine may be an exercise in deliberate deception designed to conceal the state’s strategic path, rather than serve as sign-posts along it.

### **1.3 Methodology and outline**

As noted above, China’s nuclear trajectory since its decision shortly after the establishment of the PRC to become a NWS has foundations in a wide variety of historical and cultural wellsprings, and differs considerably from the nuclear trajectories of the other Permanent Five members of the UNSC (and for that matter from the other NWS, both acknowledged and unacknowledged). As a point of departure, therefore, it is helpful to establish a benchmark for the evolution of nuclear strategy in order to examine how China’s version thereof is generally understood to have developed since Mao’s regime first decided to develop a domestic nuclear weapons capability. Development of such a benchmark is a useful exercise for three reasons: first, it will establish a timeline for comparison, an important consideration given that nuclear philosophizing tends to be largely reactive and occurs in the context of what other, more capable nuclear powers are doing; second, it will help to introduce the concepts and ideas against which China’s nuclear thinking, rightly or wrongly, tends to be compared; and third, it will establish the Western, which is to say the American, baseline of nuclear strategy – a crucial consideration given that China’s strategic development, especially over the past twenty years, evolved largely with the US occupying the role of most likely adversary.

This present paper, accordingly, as the first part of this study, will discuss briefly how the nuclear ideation of the US evolved, both in advance of and later in response to Soviet nuclear thinking, in order to establish a baseline for discussing how, to what extent, and perhaps most importantly

*why* China's nuclear evolution has differed from the US standard. After this scene-setting exercise, the remainder of this study will explore the foundations and constituent components of China's nuclear strategy. The next paper will focus on describing the origins and evolution of China's nuclear strategy. Beginning with an examination of the classical roots of Chinese military thought and how those roots were moulded by communist, Marxist and Maoist thought and experience, this second paper will examine China's on-again, off-again relationship with the concept of nuclear deterrence, and will address controversial and often contradictory aspects of Beijing's declaratory policy, including its policies on strategic arms control and disarmament, ballistic missile defence, counterforce targeting, and no-first-use of nuclear weapons.

From the foundation provided by the first and second papers, the third paper in this study will offer an objective overview of China's evolving strategic capability, a category of military power that comprises not only nuclear weapons but all of the offensive, defensive, command and control and asymmetric technologies necessary to engage in nuclear operations vis-à-vis China's key potential adversary – which, from China's perspective, is at present the United States. This will include an appreciation not only of China's weapon and delivery systems, but also of its capacity to manage nuclear operations; its pursuit of asymmetric force multipliers designed to exploit the inherent weaknesses of American nuclear and conventional weapons systems; its alleged preparations, both conceptual and practical, for nuclear war-fighting; and its opposition to, and embrace of, potentially destabilizing technologies like ballistic missile defence.

Having discussed China's strategic thinking and its strategic nuclear capabilities, the fourth paper will attempt to derive and articulate the drivers of China's nuclear strategy – the key factors that have influenced its evolution over the half-century since China's nuclear programme got underway, and that are likely to influence that programme, at least for the foreseeable future. Four categories of influence will be discussed: the advancement of China's strategic interests, including self-defence; the gradual (and quite deliberate) displacement of Marxist/Maoist ideology by an increasingly emphatic nationalism; the enduring irritant of Taiwan; and the US, in particular its role in the Western Pacific, and in Asia writ large.

These individual papers, once complete, will be compiled in a final report that will attempt to derive, from the conclusions reached therein, what seems to be the most probable strategic path for China's ongoing evolution as a nuclear weapon state. Having identified the key conceptual and technological waypoints in China's nuclear policy, strategy, capability and doctrine, the goal of this final report will be to articulate a best-fit trajectory that incorporates and explains to the greatest extent feasible all of the data observed to date. As with any attempt to project future events from a comprehensive analysis of historical trends, the aim is not to pretend to oracular precision with respect to the future shape of the international security environment (which, as with any complex interdependent nonlinear system, is by definition impossible), but rather to offer a rough projection of where, *ceteris paribus*, China's strategic ambitions are likely to take China's nuclear thought and capability over the near term; to identify areas for further research; and to suggest the sorts of sign-posts that present and future analysts ought to look for in order to determine whether China is still following the anticipated path, or whether – as has happened so often in the past – the political masters of the Middle Kingdom, seeing two roads diverge in a wood, have decided to follow the one less traveled by.

This study forms part of the broader investigation of China's re-emergence as a key great power under the aegis of the Applied Research Project (ARP) 10aa16, established in April 2009, entitled

*The Rise of China: Strategic Assessment and Implications for Canadian Security.* This project seeks to answer three basic questions: (1) Is the current trajectory of China's rise likely to continue? (2) What are the implications for the international order? (3) What are the implications for Canadian security? The research contained in this report has been limited largely to secondary source material due to institutional resource constraints. This paper, and all other papers prepared in this ARP, are constrained by the lack of access to primary source material (including Mandarin language sources and/or translation services), as well as a lack of opportunity for in-country research. Consequently, while every effort has been made to ensure that the present work meets acceptable scholarly standards, these constraints impose inescapable limitations that cannot be overcome without the provision of additional resources. Therefore, the results of this study should not be regarded as authoritative, but the best judgement of the author based upon his/her experience and the research material at hand.

## 2 Evolution of nuclear strategy: the US benchmark

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As noted in the introduction, it is important to set the stage for any discussion of China's nuclear evolution by first establishing a baseline for comparison. China, it has been argued, has followed a hitherto unique path to becoming a nuclear power, and if this is true, then it should be possible to identify key points where China's nuclear evolution has diverged from the evolutionary path followed by other NWS. To do so, it is crucial to have a standard against which purported similarities and differences may be assessed.

To this end, the present chapter will provide a rough chronological overview of the key waypoints in the evolution of America's nuclear capability, strategy and doctrine, and how these are generally understood to have evolved since the first nuclear explosion at Alamogordo, New Mexico, on 16 July 1945. The goal in crafting such an overview is three-fold. First, it will establish a timeline for comparison, an important consideration given that nuclear thought tends to evolve in response to actions by potential adversaries, and in the context of what other nuclear powers are doing. Second, it will introduce the strategic concepts, ideas and terminology against which China's nuclear thinking tends to be compared (and provide definitions the relevance and accuracy of which may be tested against the Chinese experience); and third, it will establish the Western (i.e., the American) evolutionary baseline of nuclear thought and nuclear strategy. This latter step is particularly important, as China's strategic development, for the past two decades in particular, has been largely premised on the understanding that the US will be China's key competitor for regional influence and dominance for the foreseeable future.

For ease of analysis, this chapter has been divided into four sections corresponding to the periods in which the US had a monopoly on nuclear weapons; the period in which the USSR had achieved essential equivalence in nuclear destructive power, despite the fact that the US retained an overwhelming advantage in gross capability; the period in which the USSR had achieved rough parity in destructive power; and the period commencing with the first Reagan Administration, when the US broke away from the Cold War mould, rupturing the "delicate balance of terror", as Albert Wohlstetter put it in a contemporary paper, that had dominated the US-Soviet nuclear balance for two generations, and paving the way for the eventual normalization of strategic relations between the two. This chronology will be used to craft a list of conceptual and technological waypoints to serve as the benchmark against which China's nuclear evolution will be compared and contrasted in subsequent papers in order to determine how, to what extent, and why Beijing's nuclear evolution has differed from Washington's.

### 2.1 Monopoly

*Nuclear weapons are cheaper per unit of firepower than conventional weapons.*<sup>2</sup>

When the US destroyed Hiroshima and Nagasaki in August 1945, one of the principal considerations in deciding whether to use the new weapon was a dispassionate cost-benefit analysis of competing options for ending the war. The use in combat of the atomic bomb was expected to deliver a number of strategic benefits. First, the sheer frightfulness of the weapon's

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<sup>2</sup> Morton H. Halperin, *Limited War in the Nuclear Age* (New York: John Wiley and Sons, 1963), 60.

destructive power was expected to have a salutary effect on a number of audiences, principally the Japanese government (which had hitherto appeared to be prepared to fight a defence in depth of the Japanese home islands). The demonstration was to a lesser extent aimed at the Soviet government – an important consideration given that the wartime alliance between the USSR and the Western Allies had already begun to fracture under the strains of victory.<sup>3</sup> It also demonstrated America's capacity to achieve through obliteration what Japan appeared unwilling to offer through capitulation – a speedy end to a war that had already gone on for three and a half years, and that America, after V-E Day, was going to have to fight largely alone. The impact of the use of the atomic bomb against the Japanese populace probably did not play a major role in the strategic calculus; the fire-bombing of Tokyo had already inflicted horrendous civilian casualties, while the butcher's bill of the victories at Iwo Jima and Okinawa provided a grim picture of what an invasion of Kyushu and Honshu would likely entail. The cost-benefit calculation involved in the bombings of Hiroshima and Nagasaki was predicated not merely upon pecuniary factors, but upon the military cost of prolonging the war, and the challenge of invading and occupying the islands through conventional means.<sup>4</sup>

It is important to recall that the men who had to figure out how to use the new weapons, especially (after the first Soviet detonation in 1949) in the unfamiliar context of a standoff between two superpowers and their unwieldy alliances, were proceeding from shared understanding based in wartime experience. Protestations that the effects of nuclear weapons were somehow novel clashed with that experience. Nuclear weapons were destructive, to be sure; but so were conventional arms. Dresden, Hamburg, Tokyo and Stalingrad could hardly have been more thoroughly devastated had they been subjected to nuclear attack. What the atomic bomb offered was a means of achieving the same degree of destruction with fewer aircraft, fewer crews, and fewer weapons – an important operational consideration, once one had managed to finesse the political implications of nuclear use. These were already leading to expressions of concern that Hiroshima and Nagasaki proved that nuclear weapons were in fact too frightful to be used in combat, which in turn led to early proposals to regulate nuclear power and outlaw nuclear weaponry. These were the principal arguments of the Baruch Plan that was proposed to the fledgling UN Atomic Energy Commission at its first meeting in June of 1946.<sup>5</sup>

From a political perspective, a key question was whether the horrific destructive power offered by nuclear weapons undermined their deterrent value by undermining the likelihood that they would, or even could, be used. America clearly had the ability to inflict horrific damage on an enemy, but lacked a comprehensive theory of employment for the new weapons. As Freedman notes in his review of the early years of US nuclear strategizing, the credibility of any deterrent depends on possession of both capacity to employ force, and the doctrine for doing so. “Once one openly admitted that the nuclear arsenal was unlikely ever to be activated,” he contends, “then the deterrent lost all credibility. If weapons had to be designed for operational use then some sort of

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<sup>3</sup> Stalin's reportedly blasé response to Truman when the latter informed the Soviet dictator that the United States possessed “a new weapon of unusual destructive force” may have been an act, or suspicious disbelief in the reports of his own agents in the US. Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon and Schuster, 1986), 690.

<sup>4</sup> See Rhodes, 690-697. Rhodes remarks somewhat acerbically that “Once Trinity proved that the atomic bomb worked, men discovered reasons to use it” (p. 696), and alleges that the bomb had to be used “to keep Groves and Stimson out of Leavenworth prison” (p. 697); however, he provides no evidence to falsify the reasons for nuclear use cited by Trumann, Stimson and the others involved in the decision-making process.

<sup>5</sup> Bernard Brodie, *Strategy in the Missile Age* (Princeton, N.J.: Princeton University Press, 1959), 150.

guidance was necessary, which required stating a preference for one form of nuclear employment against another.”<sup>6</sup> In other words, it was not sufficient merely to own the weapons; one had to articulate the circumstances likely to provoke Washington to order their employment.

The first doctrine to emerge was little more than an extension of conventional military thinking. The atomic bomb promised a means of offsetting the burgeoning imbalance in conventional forces between a Western alliance that, after the War, had demobilized with all possible speed, and a Soviet Union that appeared set to maintain as many as two hundred divisions under arms. Students of blitzkrieg had learned that attritional attacks against mechanized forces were costly in terms of men, munitions and equipment – but more importantly they were time-consuming, and time was expected to be at a premium when thousands of Soviet tanks were expected to be rattling across the North German Plain. In addition to the Hiroshima model, therefore – the promise of wholesale devastation in response to a provocation – nuclear weapons offered a means of rapidly disrupting and degrading the impact of a surprise conventional attack.

These two axes – deterring Soviet aggression by using nuclear weapons to threaten Soviet cities, and preparing to defeat a Soviet thrust through the use of nuclear weapons to blunt the Soviet advantage in men and armour – dominated the first decade of US nuclear thinking. In the brief period of US nuclear monopoly, the key concern was the need for the credibility of the threat to be underwritten by sufficient nuclear capability. Total numbers of US nuclear weapons remained relatively low throughout the 1940s, while their utility against massed troop and tank formations was questionable. In the four years between Trinity and the first Soviet nuclear test in 1949, the US only produced three bomb designs, of which only two were put into production – the Mark I (Little Boy), which was used against Hiroshima, of which only five were built; and the Mark III (Fat Man), which was dropped on Nagasaki, and of which only 120 were ever made.<sup>7</sup> Possession of only a small arsenal augured ill for a strategy that contemplated simultaneously using large numbers of weapons against conventional forces, and withholding large numbers of weapons to threaten enemy cities and other high-value targets as a deterrent measure.

The Korean War put America’s ‘conventionalized’ nuclear strategy to the test, with unsatisfactory results. The difficult terrain of the Korean highlands and the massed human wave attacks preferred by intervening Communist Chinese forces offered what might have been an ideal test case for the employment of nuclear weapons against masses of conventional troops. Given US air superiority and the poor state of equipment (especially the paucity of armour) of Chinese and North Korean forces, nuclear weapons would likely have significantly degraded the enemy’s war-fighting capacity. A discussion of the rationale underlying Truman’s decision to eschew nuclear use in Korea is beyond the scope of this paper, save to note the somewhat paradoxical result: that US forces had already embarked upon a path aimed at replacing soldiers and equipment with nuclear weapons (the ‘nuclear army’), and yet failed to employ that operational approach when it was most needed, and when US lives and the survival of a key ally were at stake.<sup>8</sup> One therefore

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<sup>6</sup> Lawrence Freedman, *The Evolution of Nuclear Strategy*, 3<sup>rd</sup> Ed. (New York, NY: Palgrave Macmillan, 2003), 375.

<sup>7</sup> [<http://nuclearweaponarchive.org/Usa/Weapons/Allbombs.html>]. Accessed 10 January 2011. The Mark II bomb was a theoretical plutonium-based design that was never put into production.

<sup>8</sup> Brodie, writing five years after the end of the war, attributes the non-use of nuclear weapons in Korea to a belief that the event was merely a Soviet feint or diversion; lack of experience among American commanders leading to the belief that there were no suitable targets for nuclear weapons; and the fact that

cannot help but wonder whether Washington would have willingly employed in defending Western Europe a strategy that it had refused to employ in defence of South Korea.<sup>9</sup>

Part of the reason for Truman's reluctance may have been the Soviet bomb. Moscow tested its first nuclear weapon on 29 August 1949. Subsequent developments were rapid; where the US had taken seven years to achieve a thermonuclear detonation, the Soviets did so in only four, exploding a 400 kiloton weapon in August of 1953, shortly after Eisenhower had replaced Truman. There followed thereafter a brief period characterized by competing strategic approaches. The US, by this time in possession of a significant nuclear arsenal (which by 1952 consisted of more than 500 Mark-4 bombs, a variant of the Mk III design with yields ranging from 1 to 31 kt), maintained, from its European bases, the capacity to strike the Soviet homeland with heavy bombers, as well as the ability to use nuclear weapons to blunt a conventional attack against Western Europe.<sup>10</sup>

The Soviets, still with a comparatively small arsenal, found themselves – quite unintentionally – in a condition of what has since been described as ‘minimal deterrence’, capable of striking only a few targets, which in a crisis would likely have been European cities. Regardless of what Moscow may have desired, this was the state of play, transitory though it may have been; and while perhaps unsatisfactory, it at least offered the Soviet leadership the consolation of possessing “a small but reliable and relatively invulnerable force having as its sole objective the deterrence of direct attack” without any (or any deliberate) concomitant counterforce capabilities – the acme, according to Herman Kahn, of a ‘minimalist’ deterrent posture.<sup>11</sup>

Meanwhile, the US continued to focus on the defence of Western Europe, leveraging nuclear weapons as the principal means of overcoming the West's deficit in men, tanks and guns that was the inevitable result of the inability or unwillingness of the Allies to raise the 96 divisions called for by the Lisbon Force Goals to offset the Soviet conventional threat.<sup>12</sup> America's military focus (and under Eisenhower's budgets, its military funding) devolved upon training for nuclear war, with the result that conventional forces waned in both importance and capability.<sup>13</sup> New weapons were developed, some of them verging on the bizarre; one example, the M-388 Davy Crockett recoilless tactical rocket, which launched a Mk-54 0.01 kt nuclear warhead to a maximum range of a few kilometres, was conceived during this period, although manufacture did not begin until 1961. Similar developments proceeded apace, and by the end of 1956, the US Army had activated its first division capable of fighting with nuclear weapons.<sup>14</sup>

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America's allies in the conflict, especially the British, were “strongly and emotionally opposed” to the use of nuclear weapons. Brodie, 319.

<sup>9</sup> The obvious answer to this question is that different Presidents make different decisions, and that had a different man been in the White House in November of 1950, the outcome of the Chinese counterattack, and of the war writ large, might have been very different. Regrettably, however, this is another topic that is beyond the scope of the present paper.

<sup>10</sup> US bomb and warhead labelling conventions shifted from Roman to Latin numerals between the Mk-III and Mk-4 aircraft bombs.

<sup>11</sup> Herman Kahn, *Thinking About the Unthinkable* (New York: Horizon Press, 1962), 238.

<sup>12</sup> Robert S. McNamara, *Blundering into Disaster* (New York: Pantheon Books, 1986), 23-25.

<sup>13</sup> A.J. Bacevich, *The Pentomic Era: The U.S. Army Between Korea and Vietnam* (Washington, D.C.: National Defense University Press, 1986), 6-9.

<sup>14</sup> Halperin, *Limited War*, 61.

The decline in conventional forces across the West engendered a bidirectional tension in the relationship between the old (conventional) and new (nuclear) armies. While some scholars have interpreted the introduction of nuclear weapons as the motive force driving the de-emphasis on conventional capabilities, historical trends, as I have argued above, suggest that the arrow of causation pointed in the other direction. As always in ‘chicken-and-egg’ relationships, determining which came first is the key analytical challenge. The post-War history of Europe and the evolution of NATO after signature of the North Atlantic Treaty in 1949 demonstrate that economic prostration came first, and that unwillingness to divert funds from post-War recovery efforts to maintain adequate standing field forces for the defence of Europe was an inevitable consequence thereof. In the US and NATO, in other words, the conventional force drawdown was not enabled by the introduction of nuclear weapons; nuclear weapons were deemed the only cost-effective means of offsetting Soviet conventional superiority.

The consequence of this calculus was a new need to define the break-point in a crisis where a Soviet provocation would be deemed sufficiently serious to justify a nuclear rather than a merely conventional riposte. This required NATO – and from the nuclear perspective, Washington – to contemplate adopting a concept whereby Soviet provocations would be met with a “graduated response”<sup>15</sup> consisting of conventional and nuclear forces appropriate to the situation. It is an historical irony that precisely the same strategic thought process took place in the Russian Federation after the collapse of the USSR, when accelerating conventional military incapacity due to straitened economic circumstances forced the Russian government to explicitly increase emphasis on nuclear weapons by way of compensating for its growing inability to field credible and effective conventional forces.

It quickly became apparent that one of the key problems with a graduated response consisting of separate thresholds for conventional and nuclear employment was determining where, precisely, the strategic threshold ought to be. The debate exposed two schools of thought regarding nuclear weapons: one body of strategic thinkers considered them to be nothing more than another step along the continuum that already stretched from small to very large conventional explosives; another considered them to be profoundly different. Korea settled the debate empirically; if nuclear weapons had been no different from conventional bombs, then there would have been no impediment to using them to blunt the Chinese advance that had forced Allied troops back to Pusan. But they were not. Truman, it seems, had considered the use of nuclear weapons to be an inherently political rather than simply a military act,<sup>16</sup> a fact that was not lost on subsequent generations of strategic thinkers on both sides of the Iron Curtain. Nuclear weapons were different.

There were other dissimilarities to consider. Morton Halperin, writing in the decade after Korea when the ‘Pentomic Army’<sup>17</sup> was gearing up for nuclear conflict, pondered the problem of war limitation under nuclear conditions, cautioning restraint, and arguing that the use even of small nuclear weapons would alter a battlefield and the course of a ground war “in ways that are by no means easy to predict.”<sup>18</sup> While a nuclear strike against formed bodies of troops would be

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<sup>15</sup> Bernard Brodie, *War and Politics* (New York: MacMillan Publishing Co., 1973), 404.

<sup>16</sup> Halperin, *Limited War*, 58.

<sup>17</sup> The term “Pentomic”, meaning “of five parts”, refers to the reorganization strategy for the US Army in the 1950s into divisions consisting of five battle groups, in response to the perceived threat of battlefield nuclear use. The Pentomic reorganization concept was abandoned and replaced in the early 1960s.

<sup>18</sup> Halperin, *Limited War*, 59.

expected to cause horrific damage, soldiers – protected by training, adequate equipment, improvised shelters and armoured vehicles – would have a better chance of survival than unprotected civilians. Even a small number of nuclear strikes executed in densely populated areas of Europe could be expected to cause catastrophic destruction, with ancillary impacts felt far away, long after the strikes themselves. The dangers of so-called tactical nuclear war, furthermore, increased immensely once both parties to a conflict possessed nuclear weapons, while the benefits of nuclear use decreased because the tactical advantages they offered would be offset.<sup>19</sup>

Beyond purely tactical considerations, however, lay the fact that nuclear weapons, as noted above, had come to be perceived – by politicians and decision-makers, if not necessarily by all military planners – as fundamentally different. Nuclear use was a political, not a military decision, in part because escalating to the nuclear level was deemed a political act, and in part because the scale of destruction likely to result from nuclear use could have adverse political consequences. Tactical nuclear warfare, for example, posed a relatively new threat to victorious powers: the possibility that an adversary perceived to be an underdog might be able to turn a US nuclear attack that resulted in defeat on the battlefield into a victory in the political arena.<sup>20</sup> In the immediate post-War period and after Korea, when Soviet expansion and influence posed genuine threats to the West's political stability, and when Moscow was making a concerted (and successful) effort to infiltrate Western political establishments, efforts to blunt America's nuclear near-monopoly by diplomatic and political means were a significant concern. It was not unreasonable to worry that nuclear use other than in the most dire of crises could, by a clever opponent, be turned around to bite the user.

The constraints were beginning to accumulate. Tactical nuclear weapons could not be effectively employed against another state possessing them, because their battlefield advantages would be cancelled out; they were difficult to employ in a highly urbanized environment (like the central European front) without risking catastrophic collateral damage; and they could not be employed against a less developed state, for fear of Washington being painted as a bloodthirsty oppressor. Given that the principal threats facing the West at the time (a) was direct aggression by the Soviet Union, which possessed nuclear weapons; (b) was likely to result in warfare in Western Europe, and (c) was likely to involve the further expansion of pro-Soviet communist insurgency throughout decolonizing states in Asia, Africa and Latin America; the entire concept of tactical nuclear war fighting appeared to have been politically hamstrung before the new nuclear army had been fielded.

These strategic considerations did not derail US preparations for that new nuclear army; conventional force trends during the Pentomic era proceeded in a downward direction anyway, and if there had not already been a genuine need for some sort of compensatory nuclear threat to back up the West's conventional strength, there now was. Exacerbated by Europe's ongoing economic prostration and slow recovery, the West's ability to field conventional forces continued to decline, and by the end of the Korean War, NATO had reduced its force goals to only 34

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<sup>19</sup> Halperin, *Limited War*, 65-66.

<sup>20</sup> Thornton Read, "Limited Strategic War and Tactical Nuclear War", in Klaus Knorr and Thornton Read, eds., *Limited Strategic War* (New York: Frederick A. Praeger, 1962), 39.

divisions. US troop strength continued to wane, not reaching its post-Korea nadir until 1961.<sup>21</sup> This was too small a force to be compensated for by any degree of nuclear augmentation, and as a result, the Alliance in 1956 adopted a new nuclear doctrine based on responding to a Soviet attack through a crushing nuclear riposte – a concept for the employment of nuclear forces that entered the lexicon under the ominous moniker of Massive Retaliation (MR).

The term came into vogue following a 1954 speech by Secretary of State John Foster Dulles to the Council on Foreign Relations, in which, in reference to the need to remain vigilant against communist aggression in the post-Korea era, he argued that “Local defenses must be reinforced by the further deterrent of massive retaliatory power.”<sup>22</sup> Massive retaliation contemplated responding to a serious Soviet provocation by an all-out nuclear strike against a wide range of high-value targets throughout the USSR. This was not, as Mao would characterize it, either a “paper tiger” or an empty threat. By the time the doctrine had been officially adopted, the US nuclear arsenal consisted of thousands of weapons, most of them air-delivered and ranging in yield from a few kilotons to enormously destructive two- and three-stage thermonuclear devices like the Mk-14 and TX-16 bombs, with yields in the 5-9 megaton range; and the Mk-17 and Mk-24 thermonuclear bombs, with yields in the 10-15 megaton range. An all-out attack using such weapons would have utterly devastated the majority of the USSR’s population centres and industrial capacity (which, per Soviet economic planning practice, was far more geographically concentrated than was the case in Western countries), killing tens of millions and resulting in unimaginable destruction.

The Soviet capacity to respond to such an attack was far more limited than is historically recognized. Massive retaliation, while resolving some of the internal contradictions introduced by the nuclear army, raised an entirely new set of conundrums. First, it was an entirely offensive doctrine – a quality, as Stephen Cimbala has pointed out, unique to the “first nuclear age”, when nuclear monopoly was a prerequisite for the type of strategy embodied in the MR doctrine, and deterrence “was based solely on the credible threat of second strike retaliation.”<sup>23</sup> The problem for the Soviets was that when the US and NATO embraced MR, Moscow’s ability to threaten Western targets with similar degrees of destruction was still rather limited. The credible threat of a large-scale survivable second strike capability was still a few years off. As will be seen later on, though, that was less important than those who formulated the strategy realized.

MR also highlighted the problem of defence. While the majority of the weapons were to be delivered by air-breathing bombers, as was the case throughout the 1950s and most of the 1960s, it still made some sense to talk about defending against a nuclear attack. Whole fleets of air defence fighters, expansive radar nets encircling national borders and weighted heavily along likely approach routes, long-range nuclear-armed surface-to-air missiles, and even networks of spies tasked with reporting preparatory activities at known strategic airfields were all intended to maximize the possibility of destroying attacking aircraft before they could deliver their payloads. The Soviet national air defence forces, *PVO Strany*, were reorganized for strategic air defence and received their first Marshal in 1954, while NORAD was founded for the air defence of the

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<sup>21</sup> US forces 1950-2005 dataset, [[http://s3.amazonaws.com/thf\\_media/2004/pdf/troopMarch2005.xls](http://s3.amazonaws.com/thf_media/2004/pdf/troopMarch2005.xls)]. Accessed 11 January 2011.

<sup>22</sup> Brodie, *Strategy in the Missile Age*, 248.

<sup>23</sup> Stephen J. Cimbala, “Nuclear Arms in Asia: Theory and Policy Issues”, *Comparative Strategy*, Vol. 26 (2007), 129.

North American continent in 1958. Even the most comprehensive and effective air defence effort, however, could not guarantee complete protection; and given the destructive potential of nuclear weapons, even a single missed engagement could have devastating consequences. Moreover, once the principal delivery method for strategic nuclear weapons had shifted from bombers to ballistic missiles, the concept of mounting a practical, reliable or comprehensive defence against nuclear weapons disappeared from the lexicon for a generation. Nuclear strategy, and the concept of mutual deterrence, came to be predicated entirely upon the capacity for offensive warfare.

MR also reintroduced the problem of credibility. Strategic theorists recognized early on that this was a far greater concern in the nuclear than in the conventional field of military endeavour. Deterrence, put briefly, is based on a threat, and a threat, in order to be credible, consists of both the capacity and the political will to do harm. Nuclear deterrence, by extension, was therefore a function both of the possession of nuclear weapons, and the willingness to use them. In classical military history, the bulk of strategic analysis had traditionally consisted of comparisons of capability, or correlation of forces, to use the Soviet term; political will, Clausewitz's most famous admonition notwithstanding, had only rarely been considered the determining factor, as it was presumed that a state under attack would not hesitate to use all means available to it in its own defence. In the nuclear era, however – particularly once MR had been adopted as a strategy by the US and NATO – the role of political will in the strategic calculus came once again to the fore. Freeman Dyson, writing decades after MR had been superseded, put the problem succinctly, arguing that the “central paradox” of nuclear deterrence – especially of such doctrines as MR and its inevitable offspring, assured destruction – was that the threat “depends for its credibility upon our not worrying about the consequences” of all-out nuclear war.<sup>24</sup>

The problem was that the West in general, and America in particular, had already demonstrated that they *were* worried about the consequences. Massive Retaliation required a certain suspension of disbelief; a willingness to consider nuclear weapons as nothing more than an extension of conventional arms – a continuation of conventional warfare by other means, to bowdlerize the Clausewitzian adage. Truman's eschewal of nuclear use in Korea, however, had already put paid to that notion, while Europe's collective discomfort with the US doctrine of tactical nuclear warfare (exemplified by gallows humour jests that defined a tactical nuclear weapon as one that explodes in Germany) did much to undermine the consensus on using nuclear arms to blunt a Soviet conventional thrust. There was no question that the West, through the US (and, after 1952, Great Britain) had the capacity to inflict incalculable damage on the USSR; the question, and it was a legitimate one, was whether the political will to do so could be created and sustained.<sup>25</sup>

The nature of the potential array of targets also posed concerns, at least in theory; some analysts expressed worry over about whether targeting population and industrial centres would be effective against a totalitarian state that already seemed sublimely indifferent to the well-being of its citizens. Strategists pondered whether threatening regime targets might not prove more effective. While this subject was to grow in importance as US capabilities improved in later years,<sup>26</sup> during the MR era it was a distinction that was largely without a difference; the Soviet regime was already on the list, both in terms of general and specific targeting. Subterranean

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<sup>24</sup> Freeman Dyson, *Weapons and Hope* (New York: Harper and Row, 1984), 247.

<sup>25</sup> This, incidentally, is a problem that has bedevilled NATO since 1949.

<sup>26</sup> Colin S. Gray, “Targeting Problems for Central War”, in Desmond Ball and Jeffery Richelson, eds., *Strategic Nuclear Targeting* (Ithaca, NY: Cornell University Press, 1986), 191.

command and control complexes and bunkers designed to protect the Politburo and its members were already on the target lists; and it would have been grimly humorous to argue that one was not targeting the Kremlin when assigning several multi-megaton bombs against aim-points within Moscow's city limits.

Finally, nuclear warfare in general, and the massive retaliation doctrine in particular, exposed the thorny problem of war termination. Conventional warfare tends to have natural stopping points ranging from negotiated settlements and surrenders to battlefield defeats and complete national economic prostration (or revolution). Nuclear warfare lacked this element.<sup>27</sup> Massive retaliation restored it temporarily, at least in the sense that a single, overwhelming nuclear attack would be expected to put paid to the USSR, completely eliminating its war-making capability, if not the bulk of Soviet society and government. That philosophy, however, lasted only as long as did the assurance that the destruction would be one-sided and would almost certainly result in the end of hostilities. Once it was acknowledged that a massive retaliatory strike might not be the final blow, it meant that negotiation would be necessary, which meant that there had to be somebody left to negotiate with.

Massive retaliation as a doctrine, simply put, might have been pragmatic (if not necessarily humane) while the US possessed a substantial monopoly on the use of nuclear force. Once the USSR had achieved the capacity to inflict substantial nuclear harm on the US, however, MR as a strategy no longer made any sense.

## 2.2 Essential equivalence

'Essential equivalence' is an elastic concept. At its foundation is the notion that there is an intangible line separating a condition of substantive monopoly on the use of nuclear force from a condition where two nuclear powers are capable of doing each other significant harm. The key consideration is what qualifies as 'significant' harm, and this is of course highly subjective. Determining the location of the dividing line, therefore, is virtually impossible ante-facto – but by the same token, determining its location after the fact is a relatively straightforward affair.

If, as has been argued, the decision by the US to back away from the doctrine of Massive Retaliation and embrace the new, NATO-oriented doctrine of Flexible Response was motivated in large part by the fact that the USSR had achieved the capacity to inflict significant damage on the US irrespective of any US strike on the USSR, pre-emptive or otherwise, then the dividing line may be inferred from the point at which Flexible Response began to be seriously discussed. If a date can be put to this change, it was in May of 1962, when Kennedy's Secretary of Defense, Robert McNamara, took the occasion of a NATO meeting in Athens to announce to his Alliance counterparts that the US would henceforth adopt a modified retaliatory doctrine based on selecting targets other than cities in the USSR<sup>28</sup> – the first iteration of a counterforce policy.

From an empirical standpoint, therefore, it is reasonable to posit that, from a US perspective at least, the USSR was understood to have achieved 'essential equivalence' at some point during the

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<sup>27</sup> Ian Clark, *Limited Nuclear War: Political Theory and War Conventions* (Princeton, NJ: Princeton University Press, 1982), 217.

<sup>28</sup> Desmond Ball, "Development of the SIOP 1960-1983", in Desmond Ball and Jeffery Richelson, eds., *Strategic Nuclear Targeting* (Ithaca, NY: Cornell University Press, 1986), 192.

period immediately preceding McNamara’s announcement. Figure 1 tracks the growth and decline of the US and Soviet nuclear arsenals in general, and their strategic arsenals in particular, over the course of the six decades that followed the Second World War. A comparison of the two – especially of the relative sizes of the US and Soviet strategic arsenals, which would have constituted their respective capacity to inflict harm on each other – reveals that ‘essential’ equivalence in no way implies *substantive* equivalence.

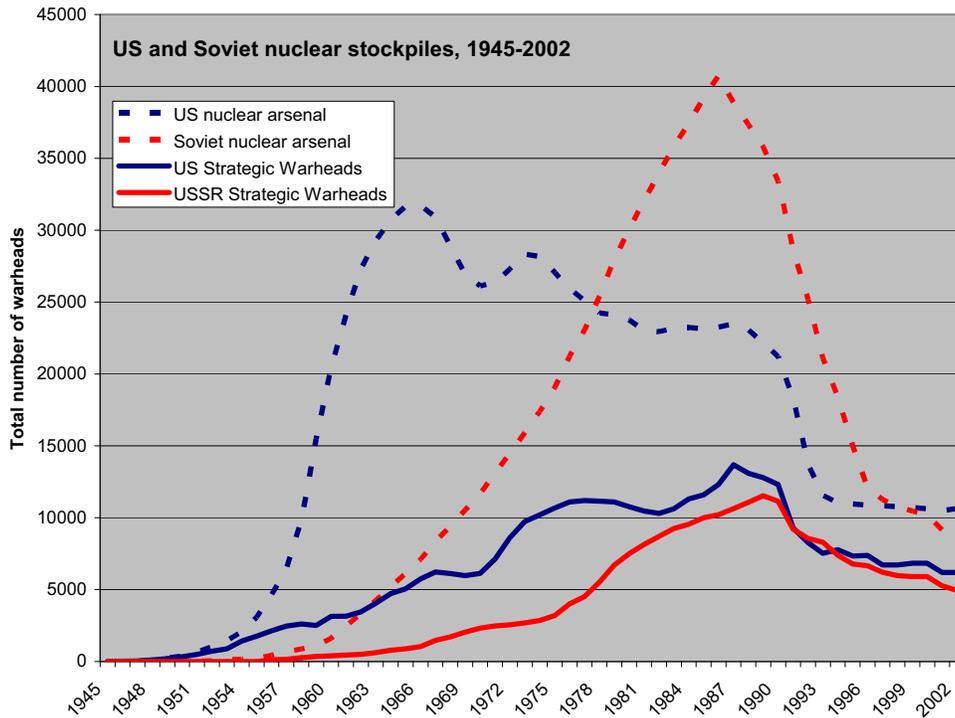


Figure 1 – US and Soviet nuclear force balance, 1945-2002<sup>29</sup>

An examination of the five years preceding and following McNamara’s announcement makes this point with some clarity. At the time the announcement was formulated and made, the US enjoyed between a seven- and eight-fold lead over the USSR in deliverable strategic warheads. Even so stark an advantage was obviously deemed inadequate to enable Washington (and by extension, NATO Headquarters) to sustain a credible threat of massive retaliation in response to a Soviet provocation. If the US lead was not relevant, then by elimination the USSR’s aggregate capability to damage the US must have been the determining factor – and that was, according to the data (see table 1, below), the ability to deliver somewhere between 380 and 500 strategic warheads to US and European targets (less of course the number likely to be lost to US defensive efforts). This enables us to put a rough qualitative figure to the shift in doctrine – at least in the contemporary context of a Democrat administration in the US in the early 1960s.

<sup>29</sup> Data from NRDC website, [<http://www.nrdc.org/nuclear/nudb/datab2.asp>], [<http://www.nrdc.org/nuclear/nudb/datab1.asp>], and [<http://www.nrdc.org/nuclear/nudb/datab19.asp>]. Accessed 11 January 2011.

Table 1 – US and Soviet total and strategic forces, 1957-1967<sup>30</sup>

Year Ending	TOTAL NUCLEAR WARHEADS		STRATEGIC NUCLEAR WARHEADS		US Lead
	US	USSR	US	USSR	
1957	6,444	660	2,460	152	16.2 to 1
1958	9,822	869	2,610	256	10.2 to 1
1959	15,468	1,060	2,496	343	7.3 to 1
1960	20,434	1,605	3,127	386	8.1 to 1
1961	24,111	2,471	3,153	449	7.0 to 1
1962	27,297	3,322	3,451	497	6.9 to 1
1963	29,249	4,238	4,050	608	6.7 to 1
1964	30,751	5,221	4,718	782	6.0 to 1
1965	31,642	6,129	5,055	885	5.7 to 1
1966	31,700	7,089	5,744	1,037	5.5 to 1
1967	30,893	8,339	6,226	1,466	4.2 to 1

NATO took five years to adopt Flexible Response as the Alliance’s nuclear doctrine, by which time Kennedy was dead, Johnston had taken his place, the US advantage in strategic nuclear weapons had fallen to 4.2 to 1, and the USSR was capable of delivering more than a thousand nuclear warheads to US targets. Washington’s strategic focus was beginning to shift towards the war in Vietnam, the execution of which very much reflected America’s evolving nuclear doctrine. Where the Pentomic era doctrine had envisioned the use of nuclear weapons in any but the very smallest of wars, Kennedy’s legacy had significantly raised the threshold for nuclear use,<sup>31</sup> resulting in the US conducting an exclusively conventional war that eventually ended up occupying, at its height, more than half a million troops.

This change in doctrine was reflected in another Kennedy innovation, the Single Integrated Operational Plan for Nuclear War, or SIOP. Early iterations produced under Kennedy implemented the ‘City Avoidance’ doctrine and embraced a policy of preferentially targeting the USSR’s war-making capacity, plotting numerous and extensive strikes against Soviet military, industrial and command-and-control facilities, an aggregate target set compiled under the overall heading of counterforce. While this approach made a certain amount of political sense, it also responded to competing pressures from the differing branches of the US armed services. Massive retaliation had had the virtues both of simplicity and parsimony; a few dozen multi-megaton bombs would have been sufficient to obliterate every city of any size in the USSR, along with most of the Soviet industrial capacity. While comparative few weapons were necessary to destroy a large proportion of Soviet society and its population, however, the SIOP posited an enormous array of counterforce targets, in turn necessitating a corresponding increase in the number of strategic warheads and delivery systems.<sup>32</sup> The concomitant increase in both warhead stockpiles

<sup>30</sup> Data from NRDC website, [<http://www.nrdc.org/nuclear/nudb/datab2.asp>], [<http://www.nrdc.org/nuclear/nudb/datab1.asp>], and [<http://www.nrdc.org/nuclear/nudb/datab19.asp>]. Accessed 11 January 2011.

<sup>31</sup> Halperin, *Limited War*, 63.

<sup>32</sup> Stephen J. Cimbala, *Strategic Impasse: Offense, Defense, and Deterrence Theory and Practice* (New York: Greenwood Press, 1989), 65.

and numbers of delivery vehicles, and the concurrent expansion into new delivery regimes (the Polaris A-1 submarine-launched ballistic missile (SLBM) entered service in 1961, and eventually, in its later A-2, A-3 and B-3 or Poseidon incarnations, constituted the bulk of the US second-strike capability) were, perhaps not surprisingly, embraced by the US military.

SIOP-62, the first iteration of the base war plan, assigned 3,253 weapons (more than three-quarters of all strategic weapons available at the time) to a total 1,860 targets (fewer than half of the 4,100 contained in the National Strategic Target Database, or NSTDB, at the time). Only 210, or roughly 11percent, of the targets selected for attack were classified as ‘urban-industrial’; the remainder were counterforce targets. The targeting strategy considered all communist countries as a single bloc, and thus some of the targets were located in China and the Eastern European portion of the Soviet sphere of influence. While the numbers of weapons and targets climbed steadily over subsequent years (especially in the early 1970s, when counterforce targeting was once again embraced), the strategic concept embodied in the SIOP never changed: the enemy’s nuclear forces would be struck first, followed by strikes on invading conventional forces, and war-supporting industrial targets as a tertiary priority.<sup>33</sup> Changes in declaratory policy over subsequent years do not appear to have substantively altered the content or thrust of the war plan.

## 2.3 Parity

As figure 1 demonstrates, the aggregate size of the US nuclear stockpile reflected the evolution of US nuclear strategy throughout the 1960s and early 1970s. As the Pentomic Era waned and was replaced by City-avoidance, counterforce targeting and the SIOP, the total number of warheads in the US stockpile declined. The decline, however, reflected only the withdrawal and dismantling of the immense numbers of tactical nuclear weapons that had been designed and built to support the nuclear army; throughout the same period, the number of strategic warheads continued to climb steadily, until the US and USSR had, by some point in the late 1970s, achieved a state of approximate numerical equivalence. This condition is generally referred to as ‘parity’.

A brief plateau and decline in stockpiles at the end of the 1960s was followed by a rapid increase throughout the 1970s, as multiple independently-targetable re-entry vehicle (MIRV) technology was incorporated into the Minuteman III intercontinental ballistic missile (ICBM) (which carried three re-entry vehicles, and became operational in 1970) and the Poseidon C-3 SLBM (which could carry up to 14 warheads, but was generally deployed with 10, and which entered service in 1971). From the mid-1960s onwards, the US Navy and Air Force had divided the strategic roles between them. The Navy’s fleet ballistic missile submarines (SSBNs), hiding at sea with hundreds of missiles of limited accuracy, carrying thousands of warheads, served as the nation’s invulnerable second-strike deterrent force; while the Air Force, with hundreds of highly accurate ICBMs and fleet of bombers armed not only with gravity bombs but also with Short-Range Attack Missiles (SRAMs), was largely responsible for the counterforce missions that had, once again, come into vogue.

The notion that a purely counterforce approach to war-fighting was even possible was roundly criticized on numerous grounds. Some of the complaints had merit. SIOP-62, for example, listed dozens of military, command and war-industry targets within Moscow’s city limits, and the

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<sup>33</sup> Cimbala, *Strategic Impasse*, 66.

distinction between being subjected to a single high-yield ‘counter-value’ strike, or dozens of low-yield (i.e., tens or hundreds of kilotons) counterforce strikes, would in all probability have been lost on the city’s residents and their political masters. In a centrally planned economy with poor roads and low personal automobile ownership, industry tends to be close to where the people live, and it is impossible to strike one without striking the other. The problem, in a nutshell, was that any use of a nuclear weapon was understood to carry a high political cost regardless of the rationale underlying the attack. As Halperin noted, “[a] propaganda campaign stressing the ‘conventional’ nature” of lower yield weapons “might soften the blow but could not eliminate it.”<sup>34</sup>

The same scenario illustrates the suspension of disbelief that was required in order to deem the impact and outcome of a planned counterforce campaign different in any significant degree from the impact and outcome of a planned counter-value campaign. The destructive effect of individual nuclear weapons scales proportionally in conformity with the inverse cube of yield, and thus numerous, small explosions spaced appropriately have a greater area of effect than a single large explosion. Counterforce scenarios involving many small strikes against discrete targets, particularly those near urban or industrial areas (as most political and industrial targets were/are in the USSR/Russia), would be likely to prove at least as devastating as deliberate counter-value targeting. The uncertainties and scale of nuclear employment envisioned augured against accuracy in pre-war estimates of the damage and casualties likely to result from a counterforce strike.<sup>35</sup>

Washington’s struggle with the theory and doctrine of nuclear warfare throughout the 1960s and early 1970s was based largely on an irreconcilable dichotomy between the two. In the realm of theory, Counterforce had evolved as a supposedly less apocalyptic, and therefore more credible, alternative to Massive Retaliation. In the world of doctrine, however, the manner in which the theory of counterforce targeting was being applied, with many thousands of weapons assigned to thousands of targets, most of them in and around urban areas, rendered the likely outcome of a conflict indistinguishable in any meaningful way from Massive Retaliation. What emerged from attempts to reconcile this dichotomy was the notion of assured destruction – possibly the most widely misattributed and misunderstood concept of the Cold War.

The term first appeared in 1964, in a context rather different from that into which it eventually evolved. McNamara, dissatisfied with the counterforce concepts that had followed on the heels of Massive Retaliation and his brief flirtation with City Avoidance, argued that the credibility of the US deterrent rested on its ability to inflict an unacceptable degree of damage on any aggressor even after absorbing a surprise first strike. As a planning figure, it was thought that a second-strike ability to kill one-fifth to one-third of the Soviet population and destroy fifty to seventy-five percent of its industrial capacity would be sufficient to dissuade Moscow from essaying a disarming first strike.<sup>36</sup> Ensuring that the US had the capability to inflict this level of damage required maintaining a robust, survivable second-strike deterrent capability, and this was accomplished through the expansion of the US Navy’s fleet of SSBNs – and, as noted above, the ten-fold increase in the firepower of the survivable deterrent through the introduction of MIRV warheads for the Poseidon C-3 SLBM.

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<sup>34</sup> Halperin, *Limited War*, 72.

<sup>35</sup> Stephen J. Cimbala, *Nuclear Strategizing: Deterrence and Reality* (New York: Praeger, 1988), 144.

<sup>36</sup> Freedman, 233.

The most interesting feature of a deterrent based on Assured Destruction is that it was by no means a one way street. When McNamara was developing the concept, the Soviet Union had nearly 800 deliverable strategic warheads. Even if a pre-emptive US counterforce strike could have eliminated ninety-nine percent of these (an impossibly high proportion given the innumerable variables attending strike planning), the remaining one percent would have destroyed seven or eight American cities. Would this have been considered ‘unacceptable’ damage in any scenario short of a war for national survival? The lack of nuclear war during the 1960s suggests that despite the diplomatic tensions and heated international rhetoric of the era, no issue that arose between the superpowers was sufficiently grave to tempt either to try their chances. Assured Destruction, in other words, was demonstrably ‘mutual’. This novel concept entered the lexicon as MAD, and has been variously mislabelled a strategy, a theory, and a doctrine, when in reality it was a fact of the security relationship between the US and USSR – one that had become inevitable once Moscow had developed the capacity to ensure that the US could not stop all of its weapons from getting through. Subsequent protestations by Soviet scholars and generals that MAD did not figure in Moscow’s calculations are not historically supportable; as neither side launched a nuclear strike during the Cold War, it is reasonable to conclude that both sides were effectively and mutually deterred regardless of what the principles believed.

No one developed, implemented or imposed Mutual Assured Destruction; it emerged as an inevitable consequence of the East-West balance of strategic forces. And it had a number of distinctive features, some of which offered advantages in terms of stability over prior strategic circumstances. For one thing, where Counterforce had emphasized first strike capability as a means of blunting the enemy’s retaliatory power, MAD emphasized second strike survivability. There was no need for painfully precise calibration forces and allocation of weapons-to-target; all that was required was the assurance that regardless of an enemy’s first strike, sufficient forces would remain to inflict unacceptable harm.<sup>37</sup>

One of the many things that emerged from MAD was a growing conviction, in the West at least, that if the game could not be won, it might be prudent to at least make it less tempting to play. This manifested itself as a new emphasis on arms limitation and arms control. If MAD had more or less neutralized the strategic forces of the superpowers and weighted the game against tactical nuclear warfare due to its potential for uncontrollable escalation, then negotiations aimed at reducing mutual suspicions, and the pursuit of agreements aimed at imposing constraints on the expansion of the arms race, made diplomatic sense. Strategic constraints on the use of nuclear weapons to backstop conventional forces augured in favour of buttressing the latter<sup>38</sup> – a process that was already underway in the US, as the post-Korea drawdown was reversed, with the US deploying upwards of half a million military personnel to Southeast Asia in the course of the Vietnam War.

Arms control negotiations were aimed at checking the spread of superpower competition and preventing it from encroaching upon hitherto unexplored areas; contemporary examples include treaties and agreements to ban or at the very least limit the placement of nuclear weapons in Antarctica (1961), in outer space (1967), on the seabed (1971), and on the Moon (1979). Efforts at limiting the aggregate numbers of strategic weapons bore fruit in the form of the Strategic

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<sup>37</sup> Stephen J. Cimbala, *Nuclear War and Nuclear Strategy: Unfinished Business* (New York: Greenwood Press, 1987), 50.

<sup>38</sup> Kahn, 238.

Arms Limitation Talks (SALT) I (1972); and at the same time, the US and USSR agreed to restrict deployments of anti-ballistic missile (ABM) systems – deemed destabilizing because they threatened to upset the stability conferred by the threat of MAD – to a single site each via the mechanism of the ABM Treaty. The negotiations, however, never went so far as to consider disarmament or even significant reductions; as may be seen from figure 1, the total number of Soviet strategic warheads grew steadily after 1970 until the fall of the USSR in 1991, while US strategic warheads, except for a brief decline and recovery during the 1980s, did the same. After all, significant reductions, let alone disarmament, would also have gravely upset the grim stability offered by MAD.<sup>39</sup>

In an attempt to break free of MAD, Nixon’s Secretary of Defense, James Schlesinger, announced a new, eponymous doctrine consisting largely of a return to Counterforce targeting, and advocating providing the President with an array of what he called ‘Limited Nuclear Options’. Explaining the new doctrine in London in 1974, Schlesinger argued that “the shift in targeting strategy...does not mean that we are pointing missiles away from city targets to military targets.” Indeed, he argued, the US “must continue to target cities [because] an assured destruction capability is an essential ingredient in overall deterrence, but it does not have to be, and should not be, the principal option.”<sup>40</sup> Schlesinger was attempting to delineate a demarcation between the Counterforce-MAD escalatory thesis, under which nuclear war would consist of a disarming first strike by one side followed by a retaliatory second strike by the other; and a concept of limited nuclear war, wherein a limited provocation, presumably conventional but possibly nuclear, would be met with a limited response selected from an array of pre-programmed options available to the President, ensuring both a timely and proportionate response.

What such a doctrine required was something new and previously untried. While America had been preparing to fight a nuclear war roughly since V-J Day, the Schlesinger Doctrine demanded that Washington be capable of integrating the full range of nuclear strike options into a staged, responsive campaign plan designed to achieve America’s objectives while simultaneously controlling unwanted escalation through demonstration of capability and resolve. This required arrays of delivery systems, ranges of warhead yields, robust surveillance, communications, command and control systems, discrete targeting capabilities, and the capacity for conventional forces not only to survive but to continue to fight and win in a nuclear environment. The subtext to Schlesinger’s argument was that relying on MAD, under which the President’s only option in response to a Soviet move would be to push the Armageddon button, was inherently unstable because the threat was not credible. Credibility could only be achieved by preparing to fight and win a nuclear war, at all operational levels.

Such a broad-brush approach to deterrence had its weaknesses as well as its strengths. Some critics of the doctrine argued that the possession of limited war-fighting capabilities could strengthen or weaken deterrence, depending on the varying scenarios in which they might come into play.<sup>41</sup> Others mocked the very idea that widespread counterforce strikes could somehow be controlled in scope or constrained in terms of devastation; Ball, writing a few decades after the fact (when nuclear war-fighting had once again come to the fore), argued that the deluge of

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<sup>39</sup> Kahn, 239.

<sup>40</sup> Speech in London, 25 January 1974, cited in Ian Clark, *Limited Nuclear War: Political Theory and War Conventions* (Princeton, NJ: Princeton University Press, 1982), 207.

<sup>41</sup> Cimbala, *Nuclear War and Nuclear Strategy*, 47.

uncertainties that would accompany any nuclear conflict augured against “the possibility of conducting limited and controlled nuclear exchanges”; and he mocked the idea that planners could precisely ‘tune’ the degree of damage inflicted on the enemy, as if it were “a matter only of policy choice.”<sup>42</sup>

Still, there was much to be said for Schlesinger’s approach. As one author has pointed out, one of the truisms of the nuclear age is that “the only form of winnable war is a limited one.”<sup>43</sup> Treating nuclear war as an integrated extension of conventional war helped to impose a degree of intellectual and doctrinal rigour that had hitherto been lacking, and it helped to break America’s nuclear elite out of their exclusionary ivory towers. The same qualities, of course, could also be interpreted as weaknesses; some critics argued that nuclear war was inherently uncontrollable and that the idea of controlling escalation was an illusion that would collapse once the first nuclear exchange had taken place. The likelihood that any dispute serious enough to result in a nuclear exchange would be existential for at least one of the parties also augured against control; limited war, unlike total war, implies agreed norms of conduct, but historically speaking, a losing side facing catastrophe is more likely to violate unstated norms and employ all available means of staving off defeat. As a result, any nuclear war that started off limited would in all probability be unlikely to stay limited for very long.

After Nixon’s resignation and Ford’s defeat in 1976, Ford’s successor, Jimmy Carter – himself a former naval officer who had served on diesel-electric submarines in the 1940s and 1950s – initiated another revision of America’s approach to nuclear weapons. According to Freedman, Carter “displayed a marked aversion to nuclear weapons...and dismissed notions of limited nuclear war.”<sup>44</sup> While Carter allegedly preferred a ‘minimum deterrence’ approach, under his administration, the SIOP began to weight target selection towards targets involving the key Soviet political and economic objectives. Carter cemented this change in 1980 with the issue of Presidential Directive (PD) 59, which directed US strategic forces to focus on targets most valued by the Soviet leadership, and to prepare for a limited but potentially prolonged nuclear war. The ability to fight a lengthy war was to be supported by maintenance of a “secure strategic reserve” that rather than being dedicated to second-strike counter-value targets in support of MAD, would instead be capable of re-targeting in response to intelligence and damage assessment reports obtained, *inter alia*, from satellites.<sup>45</sup>

Some aspects of Carter’s doctrine drew praise. It was argued, for example, that striking Soviet leadership targets early on in a conflict could actually result in victory due to the centralization and hierarchical, top-down command structure of the Soviet government and armed forces;<sup>46</sup> while Carter’s plan to maintain a flexible, secure strategic reserve, it was suggested, ought to be sufficient to deter the enemy from escalating beyond a limited nuclear exchange. The problem with restraint, of course, is that it is voluntary, depends upon subjective rather than objective criteria, is subject to internal considerations that may be opaque to external observers (Carter’s wavering during the Euro-missiles crisis and the debate over enhanced radiation weapons – ERW, aka the ‘neutron bomb’ – illustrate how deployments intended to demonstrate political will can

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<sup>42</sup> Clark, 224.

<sup>43</sup> Clark, 206.

<sup>44</sup> Freedman, 375.

<sup>45</sup> Freedman, 376.

<sup>46</sup> Colin S. Gray and Keith Payne, “Victory is Possible”, *Foreign Policy*, 39 (Summer 1980), 21.

backfire if the adversary's strategic national interests or 'redlines' are not sufficiently understood<sup>47</sup>), and is highly scenario-dependent. Carter's doctrine, furthermore, required perpetuating the notion that nuclear weapons differ from conventional weapons only in degree, and not in kind.<sup>48</sup> Regardless of whether the superpowers and their respective coteries of strategists believed that nuclear weapons *were* different, the fact that the US and USSR had for more than three decades been *treating* them as profoundly different for more than was a strong argument against Carter's limited nuclear war doctrine.

The whole history of the evolution of nuclear strategy in the 1970s boils down to this: devising a strategy for limited nuclear war and creating the infrastructure and forces to support it were relatively straightforward exercises; but figuring out how to actually fight a limited nuclear war while controlling escalation, let alone dominating it, was not. The last word on the Carter Doctrine goes, as it must, to Freedman, who, in reviewing the impact of PD-59 on the nuclear balance between the superpowers, noted that "no operational nuclear strategy had yet been devised that did not carry an enormous risk of degenerating into a bloody contest of resolve or a furious exchange of devastating and crippling blows against the political and economic centres of the industrialized world."<sup>49</sup>

## 2.4 Breakaway

Where much of the strategic theorizing of the 1970s struggled with the imponderables of fighting a limited nuclear war, the nuclear strategizing of the 1980s under the administration of Ronald Reagan might best be characterized as trying to come to grips with the problems involved in fighting an unlimited nuclear war. While most of the calumny heaped upon Reagan by his opponents in political and media circles was little more than that, there is no question that the new President and his advisors were under few illusions about the possibility of controlling escalation once nuclear war had broken out. This was not, incidentally, a Republican phenomenon; Harold Brown, Carter's Secretary of Defense, had already acknowledged that "what might start as a supposedly controlled limited strike could well – in my view would very likely – escalate to a full-scale nuclear war."<sup>50</sup>

If a general nuclear exchange could not be avoided or controlled, then the next priority would be to make it winnable – or at least survivable. This was not a non-trivial problem; by the time Reagan arrived in the White House, the NSTDB had expanded to 50,000 targets. SIOP-6, prepared in 1983, provided Major and Selected Attack Options that varied in scope and ferocity depending upon the level of warning available. Alert options envisioned strikes against 2,300 economic/industrial targets in the USSR and its allies (a total of 1,793 aim-points), while, with sufficient time to generate forces, the SIOP envisioned striking 3,572 aim-points, for a total of 4,400 targets.<sup>51</sup> Reagan displayed a marked preference for striking military rather than civilian

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<sup>47</sup> Cimbala, *Nuclear War and Nuclear Strategy*, 49.

<sup>48</sup> Dyson, 248.

<sup>49</sup> Freedman, 377.

<sup>50</sup> Clark, 209.

<sup>51</sup> Ball, 192.

targets, and, through National Security Decision Directive 13, re-emphasized the counterforce aspect of US targeting doctrine.<sup>52</sup>

During his first term, Reagan's administration pushed nuclear strategy in five distinct directions, three of them well known from previous eras, and two of them novel. The well known ones were continuing to expand the diversity, depth and capability of America's nuclear forces in order to back up the credibility of nuclear war-fighting doctrine; expanding, re-equipping, and re-professionalizing America's conventional military forces, and dragging them out of their post-Vietnam malaise; and reinvigorating civil defence activities to enhance survivability in the event of nuclear war. The novel ones were initiating research and development into the creation of a comprehensive, nationwide defence against ballistic missiles; and, in the political arena, directly challenging the Soviets on a variety of fronts, ranging from the deployment of theatre missiles in Europe, to ramping up defence expenditures, to engaging in substantive arms reduction and disarmament activities. The goal of these new developments, to borrow a term first coined by Brown, was not to 'prevail' against the Soviet Union, but to deter Moscow from launching a nuclear war by denying the adversary any possibility of realizing benefits from aggression that would in any way be proportional to the costs thereof. This was dubbed a "countervailing" strategy.<sup>53</sup>

As America's nuclear planners and their political masters had learned and relearned at least twice since the end of the Second World War, fighting a prolonged nuclear war consisting of a lengthy series of attacks and ripostes is a rather different affair from simply replying to a provocation with a massive retaliatory strike, or engaging in a single massive, spasmodic exchange. A war-fighting capability requires robust surveillance, target acquisition, and damage assessment capabilities; survivable, redundant command, control and communications capabilities; a mix of weapons and delivery systems; a survivable deterrent force to dissuade the adversary from indulging in an all-out counter-value attack; and a resilient, multi-layered and responsive national command authority to issue valid engagement orders, conduct war termination activities, and direct post-war recovery. Furthermore, as a prerequisite to all of this, nuclear war-fighting requires the capability to pre-empt enemy action in order to limit the damage to one's own country – which in turn requires the ability to find and destroy hardened military targets on short notice, as a crisis escalates. From Washington's perspective, this meant that the US had to be able to vastly reduce Moscow's ICBM force before the missiles could be launched – a non-trivial problem when one considers that the USSR possessed at the time more than a thousand silo-based missiles.<sup>54</sup>

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<sup>52</sup> [<http://www.fas.org/irp/offdocs/nsdd/nsdd-013.htm>]. Accessed 13 January 2011. The website notes that all but two sentences of this directive are still classified.

<sup>53</sup> Freedman, 387.

<sup>54</sup> The war-fighting problem was further complicated by the fact that most of the USSR's ICBM force was by this time equipped with MIRV payloads. Multiplying the load-out of missiles by, for example, ten, requires a defender to achieve a tenfold improvement in the likelihood of destroying all of the missiles on the ground. If, for example, 10 impacts are judged 'acceptable', then one must achieve a single-shot kill probability of 99% against a force of 1000 ICBMs. If those ICBMs carry 10 warheads each, however, then only a single missile will result in 10 impacts; thus, unless one is able to target each silo with multiple warheads, the SSKP required rises to 99.9% - an impossibly high performance ratio. This enormously complicates the war-fighting problem – and thus, it could be argued, enhances deterrence. The US, incidentally, responded to this problem by assigning multiple warheads to each Soviet silo, requiring many thousands of highly accurate, very powerful warheads to support a pre-emptive counterforce strike, and leading, in due course, to the introduction of the Trident D-5 SLBM.

The three technical requirements of a pre-emptive strike force are weapon accuracy, weapon yield and numbers.<sup>55</sup> Again, due to the inverse square law by which explosive force propagates, improvements in accuracy offer more benefits than improvement in yield. During the 1970s the US achieved significant improvements in accuracy, which in turn enabled the yield of individual warheads to be reduced – and this made it possible for delivery systems to carry more of them, answering the numbers problem. By the 1980s, the Minuteman III, which carried three MIRV W-78 warheads with sufficient yield (330 kt) and accuracy to destroy an ICBM silo, was being reinforced by the MC (Peacekeeper) ICBM, which was even more accurate, and which carried 10 of the more powerful W-87 warheads (475 Kt).<sup>56</sup> The B-1 bomber programme was reinstated, and in order to augment its capability (and to mitigate the impact of improvements to Soviet ground-based and aerial air defence systems), hitherto based entirely on gravity bombs and the SRAM, more air-launched cruise missiles (ALCMs) would be purchased. Finally, America's at-sea deterrent force, already evolving from the Poseidon C-3 to the Trident C-4 (which entered service in 1979), would be upgraded to the Trident D-5, an SLBM twice as heavy as its predecessor, capable of delivering up to eight of the new 475 kt W-88 warheads, and delivering them with three times the accuracy of the MX.<sup>57</sup> Together, these programmes constituted a substantial enhancement to the US strategic arsenal. The Trident upgrade programme was of particular importance; the fact that, for the first time, the “invulnerable second-strike deterrent” force now had the capability to engage in counterforce strikes against Soviet ICBM silos led critics to label the D-5 a ‘destabilizing’ weapon system.

Reagan's civil defence and strategic defence programmes were similarly derided by much of the Western media and cognoscenti. The latter programme was launched by the President in March of 1983 when he called upon “the scientific community who gave us nuclear weapons...to give us the means of rendering these nuclear weapons impotent and obsolete.”<sup>58</sup> Without minimizing the technical challenges involved in creating an effective and comprehensive defence against thousands of enemy missiles (to say nothing of weapons delivered by bomber or other non-ballistic means), Reagan argued that defences that reduced the likelihood of success of a surprise attack would correspondingly reduce the utility of nuclear weapons, and lead to more, and more successful, arms limitation and reduction talks between the US and USSR.

Reagan's call to defensive arms came a technological generation too early for effective missile defence, but some combination of his rhetoric, his conventional and nuclear forces build-up and modernization programmes, his new focus on strategic defence, and the arrival in Moscow of more flexible and imaginative Soviet leadership in the form of Mikhail Gorbachev paved the way for successful arms reduction efforts. In addition to launching the START (Strategic Arms Reduction Talks) negotiations in 1982 as a follow-on to the SALT II talks (START I was signed by his successor, George Bush, in 1991), Reagan and Gorbachev negotiated the Intermediate-range Nuclear Forces (INF) Treaty and signed it in December 1987. This was the first genuine arms reduction treaty between the superpowers and the first to eliminate an entire class of weapons, and it paved the way for further treaties and agreements between East and West over

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<sup>55</sup> Brodie adds hardening of missile silos to preserve the striking force. Brodie, *War and Politics*, 187.

<sup>56</sup> [<http://nuclearweaponarchive.org/Usa/Weapons/Allbombs.html>]. Accessed 13 January 2011.

<sup>57</sup> [<http://www.globalsecurity.org/wmd/systems/d-5-features.htm>]. Accessed 13 January 2011.

<sup>58</sup> President Ronald Reagan, “Address to the Nation on Defense and Security”, 23 March 1983 [<http://www.reagan.utexas.edu/archives/speeches/1983/32383d.htm>]. Accessed 13 January 2011.

the coming decades, ranging from the Bush-Gorbachev Presidential Agreement to withdraw sea-based tactical nuclear weapons, to further iterations of the START talks.

The fall of the Berlin Wall in 1989 and the subsequent collapse and dismantlement of the Soviet polity neither eliminated nuclear weapons nor nuclear strategic thinking, but they did result in a de-emphasis on widespread discussions of nuclear strategy as other security concerns – notably the concomitant increase in ethnic and religious violence and, later, the rise of Islamist terrorism – came to the fore. Nuclear strategy became a matter of maintaining deterrence while simultaneously balancing the need to reduce arsenals as part of the general post-Cold War drawdown in forces, against the need to ensure the security, safety and reliability of nuclear stockpiles in an era when live testing of nuclear weapons was no longer a possibility.

Advances in technology allowed defences to come once again into vogue as Bill Clinton, and later George W. Bush, injected new funding and vigour into ballistic missile defences. Bush attracted considerable opprobrium for his 2002 decision to withdraw from the ABM Treaty in order to pursue deployment of an operational ballistic missile defence (BMD) system; but as this decision was predicated on a review of America's nuclear posture that argued that the US would "no longer plan, size or sustain its forces as though Russia presented merely a smaller version of the threat posed by the former Soviet Union",<sup>59</sup> and as it was followed in short order by signature of the Strategic Offensive Reductions Treaty (SORT, or Moscow Treaty), the political fallout was minimal. This policy guided US strategic thinking until it was superseded by the Obama Administration's own nuclear policy review, which was issued in April 2010, and which, while it argued for maintaining a "safe, secure and effective nuclear arsenal", took as its primordial strategic aims the prevention of nuclear proliferation and terrorism and the reduction of the role of nuclear weapons in US national security strategy – all with a view to facilitating international nuclear arms control, reduction, and disarmament. Maintaining strategic deterrence and stability, reassuring US allies and partners, and maintaining a "safe, secure and effective nuclear arsenal" were the new policy's third, fourth and fifth objectives.<sup>60</sup>

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<sup>59</sup> Donald H. Rumsfeld, Secretary of Defense, "Foreword to the Nuclear Posture Review Report", 2001, 2.

<sup>60</sup> Department of Defense, *Nuclear Posture Review Report* (Washington, D.C.: Department of Defense, April 2010), iii.

### 3 Waypoints, relevance and caveats

At this point it is important to evaluate the utility of the evolution of nuclear strategy from an American perspective as a benchmark against which to assess the development of nuclear strategy from a Chinese perspective. The discussion, examination and evaluation of convergences and divergences are a matter for the chapters which follow; the purpose of this section is simply to draw from the US experience some broad principles to serve as waypoints to guide those chapters. In that context, the foregoing analysis suggests that the evolution of China's nuclear capability, strategy and intentions be examined to determine how closely it conforms to, or how widely it diverges from, the broad strategic and technological waypoints that emerged from the US nuclear evolutionary experience. These are listed at table 2.

*Table 2 – Conceptual and Technological Waypoints in US Nuclear Evolution, 1945-2010*

<b>Era</b>	<b>Conceptual Waypoints</b>	<b>Technological Waypoints</b>
Nuclear Monopoly	Nuclear regulation / ban Nuclear war-fighting Massive Retaliation	First nuclear detonation Dozens of fission bombs Thousands of fission/fusion bombs
Essential Equivalence	City-Avoidance Counterforce Flexible Response	ICBMs SLBMs Limited defences
Parity	Arms Limitation / Localized Bans Limited Nuclear Options Minimal deterrence	MIRV ERW ('neutron bomb') Cruise missiles
Breakaway	Countervailing strategy Strategic Defence Arms Control	Improved accuracy Counterforce-capable SLBMs Stealth
Post-Cold War	Arms Reduction Novel roles and missions	Limited BMD Asymmetric technologies

The next paper in this study will employ these waypoints as the benchmark for comparison of the evolution of China's nuclear panoply. It is expected that areas of divergence will be as instructive as areas of commonality.

The fact that a nuclear weapon has not been used in combat since the destruction of Nagasaki on 9 August 1945 provides at least some empirical evidence to support the contention that nuclear deterrence, for lack of a better term, works; as Brodie put it in a none-too-subtle critique of the title of Albert Wohlstetter's 1959 Rand paper, "the balance of terror is decidedly *not* delicate."<sup>61</sup> As the foregoing chronology demonstrates, the East-West deterrent relationship in the post-Second World War period progressed through four distinct stages: monopoly, when the US, for all intents and purposes, entirely dominated the nuclear field; essential equivalence, when the US still maintained an enormous lead in nuclear weapons, but the USSR had achieved the capability to cause unacceptable damage to the US and its European allies; parity, the point at which the superpowers possessed roughly a equivalent strategic nuclear capacity; and the breakaway from the nuclear deadlock achieved in the 1980s as a consequence of Reagan's modernization, defence

<sup>61</sup> Brodie, *War and Politics*, 380. Emphasis in original.

and arms control initiatives, and his ability to leverage the more flexible leadership in the Kremlin.

This latter stage set the conditions to segue into the post-Cold War period characterized by force draw-downs, arms control, and the de-emphasis of nuclear weapons in national security strategies. This trajectory, incidentally, was unique to the US, and to a lesser extent Great Britain and France; Russia responded to the collapse of its conventional forces by placing more strategic emphasis on its nuclear deterrent,<sup>62</sup> while China has the only active strategic nuclear enhancement programme in the world today. India conducted a “peaceful” nuclear test in 1974 but did not overtly enter the nuclear arms race until 1998, when it and Pakistan conducted a series of tit-for-tat nuclear tests. North Korea, having repeatedly promised (and having been repeatedly paid) not to build nuclear arms since the signature of the Agreed Framework in 1994 joined the nuclear club in 2006, and it appears likely that, absent any action to the contrary, Iran will do so as well at some point in the near future.

The likelihood that the gradual spread of nuclear weapons beyond the original five NWS will significantly increase the risk of nuclear conflict is a function of the stability of the states to which the weapons spread. Israel and India have been unacknowledged NWS since the 1970s, without any noticeable disruption to the international security environment. Pakistan’s possession of nuclear weapons is newer and, given the inherent and increasing instability of the Pakistani state and the growing local and worldwide influence of radical Islamists, nuclear stability, either in the Subcontinent or more broadly, can no longer be assumed. North Korea is unprecedentedly opaque, an international pariah, and chronically prone to irrational behaviour; while Iran, the state most likely to achieve its nuclear aspirations in the near term, is both unstable and a state sponsor of Islamist terrorism. With the exception of Iran, the fact that each of these states is locked in a perennial state of conflict with a neighbour (and in Iran’s case, by virtue of its internal instability and support for Islamist terrorists in Iraq and Israel to the west, Afghanistan to the east, and globally) gives rise to the sort of crisis instability that had been routinely decried by nuclear thinkers throughout the bumpier intervals in US-Soviet relations.

While nuclear deterrence proved to be generally stable throughout the Cold War, it is important to recall that it may break down in areas where intervention and/or defensive responses to provocations are automatic<sup>63</sup> – as in the disputed areas between India and Pakistan; between India and China; or between North and South Korea. Deterrence may also be unstable in crises where vital strategic interests are engaged – for example, in cases of regime survival (North Korea, Iran) or where a regime has nailed its colours to the mast (as China has done with respect to Taiwan).

Finally, it is necessary to enumerate some caveats that could augur against constructing a meaningful comparison of the Chinese and American cases, as many factors pertinent to the US experience may not translate readily to a discussion of the evolution of Chinese nuclear strategy. First, China has stated that it follows a policy of minimum deterrence, something that is entirely foreign to the US experience, as minimum deterrence tends to be adopted by the underdog in any deterrent relationship, and the US has never found itself in this situation. Accordingly, it will be

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<sup>62</sup> See section 22 of the 2010 Edition of the *Military Doctrine of the Russian Federation*. Informal translation available here [[http://merln.ndu.edu/whitepapers/Russia2010\\_English.pdf](http://merln.ndu.edu/whitepapers/Russia2010_English.pdf)]. Accessed 13 November 2011.

<sup>63</sup> Halperin, *Limited War*, 69.

necessary to evaluate China's approach to and experience with minimum deterrence on its own merits.

Second, the US approach to nuclear strategy has – as the above chronology demonstrates – invariably been closely linked to technological developments weighted to make the most of US pre-eminence in specific military domains, most notably its generations-old dominance of the high seas. Absent that dominance, the US would probably not have placed as great an emphasis on the sea-going leg of its deterrent force as it did. China, by contrast, has very little blue water capability or experience, largely because it has never had a transoceanic economic or military empire to administer and defend. Accordingly, attempts to leverage sea-going technologies in support of nuclear deterrence are unlikely to play out the same way they did in the US case.

Third, US nuclear strategy has dipped into and out of the murky waters of nuclear war-fighting on at least four distinct occasions over the past several years (the Pentomic era under Eisenhower, Counterforce under Kennedy, limited nuclear war and the return to counterforce targeting under Nixon and Carter, and Reagan's Countervailing strategy). China, by contrast, has taken a very different approach to the combat utility of nuclear weapons. The differences, and their implications, will be discussed in greater detail in a later part of this study.

Fourth, China and the US have very different governmental systems, with very different standards of public accountability. Nuclear strategists have long posited that totalitarian states would be unlikely to behave in a fashion similar to democratic states, either in terms of the rationale for undertaking (or eschewing) a nuclear attack, or in how they would, respectively, respond to one.<sup>64</sup> Again, this potential for different reactions to similar stimuli will be explored in further papers.

Fifth, I have already defined doctrine, strategy and declaratory policy, and the substantive differences between them should be obvious from the foregoing discussion. Some of these change rapidly, others slowly, and still others not at all. As a point of comparison, consider the fact that US declaratory policy evolved from Massive Retaliation to City-Avoidance to Counterforce during the brief course of the truncated Kennedy administration. Subsequent changes to declaratory policy (and doctrine) over the following two decades included graduated response, a return to counterforce targeting, the development of limited nuclear options, Carter's brief flirtation with minimal deterrence, and Reagan's Countervailing strategy. All of these proposed very different approaches to the question of how and why a nuclear war would be likely to begin, and how it would be fought. At the same time, however, between Kennedy's and Reagan's iterations of the SIOP, the number of targets in the NSTDB continued to increase – and, as more strategic weapons became available through the introduction of MIRV and cruise missile technology, more weapons continued to be assigned to more targets. Regardless of whether it was policy or doctrine at any given time, nuclear war-fighting has remained a core capability of the US military throughout the Cold War.

These trends illustrate the two-fold problem attending all discussions of nuclear strategy: that declaratory policy is not necessarily linked to doctrine, and in fact may be promulgated for reasons other than transparency (or as Colin Gray put it, "It is sometimes difficult to distinguish between the statements of Soviet officials made for internal consumption and those designed to

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<sup>64</sup> Gray, "Targeting Problems", 192.

influence Western audiences”<sup>65</sup>); and that declaratory policy may be irrelevant to the state that finds itself on the receiving end of a nuclear attack. The question of whether war plans align with propaganda is rendered moot by the fact of nuclear war.

Sixth, there is considerable disagreement among nuclear strategists about whether nuclear war can be controlled; even the proponents of limited nuclear war stipulate that keeping war limited is a matter of consensus between adversaries. This conundrum has led to such notions as ‘escalation dominance’ (first mooted by Kahn in his 1965 book *On Escalation*), defined as the ability to prevent undesired escalation by demonstrating at every stage of a conflict that one retains the capacity to overwhelm any option the enemy might select. Other strategists disagreed with this characterization, offering that, as is the case with conventional wars, nuclear conflict would be context-dependent, with decision-makers paying careful attention to results and cues from adversaries in order to determine their next moves, furiously attempting to decrypt the implied but unspoken message underscoring a particular series of strikes. “After the nuclear threshold has been crossed,” Cimbala argued, “it does not necessarily follow that all bets are off...Much depends upon how and why the nuclear threshold is crossed and by whom. The nuclear threshold might not be crossed, but gradually and inadvertently circumvented.”<sup>66</sup>

Such qualifiers, while seemingly absurd in the context of a direct superpower conflict at the height of the Cold War, may be more relevant in the context of contemporary conflicts involving NWS with small arsenals and limited aims. China, for example, has repeatedly stressed the defensive nature of its nuclear weapons, and Beijing would be likely to leverage the strategic context of a given crisis to explain or excuse limited nuclear use, for example by claiming a defensive context, or by acting to prevent a de facto declaration of independence by Taipei, or by executing strikes only against enemy forces on Chinese soil (or more to the point, on what Beijing deems Chinese soil, e.g., US forces acting in support of Taiwan).

With this in mind, the potential gulf between China’s declaratory policy (which includes, *inter alia*, what is purported to be a strict no-first-use policy) and its military preparations (which include thousands of nuclear-capable ballistic missiles stationed along China’s southern littoral, and aimed at Taiwan) becomes more apparent, and the role of declaratory policy as a tool of diplomacy aimed at securing China’s position atop the moral high ground becomes easier to comprehend – a point emphasized by Kahn, who, before China had even detonated its first nuclear explosive, had already argued that “by adopting a less aggressive and more constructive *posture* we increase our ability to wage psychological warfare for the minds and hearts of men.”<sup>67</sup>

Kahn also highlighted the utility of a non-aggressive, even pacifistic, declaratory policy as a means of gaining strategic advantage by exploiting the adversary’s peace and ‘ban the bomb’ movements “in order to disarm its opponent or at least to manipulate internal political movements of the other side to its own advantage,” and may even be used to “create pressures on the other side for unilateral nuclear disarmament.”<sup>68</sup> This is obviously a tactic that works better against free than against unfree societies, and it is one that the USSR leveraged heavily, especially during the neutron bomb and Euro-missiles crises of the late 1970s and early 1980s. As China is an unfree

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<sup>65</sup> Cimbala, *Nuclear War and Nuclear Strategy*, 47.

<sup>66</sup> Cimbala, *Nuclear Strategizing*, 193.

<sup>67</sup> Kahn, 239-240.

<sup>68</sup> Herman Kahn, “Some Comments on Controlled War”, in Klaus Knorr and Thornton Read, eds., *Limited Strategic War* (New York: Frederick A. Praeger, 1962), 38-39.

state in an adversarial relationship with a democracy, this aspect of the nature and purpose of its declaratory policy is worthy of examination. It should also be noted that the potential gulf between declaratory policy and the reality of doctrine and preparations for nuclear war further justifies the methodology proposed in the introduction to this paper, and focusing more on capabilities, which are slow to change, than on declarations of intent, which can change rapidly.

Seventh, the question of the moral high ground itself, raised above, likewise merits investigation. The US-USSR standoff revealed much about the role of political ideology in military doctrine, and political ideology tends to preoccupy decision-makers in totalitarian states to a greater extent than in democracies. Ideology plays two key roles in determining how a state's nuclear strategy evolves: in totalitarian states founded upon an ideological keystone (e.g., Marxist-Leninism, or Marxism modified by Maoism, or for that matter the hyper-nationalistic *juche* doctrine espoused by Pyongyang, or the expansionist Islamism preferred by Teheran), it serves as a navigational point of reference against which strategic concepts are measured to ensure compliance with political doctrine; and second, taken in conjunction with the international understanding of and revulsion for the destructive potential of nuclear weapons, it necessitates that the state take pains to demonstrate that it is acting from a morally superior position. All of these considerations impact how a state will devise its strategy for employing nuclear weapons, and will colour decision-making should a crisis ever erupt into nuclear conflict. The importance of the moral high ground, and of ensuring that strategic doctrine complies with political doctrine, means that "it matters very much who starts the war, how rapidly it escalates, and how committed the participants are to persevere in the face of political and military reversals."<sup>69</sup> The importance of seizing and retaining the moral high ground through declaratory policy, therefore, will be investigated further along in this project.

Eighth, as noted in the introduction to this paper, strategy is a function not only of the needs and aims of a state, but of its geostrategic circumstances as well. A state that possesses vast reserves of, for example, crude oil, will have different strategic concerns from a state that does not. Likewise, the strategic concerns of a state close to the Russian border – e.g., Poland – naturally differ from those more distantly situated. These considerations are not merely relevant in terms of resources or politics, but also in terms of physics; proximity, distance and global positioning determine the technological challenges that must be overcome in order to be able to threaten an adversary with a nuclear strike. The US, operating from its own and Allied bases in Europe, was able to threaten Moscow long before the USSR was in a position to threaten Washington. Indeed, the fact that US nuclear strategy evolved while the US was one of the two key actors in a bipolar world order complicates the notion of using the US experience as a point of comparison for China's nuclear strategy. China's geostrategic situation is vastly different from that of the US during the Cold War; amongst other things, it faced a greater threat of conventional attack from its putative ideological partner, the USSR, than from its alleged adversary, the US. China's geostrategic concerns have been and will continue to be fundamentally different from those that have afflicted the US. These differences must be accounted for when using the evolution of US nuclear strategy as a point of comparison for China's own nuclear evolution.

Ninth, as the question of geographic location demonstrates, strategy is also to a significant extent a function of technology. There can, for example, be no nuclear threat without nuclear weapons. Similarly, the threat of nuclear attack by air-breathing bombers, which are subject to ground- and

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<sup>69</sup> Cimbala, *Nuclear War and Nuclear Strategy*, 47-48.

air-based air defences, differs fundamentally from the threat posed by ballistic missiles, which – as the tribulations of the US BMD programme demonstrate – pose a far thornier interception problem. Land-based missiles are easier to locate and attack than prowling, near-silent submarines, making the sea-based leg of any nuclear deterrent by definition more survivable – so long as the adversary’s anti-submarine warfare capabilities do not obviate one’s submarine fleet.

A deterrent cannot be considered stable unless one is confident that a substantial proportion of one’s strategic nuclear forces are like to survive the most comprehensive and determined attack that the enemy is able to launch.<sup>70</sup> This is likely one reason that the USSR did not begin to embrace and advocate a limited nuclear war strategy until adequate theatre and strategic forces had been developed and deployed.<sup>71</sup> This principle also conflicts with the Chinese experience. The dissimilarities between the apparent links connecting nuclear technological and nuclear strategic evolution in the US and China also, therefore, complicate comparisons between the two. This consideration further reinforces the importance of focussing on capabilities (what a state can and cannot do) rather than becoming fixated on intentions (what it may or may not do). As the authors of a 1969 report on the development of an anti-ballistic missile system to respond to the Soviet ballistic missile threat put it, a study based on strategic military capabilities is more useful than one based on intentions, “because one can easily be deceived by intentions but not as readily by capabilities”, and it is only logical to take one’s adversary at his word:

If one finds an increasing capability for warfare on the part of a self-declared enemy, it is only common sense and prudence to prepare an adequate defense. This judgement is reinforced if one finds that the enemy’s stated objectives and goals parallel his increasing capabilities.<sup>72</sup>

Tenth and finally, it must be recalled that US nuclear strategy evolved in a very different time and under very different circumstances. It can be difficult for analysts writing in the second decade of the 21<sup>st</sup> Century to comprehend let alone recapture the sentiments of those who were formulating nuclear doctrine in the decades immediately following the Second World War and the Korean War, under the perpetual shadow of the threat not just of nuclear annihilation but also of Soviet metastasis, encroachment and potential dominance. Such men were working under very different strategic and geopolitical assumptions from those that obtain today. This is not a reason to throw up one’s hands and declare it impossible to envision defunct circumstances (or no history would ever be written); but it is a reason to exercise prudence and caution when attempting to ascribe motives to our forebears.

Chinese nuclear strategists – the furor of official rhetoric notwithstanding – working today know, or at least *should* know, that they face no genuine threat of a surprise nuclear attack from the US. Washington has never promised to conquer China and impose democracy on Beijing, and no US President has ever sworn to “bury” Chinese civilization, as – according to Khrushchev – the USSR was historically destined “bury” the West.<sup>73</sup> China faces a dizzying array of strategic problems, but unless Beijing does something grotesquely incautious, it does not face thermonuclear

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<sup>70</sup> Herman Kahn, *On Thermonuclear War*, 2<sup>nd</sup> ed. (Princeton, N.J.: Princeton University Press, 1961), 184.

<sup>71</sup> Cimbala, *Nuclear War and Nuclear Strategy*, 48.

<sup>72</sup> Dr. Willard F. Libby, Dr. William J. Thaler, and General Nathan F. Twining (USAF, Ret.), *The ABM and the Changed Strategic Military Balance* (Washington, D.C.: Acropolis Books, 1969), 8.

<sup>73</sup> “We will bury you!”, *Time Magazine*, November 26<sup>th</sup>, 1956

[<http://www.time.com/time/magazine/article/0,9171,867329,00.html>]. Accessed 20 January 2011.

annihilation – at least not at the hands of the United States. This, however, makes no difference, for China’s leaders also presumably conduct their analysis on the basis of capability rather than on uncertain assessments of US intent, and the US has had the ability to devastate China for more than half a century. This disparity in capability has doubtless coloured Chinese nuclear strategic thinking regardless of the circumstances of the moment, and it must be accounted for in any chronology and analysis of how Chinese nuclear thinking evolved.

Such an enormous list of caveats naturally begs the question whether, with so many differences between the US and Chinese strategic contexts, there is really any utility in using the evolution of US nuclear strategy as a point of comparison for China’s own nuclear experience. The answer, which sounds facetious although it is not intended to be, is that there are few other options. In order to even aspire to comparability, a strategic benchmark must perforce be, like China, a great power with significant aspirations for great power status, regional hegemony, overseas influence, and global economic dominance. Apart from the US, the only other potential candidate for comparison that comes even remotely close is the former USSR (Russia, a shadow of its Soviet self, no longer qualifies). While a comparison with the Soviet nuclear evolutionary experience might be more practical now than in the past, given the new availability of some archival material, the discontinuity in the Soviet political structure in 1989, the opacity of the Soviet strategy-making process during the Cold War, and Russia’s dwindling economic and strategic significance in the post-Cold War period make it a less relevant point of comparison.<sup>74</sup> If we are seeking a benchmark against which to compare the Chinese nuclear experience, our options are the US, or nothing.

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<sup>74</sup> That said, an intrepid researcher revisiting these questions using the Soviet/Russian archival material available could provide helpful additional analysis to confirm (or falsify) the conclusions reached in this study. This could prove a fruitful area for further research.

## 4 Conclusion

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The aim of this, the first paper in a series of studies of the evolution of China's trajectory as a NWS, was to set the stage for an examination of the evolution of China's nuclear declaratory policy, strategy, capability and doctrine, with the ultimate goal of determining how China views the role of nuclear weapons in its national security strategy at present, and how that role is likely to change in the near future. This paper began by discussing the research questions to be examined, the methodology that will be employed (a comprehensive assessment of the evolution of Chinese nuclear strategic thought buttressed by an objective assessment of capability as the principal determinant of what a state can, and cannot, do), and the key definitions that will be employed – especially the definitions of, and differences between, declaratory policy, strategy and doctrine.

This paper then provided a very general overview of the key stages in the development of US nuclear strategy since the end of the Second World War, dividing those developments into four chronological periods based on the qualitative and quantitative relationship between the strategic nuclear forces of the two superpowers during the periods in question. The purpose of doing so was to provide a series of waypoints that will serve in subsequent studies emerging from this project as a point of comparison against which the evolution of Chinese nuclear strategy may be assessed and, hopefully, better understood. Finally, the paper identified an array of important caveats relating to potential areas of significant divergence that could erode the validity of attempts to draw comparisons between the US and Chinese cases. While these divergences are largely irreducible, it is hoped that awareness of them, and an understanding of how they could impact the analysis that flows from this project, will enable them to be taken into consideration in the course of the following papers, strengthening rather than undermining them.

The next study in this project will examine the evolution of China's nuclear strategy since Mao's decision in the 1950s to make China a nuclear power, with special reference to the sources thereof in classical Chinese military theory as embraced and modified by the military theories derived from Marxist and Soviet thought, and the far more extensive modifications initiated by Mao Zedong and his successors. Subsequent papers will examine and assess the current status of China's strategic nuclear forces, and attempt to divine the factors and influences that constitute the fundamental drivers of China's declaratory policy, strategy and doctrine in the nuclear domain. All of these studies will be subsumed in a capstone paper that will offer an assessment of the likely trajectory of China's nuclear thought and its strategic forces; propose recommendations for Canada and for allied states as they attempt to come to grips with the challenges and opportunities offered by China in the years ahead; and identify useful directions for further research into China's strategic intentions and capabilities.

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## List of terms and acronyms

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ABM	Anti-Ballistic Missile
ALCM	Air-Launched Cruise Missile
ARP	Applied Research Programme
BMD	Ballistic Missile Defence
ICBM	Inter-Continental Ballistic Missile
INF	Intermediate-range Nuclear Forces
kt	Kiloton
LNO	Limited Nuclear Options
MAD	Mutual Assured Destruction
MIRV	Multiple Independently-targetable Re-entry Vehicle
MR	Massive Retaliation
Mt	Megaton
NATO	North Atlantic Treaty Organization
NFU	No First Use
NNWS	Non-Nuclear Weapon State
NORAD	North America Air Defence Command
NPR	Nuclear Posture Review
NRDC	Natural Resources Defense Council
NSTDB	National Strategic Target Data Base
NWS	Nuclear Weapon State
PD	Presidential Directive
PDD	Presidential Decision Directive

PRC	People's Republic of China
PVO	<i>Proviso Vozdushnaya Oborona</i> (Russian); National Air Defence Forces (currently <i>Voyska PVO</i> ; formerly <i>PVO Strany</i> )
ROC	Republic of China
SALT	Strategic Arms Limitation Talks
SAO	Selective Attack Option
SDI	Strategic Defence Initiative
SIOP	Single Integrated Operational Plan
SLBM	Submarine-Launched Ballistic Missile
SORT	Strategic Offensive Reductions Treaty ("Moscow Treaty")
SRAM	Short-Range Attack Missile
SSBN	Fleet ballistic missile submarine
START	Strategic Arms Reduction Talks
UNSC	United Nations Security Council
USSR	Union of Soviet Socialist Republics
V-J	Victory in Japan

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(Security classification of title, body of abstract and indexing annotation must be entered when the overall document is classified)

1. ORIGINATOR (The name and address of the organization preparing the document. Organizations for whom the document was prepared, e.g. Centre sponsoring a contractor's report, or tasking agency, are entered in section 8.)  Defence R&D Canada – CORA 101 Colonel By Drive Ottawa, Ontario K1A 0K2		2. SECURITY CLASSIFICATION (Overall security classification of the document including special warning terms if applicable.)  UNCLASSIFIED (NON-CONTROLLED GOODS) DMC A REVIEW: GCEC December 2013	
3. TITLE (The complete document title as indicated on the title page. Its classification should be indicated by the appropriate abbreviation (S, C or U) in parentheses after the title.)  China's evolving nuclear posture: Part I - Background and Benchmark			
4. AUTHORS (last name, followed by initials – ranks, titles, etc. not to be used)  D.A. Neill			
5. DATE OF PUBLICATION (Month and year of publication of document.)  Sep 2011		6a. NO. OF PAGES (Total containing information, including Annexes, Appendices, etc.)  52	6b. NO. OF REFS (Total cited in document.)  0
7. DESCRIPTIVE NOTES (The category of the document, e.g. technical report, technical note or memorandum. If appropriate, enter the type of report, e.g. interim, progress, summary, annual or final. Give the inclusive dates when a specific reporting period is covered.)  Technical Memorandum			
8. SPONSORING ACTIVITY (The name of the department project office or laboratory sponsoring the research and development – include address.)  Strategic Joint Staff 101 Colonel By Drive Ottawa, Ontario K1A 0K2			
9a. PROJECT OR GRANT NO. (If appropriate, the applicable research and development project or grant number under which the document was written. Please specify whether project or grant.)		9b. CONTRACT NO. (If appropriate, the applicable number under which the document was written.)	
10a. ORIGINATOR'S DOCUMENT NUMBER (The official document number by which the document is identified by the originating activity. This number must be unique to this document.)  DRDC CORA TM 2011-148		10b. OTHER DOCUMENT NO(s). (Any other numbers which may be assigned this document either by the originator or by the sponsor.)	
11. DOCUMENT AVAILABILITY (Any limitations on further dissemination of the document, other than those imposed by security classification.)  Unlimited			
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This paper is the first part of a larger study the principal purpose of which is to determine the trajectory of China's nuclear weapons policy, strategy, capability and doctrine. It discusses the origins, scope and methodology of the proposed study, and provides an overview of the evolution of US nuclear strategy in order to establish a baseline for discussing why, and to what extent, China's nuclear evolution has differed from US nuclear thinking. In doing so it sets the stage for further papers examining the evolution of China's nuclear strategy; the status of its strategic nuclear forces; and the drivers of China's declaratory policy, nuclear strategy, and nuclear doctrine. The study will terminate with a comprehensive report discussing the apparent trajectory of Chinese nuclear strategy and capability and the implications thereof for Canada and its allies, and will suggest directions for future research.

Ce document est le premier volet d'une étude plus vaste dont le but principal est de déterminer la trajectoire de la Chine en matière de politique des armes nucléaires, de la stratégie, la capacité et la doctrine. Il examine les origines, la portée et la méthodologie de l'étude proposée, et donne un aperçu de l'évolution de la stratégie nucléaire américaine afin d'établir une base pour discuter de pourquoi, et dans quelle mesure, l'évolution nucléaire de la Chine a été différent de la pensée américaine nucléaire. Ce faisant, il ouvre la voie à des documents supplémentaires examinant l'évolution de la stratégie nucléaire de la Chine; le statut de ses forces nucléaires stratégiques, et les pilotes de la politique déclaratoire de la Chine, la stratégie nucléaire, et la doctrine nucléaire. L'étude se terminera avec un rapport complet discuter de la trajectoire apparente de la stratégie nucléaire chinoise et des capacités et de leurs implications pour le Canada et ses alliés, et suggérer des orientations pour de futures recherches.

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China, Chinese, Nuclear, Nuclear Weapons, Nuclear Strategy, Strategy, Asia, Asian Security, Deterrence



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