NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

THE ARMY BEFORE LAST: MILITARY TRANSFORMATION AND THE IMPACT OF NUCLEAR WEAPONS ON THE US ARMY DURING THE EARLY COLD WAR

by

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September 2004

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
1. AGENCY USE ONLY ***(Leave blank)***	**2. REPORT DATE** September 2004	**3. REPORT TYPE AND DATES COVERED** Master's Thesis	
4. TITLE AND SUBTITLE: The Army Before Last: Military Transformation and the Impact of Nuclear Weapons on the US Army During the Early Cold War		**5. FUNDING NUMBERS**	
6. AUTHOR(S) MAJ Bret C. Kinman, US Army			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000		**8. PERFORMING ORGANIZATION REPORT NUMBER**	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A		**10. SPONSORING/MONITORING AGENCY REPORT NUMBER**	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Distribution Statement (mix case letters)		**12b. DISTRIBUTION CODE**	

13. ABSTRACT (maximum 200 words)

This thesis analyzes the impact of nuclear weapon on the doctrine and force structure of the US Army during the Early Cold War (1947-1957). It compares these impacts with those that occurred on the US Air Force and Navy during that time. Nuclear weapons brought a new aspect to warfare. Their unprecedented economy of destructive power changed the way nations viewed warfare. For the Army, nuclear weapons presented a dual challenge. The Army faced a US security policy centered on the massive use of these weapons; the Army also struggled to understand how these weapons would be utilized on the battlefield. The nation's security policy of large scale strategic nuclear bombardment of the Soviet Union favored the Air Force and to a lesser degree the Navy. The Army viewed this policy as single minded and purposely limiting the nations options to all out nuclear war or deference to another national will. In all the Army faced an internal struggle to incorporate these weapons and an external struggle to retain a useful position within the US Defense establishment during this period.

14. SUBJECT TERMS U.S. Army, Early Cold War, Nuclear Weapons			**15. NUMBER OF PAGES** 95
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT** UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF ARTS IN SECURITY STUDIES (DEFENSE DECISION-MAKING AND PLANNING)

from the

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This thesis analyzes the impact of nuclear weapon on the doctrine and force structure of the US Army during the Early Cold War (1947-1957). It compares these impacts with those that occurred on the US Air Force and Navy during that time. Nuclear weapons brought a new aspect to warfare. Their unprecedented economy of destructive power changed the way nations viewed warfare. For the Army, nuclear weapons presented a dual challenge. The Army faced a US security policy centered on the massive use of these weapons; the Army also struggled to understand how these weapons would be utilized on the battlefield. The nation's security policy of large scale strategic nuclear bombardment of the Soviet Union favored the Air Force and to a lesser degree the Navy. The Army viewed this policy as single minded and purposely limiting the nations options to all out nuclear war or deference to another national will. In all the Army faced an internal struggle to incorporate these weapons and an external struggle to retain a useful position within the US Defense establishment during this period.

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ACKNOWLEDGMENTS

First, I would like to thank Professors Daniel Moran and Rich Hoffman of the Department of National Security Affairs at the Naval Postgraduate School, for their guidance and insight in the development of this topic. Their support was invaluable and any errors contained are mine alone. Also at the Naval Postgraduate School, Professors Jim Wirtz and David Yost who reviewed portions of this thesis and provided additional insight and guidance. I would also like to thank Mr. Bud Meador, an instructor with the Combat Studies Institute of the U.S. Army Command and General Staff College (CGSC) at Ft. Leavenworth, Kansas. Also at the Combat Studies Institute, Mr. Fred Wham assisted me with resources on the U.S. Army in Germany during the Early Cold War. Finally, my wife Karen has been consistently supportive of my efforts, and put up with my hours spent researching and writing.

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I. THE ARMY BEFORE LAST: MILITARY TRANSFORMATION AND THE IMPACT OF NUCLEAR WEAPONS ON THE US ARMY IN THE EARLY COLD WAR

A. INTRODUCTION

The United States Army is the world's premier land combat force. The Army's recent exploits in Afghanistan and Iraq have proven the agility, capability and lethality of the Army and of the American armed forces in general. Sustaining and enhancing this capability are the cornerstones of "Defense Transformation" an ongoing process of integrating and reforming the American defense establishment.

The current US military is essentially the product of the combat lessons of World War II and the preparations to fight the Soviet military during the Cold War. Tactics, techniques and equipment refined during both of those wars led to the victory in Desert Storm as well as the success of the peacemaking and peacekeeping operations in Bosnia and Kosovo. Ongoing efforts throughout the 1990's to capitalize on emerging information technologies enhanced the forces that defeated the Taliban in Afghanistan in 2001 and ousted Saddam Hussein in Operation Iraqi Freedom two years later. The Army is always changing, by improving its weapons systems, altering its force structure, or refining its doctrine and tactics. This process always involves the interaction of recent combat experience, budget realities, and the exploitation of a new technology. Any change in an institution such as the Army is a skilled balance of risk versus reward.

The early Cold War represented a comparably intense period for military change. Before the Second World War, the American army and navy had been primarily hemispheric defense forces. The challenge of defeating both Germany and Japan required a massive land force for Europe and an equally large naval force for the vast Pacific theater. Furthermore, World War II saw an exceptional

growth of military technology including improved mechanization, radios, jet engines, and, most significantly, the atomic bomb.

The end of the war saw a massive drawdown of military forces, coinciding with an increase in tensions with the Soviet Union. As this new conflict developed, the armed forces of the US had to begin to develop a new security strategy. The availability of the atomic bomb promised the most efficient option for a smaller American military. The emerging national strategy relied heavily on the potential use of atomic weapons, and seemed to expect only a global scale conflict with the Soviet Union.

For the Army, this period represented a time of unease over its strategic role. During the Korean War the Army tried to embrace the new nuclear technology in the form of atomic weapons delivery systems, in hopes that these would provide a solution to its troubles. This period also saw vigorous disagreement among the services over defense strategy, service missions, and defense budget. The current challenge for the US military is no less difficult, although the interservice conflicts of that earlier time have subsided, and the US military and defense leaders have a more planned program of change than in the past.

B. CURRENT MILITARY TRANSFORMATION

Since 1991, the US military has labored to maintain its warfighting capability while reducing its overall size. The Department of Defense and the services inaugurated a program of force reductions and base closures, while simultaneously exploring new technology to improve overall capabilities. The peacekeeping and engagement operations of the mid-to-late 1990s provided a venue in which the military could experiment with new systems and technologies. This process was proceeding, albeit slowly given the post-Cold War budget realities.

President George W. Bush and Defense Secretary Donald Rumsfeld came to office determined to maintain the vigor in this process of "Transformation." Consequently, transformation has led to difficult decisions

about weapons systems the armed forces were planning to buy, and programs the services were committed to undertake. The Army lost its “next-generation” artillery when Secretary Rumsfeld canceled the “Crusader” self-propelled artillery system in 2000, and the Army itself cancelled the “Comanche” helicopter program in 2004. Other service weapons systems have also come under scrutiny, with some programs being trimmed in size or cancelled altogether. Many have argued that such fundamental change for the armed services is needed and long overdue.

While there is certain to be heated debate over the shape and pace of the change, its inevitability is not in doubt. As Max Boot points out, transformation is “a change of mindset that will allow the military to harness the technological advances of the information age to gain a qualitative advantage over any potential foe.”[1] Further, as Eliot Cohen says, “A transformation of combat means change in the fundamental relationship between offense and defense, space and time, fire and maneuver.”[2] Transformation is therefore more than just newer, better equipment and tactics. It is also new thinking about warfare and how best to prosecute it successfully with improved information awareness and systems.

The Army launched its latest transformation effort in October 1999 under the guidance of then Army chief of Staff General Eric Shinseki. During this time, the Army was engaged in two major peacekeeping operations in Bosnia and Kosovo, yet otherwise not deployed on a large scale. The timing was right for the Army to begin looking at how it would posture itself for the 21st Century. M aking the Army lighter and more mobile were key goals. The long deployment time for heavy armored forces were a luxury the Army could no longer afford, as it became increasingly involved in so-called Small Scale Contingencies or SSC. These SSCs are neither full-scale war nor pure humanitarian assistance type missions but a difficult blend of both. The Army would be required to fight initially, then transition to peacekeeping and stability operations.

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[1] Max Boot, *The New American Way of War* (July/August 2003, Foreign Affairs) p.42

[2] Eliot Cohen, *A Revolution in Warfare* (March/April 1996, Foreign Affairs) p. 44

This change in the Army is not the first effort at altering the composition and role of the Army, merely the latest. There have been previous efforts, some of which sought whole scale changes in the structure of the Army, others that focused on the doctrine of the Army and how it fights while limiting the structural changes. In both cases, there were proponents and critics that desired or resisted change. In both cases, there were critical figures and events that made or forced tough decisions. In any event, change for the Army is difficult because as it embraces new technology for its soldiers, it may inadvertently increase their risk. Technology and information age science may or may not be able to replace combat power.

The military information revolution recently witnessed in Afghanistan and Iraq was preceded by another distinct revolution, that of nuclear weapons. Nuclear weapons altered the conduct of warfare after World War II. They played a role in Superpower calculations throughout the Cold War. The prospect of a localized conflict expanding into a global nuclear conflict occupied strategists and planners from both sides. Preventing such an occurrence and controlling if it did happen was essential, given the stakes involved.

C. THE NUCLEAR REVOLUTION

The advent of atomic weapons is the most dramatic of the Revolutions in Military Affairs of the 20th century. An RMA "involves a paradigm shift in the nature and conduct of military operations."[3] Such a shift renders obsolete or irrelevant on or more core competencies of a dominant player, or creates one or more new core competencies in some new dimension of warfare.[4] The atomic bomb rendered cities and large military formations vulnerable to a single weapon delivered by a single delivery system, against which there was no viable defense.

The atomic bomb transformed warfare by virtue of its sheer destructive power, and by compressing the time and reducing the resources needed to

[3] Richard O. Hundley, *Past Revolutions, Future Transformations: What can the history of Revolutions in Military Affairs tell us about Transforming the U.S. Military?* (Santa Monica, CA, RAND, 1999), p.9

[4] Ibid, p.9

accomplish such destruction. Armed with an atomic bomb, one airplane could destroy an entire city or significantly damage a geographic region. A fleet of such aircraft or missiles could destroy a county in a few hours. As Bernard Brodie points out:

> In fact the essential change introduced by the atomic bomb is not that it will make war more violent- a city can be as effectively destroyed with TNT and incendiaries- but that it will concentrate the violence in terms of time. A world accustomed to thinking it horrible that wars should last four or five years is now appalled at the prospect that future wars may last only a few days.[5]

The revolutionary impact of atomic weapons lies in the economy of their destructive power. As technology improved, atomic weapons became smaller and applicable to an increasing number of military scenarios. The military began to conceive of their use in situations other than a strategic campaign against the Soviet heartland, and to develop new delivery systems, force structures and doctrine to capitalize on them. All the armed sought to emphasize their unique ability to utilize these weapons in their specific medium of combat. The effective delivery of a nuclear weapon became increasingly synonymous with each services' contribution to national strategy.

D. THE MILITARY SERVICES AND NUCLEAR WEAPONS

World War II brought about profound change in how the United States fought wars. The development of aviation technology allowed for a massed air force of a kind envisioned a generation earlier by airpower theorists like Gullio Douhet and Hugh Trenchard. The maturation of "strategic bombing" during World War II, led to the creation of the Air Force as a separate service after the war.

Nuclear weapons delivery was deemed a critical mission for the new Air Force, and a logical extension of strategic bombing theory. Nuclear weapons and strategic bombing was a harmonious match for the Air Force. During the

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[5] Phillip Bobbit, Lawrence Freedman and Gregory F. Trevorton, editors, *U.S. Nuclear Strategy: A Reader* (New York, New York University Press, 1989), p. 67

early Cold War, the Air Force held a virtual monopoly on nuclear weapons delivery, as the service had the only airplanes capable of carrying the new weapons to the range needed. The Air Force senior leaders were intellectually attuned to the concept of strategic bombing, and nuclear weapons reinforced that intellectual and institutional connection throughout the Cold War.

As for the Navy, the advances in aircraft led to the demise of the battleship and to the primacy of the aircraft carrier. During the war aircraft carriers and naval aviation had performed roughly the same traditional functions as battleships (sea control, shore bombardment, etc.), but with greater range and accuracy. Although other surface ships were still needed, their predominant mission was to defend the carrier. The Navy emerged from the war strongly oriented toward combat in the air, and under the sea. Its aircraft carriers and submarines had won the Pacific campaign, destroying Japan's navy and interdicting its supplies. Additionally, the Navy was more attuned to the operational and tactical use of airpower in support of ground troops and amphibious landings.

The Army had emerged from World War II as the service suffering the greatest overall loss in the US defense establishment. It underwent a large drawdown of personnel and had a significant portion of its wartime force structure separated to make the US Air Force. There were also additional constraints placed on the Army about what type of aircraft it could possess to support its operations. The Army was left with minimal control of tactical and cargo aircraft, which it needed for deployment and combat. A final but not any less important distinction for the Army was the nation's new strategic outlook, which relied on nuclear weapons the predominant instrument for war. The Army saw this strategy as a bureaucratic loss of roles and missions to the Air Force and (to a lesser degree) the Navy, and also as a strategic folly, in that only limited account was taken of other types of conflict that might involve US forces.

The Army's struggle with nuclear weapons in the early Cold War was undertaken in this environment. As A.J. Bacevich writes:

> The Army found itself grappling for the first time with the perplexing implications of nuclear warfare; seeking ways of adapting its organization and doctrine to accommodate rapid technological advance; and attempting to square apparently revolutionary change with traditional habits and practical constraints of the military art.[6]

First, the Army had to contend with the primacy of the Air Force, the chief instrument of a national strategy focused on strategic nuclear bombardment of the Soviet Union. It was in light of this institutional competition, and in order to claim a share of defense resources equivalent to that of its sister services, that the Army embraced nuclear weapons., It did so even though it saw these weapons as creating a tactical stalemate, rather than as the key to victory.

E. THESIS AND DESIGN

In this thesis, I will conduct a historical analysis of this challenging period in the military history of the United States, mainly that of nuclear weapons and their transformative impact on the armed services and the Army in particular, during the early Cold War (The period from 1947 to 1957). I will start by looking at the Air Force and the Navy's incorporation of this weapon. I will then look at the Army's adaptation to nuclear weapons including its experience in the Korean War. This adaptation will be viewed in terms of actual systems and force structure. Finally, I will look at the doctrinal impacts of atomic weapons for the Army. How did the Army adjust to the "atomic age"? What changes in force structure, institutional thought, doctrine and tactics did the Army undergo? What lessons can be learned from that period that can be applied to the current transformation process?

Overall, the intent is to provide some context to the changes the Army is currently making in its force structure, doctrine and thinking based on its past experiences. The Army today faces a situation comparable in difficulty and complexity to that which it faced in the early Cold War. Today the United States faces a continuing threat from terrorism whereas in the Early Cold War it faced a

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[6] A.J. Bacevich, *The PENTOMIC ERA: The U.S. Army Between Korea and Vietnam* (Washington D.C., National Defense University Press, 1986), p. 4

continuing threat in the form of Communism. Today the new technology of the information age brings computers and networks, in the Early Cold War the new technology was the Atomic Bomb. Finally, today the Army's doctrinal challenge is how to structure forces and train to fight terrorism; the Early Cold War saw the doctrinal challenge as to ho to structure to fight on an atomic battlefield.

II. THE NUCLEAR REVOLUTION AND THE UNITED STATES AIR FORCE AND NAVY

A. INTRODUCTION

Nuclear weapons represented an unprecedented technological advancement to warfare in the 20th century. Their destructiveness represented an exceptional economy in weapons capability. These weapons also required a shift in how nations and militaries approached war. Today, nuclear weapons continue to affect policy and strategy.

In 1947, the United States Air Force (USAF) came into existence under the aegis of the National Security Act of 1947. The advocates of airpower finally had an independent air arm with which to conduct large scale strategic bombing. Coupled with the destructive capability of nuclear weapons, the USAF came to the vanguard of US national security policy. The ability to deliver nuclear weapons to the Soviet Union gave the USAF an integral role in determining US defense priorities.

The United States Navy had come out of World War II, as a professional, "blue water" navy. The Navy had retained its air assets under NSA 1947, although it had to submit to the Joint Chiefs of Staff organization, losing its position as one of two services with Presidential access. The Navy had embraced nuclear energy as both a weapons system and a propulsion system. The Navy had incorporated nuclear weapons as another weapon in its arsenal, rather than the central asset for Naval weapons and strategy.

Both military and political leaders struggled with the implications of these new weapons. Were nuclear weapons just an extension of weapons technology albeit larger and more destructive, but used in fundamentally the same way? Were these weapons something completely new in warfare, requiring new ways of warfighting doctrine and tactics? In either case, these weapons had an impact on the US military in that they defined defense programs, budgets and strategy.

This paper will look at how nuclear weapons affected the United States Air Force and Navy in the early years of the Cold War.

B. REVOLUTIONS

The concept of a "Revolution in Military Affairs" or RMA originated with the Soviets in the 1950s. The Soviets phrasing encompassed not only technology but also ideas. The Soviet Military journal Red Star wrote:

> The revolution in the military field has taken place not only in the field of material means of waging war, but also in the realm of ideas. It has required a radical review of existing military-theoretical views, a working out of new principles of military science, and a thorough development of all its constituent parts and branches on a new basis.[7]

Although a term *du jour* today, this concept was not universally accepted in the 1950s. Nevertheless, the advent of nuclear weapons had an impact on national strategies but also military doctrine.

In the United States, military and civilian thinkers began to understand that nuclear weapons represented more than just another new weapon in the arsenals. Much of the argument over these weapons centered on whether they represented a capability for a military force to do it job better, or they represented a requirement to fight war with a completely different set of technology and doctrine. This discourse coupled with the lessons learned from the victory in World War II left the United States in a dilemma of applying the new weapon to existing thought on warfare or developing a new form of warfare. Obviously, those in the military knew what had worked on the battlefield, yet nuclear weapons had been used on Japan in much the same context that the Army Air Force had been using conventional bombing raids on Japanese cities. Initially, the only difference the military saw was that of the economy of scale between one B-29 carrying one bomb and a 1,000-plane formation carrying thousands of conventional bombs.

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[7] Joseph D. Douglass, Jr., *Soviet Military Strategy in Europe* (New York, Pergamon Press, 1980) p.22

Throughout the 1950's however, the continued development of thermonuclear weapons of ever increasing destructive capability imposed changes on both the military doctrine and the political strategy guiding the U.S. military. Previous thoughts on strategic airpower, focused on attacking an enemy's war making capability, with nuclear weapons, an attack on that capability generally included his cities. The economy of nuclear weapons and strategic bombing arguably reduced the need and requirement for large-scale land or even naval warfare. As Bernard Brodie wrote in *Strategy in the Missile Age*:

> When we say that strategic bombing will be decisive, we mean that if it occurs on the grand scale that existing forces make possible, other kinds of military operations are likely to prove both unfeasible and superfluous. The Red Army, if poised to spring, could perhaps have a certain brief career as an autonomous force even if its homeland were laid entirely waste behind it, though in such a case it would itself also be the target of nuclear weapons of all sizes.[8]

The economy of nuclear weapons, a single device with exponential destructive power, coupled with the brief requirement for time invested in a bombing campaign made them revolutionary. These weapons married to a newly independent air arm, made for a service that would dominate US military and strategic policy throughout the Cold War and certainly the early years of that standoff.

C. DEFINING THE NEW THREAT 1947-1955

The end of World War II saw the United States begin a massive demobilization of its forces as well as the establishment of the Defense Department and the United States Air Force. The Army was executing force reductions and conducting occupation duties in Germany and Japan and the Navy was in similar circumstances, the Air Force was struggling with its establishment. In general, the armed forces of the United States had ageing

[8] Bernard Brodie, *Strategy in the Missile Age* (Princeton, NJ, Princeton University Press, 1959) p.166

equipment and limited numbers of personnel. As the Cold War developed and American attention turned to dealing with the Soviet Union as a competitor rather than an ally, the armed forces were aware of the threat from the Soviets, but were unable to maintain conventional forces to deal with the threat. Nuclear weapons were viewed as an offset for the reduced armed forces. This was more of a political decision than a military one. Army leaders obviously would have preferred to maintain sufficient conventional forces to counter the Soviet force, especially in Europe. Army Chief of Staff Mathew Ridgeway (1953-55) believed that the Eisenhower administration should invest in forces that were "properly balanced and of adequate readiness" which in turn would be an effective deterrent rather than increasing investment in nuclear weapons and delivery systems.[9] This thinking was based on the Army's belief that nuclear weapons would stalemate and conflict would return to the conventional realm.

As tensions began to increase, thinkers with in the government began to articulate theories about Soviet policies and goals. George Kennan's "The Sources of Soviet Conduct" is clearly the standard for such documents; the US government's response to that document was NSC-68, which was adopted in April 1950. In NSC-68, Paul Nitze defined the current and projected situation of conflict between the United States and the Soviet Union. As NSC-68 states, "The Kremlin regards the United States as the only major threat to the achievement of its fundamental design."[10] This document and others written during this time outlined American strategic thinking and policies throughout the Cold War.

Among the ideas contained in NSC-68, was the recognition that the US monopoly on nuclear weapons had disappeared as a consequence of the Soviet atomic detonation in August 1949. Further, even if American ground and naval forces were expanded, this alone would not be enough to deter the Soviets from

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[9] A.J. Bacevich, *The PENTOMIC Era: The U.S. Army between Korea and Vietnam* (Washington D.C., National Defense University Press, 1986) p. 38

[10] Steven L. Rearden, *The Evolution of American Strategic Doctrine,* SAIS Papers Number 4, p.90

attacking.[11] As stress between the two nations developed, each nation's atomic stockpile would increase, further raising tensions. The fear of general war in the early 1950's was profound; accentuating this fear was the Soviets willingness to risk escalation by the conflict in Korea. Soviet support for North Korea and then China, visibly represented to the United States a possible first move for the Soviets, potentially followed by actions in Europe. For instance as Marc Trachtenberg points out, "It was taken for granted that a serious Soviet intervention in the war would lead to World War III, and not just to a local U.S.-Soviet war in the Far East. "[12]

The fear at the time was not just of war with the Soviets, but the possibility that the United States stood the possibility of losing it. Not only were U.S. ground forces numerically smaller, the United States had a limited ability to deliver the atomic weapons in its arsenal. Further, atomic weapons, while destructive, were not seen as capable of significantly reducing Soviet War making capacity.[13] The underlying logic, therefore was that the United States needed to improve not only its nuclear capabilities, but also increase its conventional forces and those of its allies in order to deter Soviet aggression. Therefore, as the United States developed its nuclear and conventional forces for the potential war with the Soviets, the existing forces of the United States were left with the task of applying the current capabilities to attack the Soviet Union should they need to. In summary, the United States would have to embark on a rearmament program both conventionally and by expanding the ability to deliver nuclear weapons.

D. POLICY TO WAR PLAN

The Joint Staff had begun to develop strategic plans to address various scenarios for conflict with the Soviet Union as early as 1946. The JCS assessed, "that the Soviets were aggressive, and that Moscow was not simply seeking to

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[11] Marc Trachtenberg, *History and Strategy* (Princeton, NJ, Princeton University Press, 1991) p. 107-108

[12] Ibid, p.115

[13] Marc Trachtenberg, *History and Strategy* (Princeton, NJ, Princeton University Press, 1991) p.119

create buffer zones around the USSR but was intent upon world domination."[14] The JCS also understood that the conventional forces of the U.S. were insufficient in size to resist a Soviet attack and that, atomic weapons were the only "immediately effective weapon in the American arsenal."[15]

Initial concepts for war with the Soviets envisioned the expansion of a local incident into larger scale conflict. The predominant geographic focus was on Europe and the Middle East, presuming Soviet desire for resources and industrial capacity. These plans addressed the concepts for fighting the Soviets, but did so with no allowance for mobilization or sustainment of a force during an extended conflict. Besides limited conventional and nuclear forces, an additional complicating factor for planners was the Truman administration's contemplation of an international ban on nuclear weapons.

The initial plans such as CHARIOTEER and BROILER, placed emphasis on atomic weapons, as Steven Ross writes:

> It became the centerpiece of American strategy, and the planners strongly implied that atomic warfare alone could be decisive in a war against Russia. Shrinking forces and shrinking budgets convinced planners, that effective forward defense of Europe was not feasible. Coupled with a belief in the effectiveness of air power loudly trumpeted by the Air Force, planners had to emphasize their most effective weapon. Thus the A-bomb, despite its scarcity and severe limitations in delivery capability, took on an increasingly important role in American strategy.[16]

Early war plans focused on attacking Soviet industrial concentrations, the limiting factors being the stockpile size, delivery capability and inaccurate target information. Even so, the use of atomic weapons on or near these targets was expected to degrade the industrial war making capacity of the Soviets and in killing large numbers of civilians, further reduce the ability of Soviet industry to

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[14] Steven T. Ross, *American War Plans 1945-1950* (London, Frank Cass, 1996) p.19

[15] Ibid, p.19

[16] Steven T. Ross, *American War Plans 1945-1950* (London, Frank Cass, 1996) p.61

recover. However, the expansion of the stockpile brought increased capability and added missions for the bombing force. As David Rosenberg writes:

> The October 1949 target annex for Joint Outline Emergency War Plan OFFTACKLE called for attacks on 104 urban targets with 220 atomic bombs, plus a re-attack reserve of 72 weapons. The prime objective was still to disrupt the Soviet will to wage war.[17]

The Air Force clearly believed it could accomplish a war winning campaign against the Soviet interior, thereby obviating the need for a large force to defend Europe.

The Joint Staff continued to develop its estimates for a strategic bombing campaign, estimates of Soviet capabilities and the priorities to address those capabilities. The requirement to stop not only a Soviet advance in Europe or elsewhere, but also reduce their industrial war making capacity placed severe constraints on the planners flexibility. The JCS eventually identified three priorities for atomic attack. According to Rosenberg:

> The JCS formally assigned first priority to the destruction of known targets affecting Soviet capability to deliver atomic bombs. The retardation mission [attack of advancing Soviet armies in Europe] was given second priority because of the fleeting nature of the majority of major retardation targets. Third priority was assigned to attacks on the Soviet liquid fuel, electric power and atomic energy industries.[18]

These plans showed a growing reliance on atomic weapons to fill a shortfall in conventional forces both in Europe and in other areas of possible Soviet advance.

Atomic weapons were a central factor in U.S war planning throughout the early Cold War. Despite their limitations, the weapons represented a critical capability for the JCS and U.S planners. The weapons also became markedly more powerful after the first hydrogen bomb was detonated in 1952.

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[17] David Alan Rosenberg, *The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960,* International Security, Vol. 7, No. 4 (Spring, 1983), p. 16

[18] Ibid, p.17

Improvements in the weapons' destructive effect in turn required policy and planning adjustments. The option of capitalizing on the U.S. nuclear superiority also was considered, the idea of preventive war had circulated through the government and the military. The nation's vulnerability to atomic weapons, forced consideration of a "first blow." As a 1952 NSC study identified:

> The controlling relationship in the atomic equation appears not to be that of stockpiles to each other, but rather the relationship of one stockpile, plus its deliverability, to the number of key enemy targets, including retaliatory facilities, which must be destroyed in order to warrant an attack.[19]

While the possibility of a preventive war was considered, the concept clearly was never placed into action. Atomic weapons represented a centerpiece of U.S strategic thinking and policy. Their use in a conflict was accepted as inevitable, even at the tactical level. Yet, their true strength, in the view of the Air Force, lay in their strategic use against targets in the Soviet Union.

E. DECISIVE AIR POWER

The development of aircraft and subsequently air warfare doctrine has marked the latter part of the 20th century. Combat aircraft have graduated from reconnaissance aids to decisive instruments of war, able to operate from the tactical to the strategic levels. To this end, air power advocates such as General Billy Mitchell and Italian General Giulio Douhet were viewed as "visionaries who saw air power as the decisive vehicle of future wars, superseding and rendering marginal or superfluous the clash of armies on the ground."[20] The creation of the United States Air Force, in 1947 was an extension of this thinking, tempered by the experience of the Second World War.

Clearly, the Second World War supported the rapidly emerging technology of aircraft to include jets and missiles. The United States with its huge technological base was able to produce on a massive scale, tactical and strategic

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[19] Marc Trachtenberg, *History and Strategy* (Princeton, NJ, Princeton University Press, 1991) p. 135

[20] Fred Kaplan, *The Wizards of Armageddon* (Stanford, CA, Stanford University Press, 1983) p.35-36

aircraft as well as meet the requirements for ground and naval warfare. As Carl Builder writes:

> Who is the Air Force? It is the keeper and wielder of the decisive instruments of war-the technological marvels of flight that have been adapted to war. What is it about? It is about ensuring the independence of those who fly and launch these machines to have and use them for what they are- the ultimate means for both the freedom of flight and the destruction of war.[21]

Airpower had come of age during the World War II and the USAF saw as an absolute, its faith in air power and in particular the primacy of the heavy bomber and in general the technology of aircraft.

The Air Force found itself in a unique position among the services as it was intellectually equipped to couple strategic bombing and nuclear weapons. The Air Force truly believed that bombers equipped with atomic weapons would be the ultimate solution to warfare. Fortunately for the Air Force, during the late 1940s and early 1950s, the only way to deliver these weapons was by heavy bomber. Nevertheless, the early nuclear weapons were limited in numbers, outsized and heavy. According to Steven Ross:

> The bomb stock stood at thirteen in 1947 and grew to fifty by 1948. The bombs were mostly Mark III models that weighed 10,300 pounds and had a twenty-kiloton yield. It took a specially trained thirty-nine-man team two days to assemble a bomb which could remain in its ready state for only forty-eight hours…[22]

Even so, the Air Force found itself the right service, at the right time with the right capability. At the time, while long range, guided missiles were still being developed; bombers had proven their ability during the war and were the only sure way to deliver atomic weapons onto the Soviet Union. The responsibility for this mission fell to a unique organization within the United States Air Force, the Strategic Air Command.

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[21] Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore, MD, Johns Hopkins University Press, RAND Corporation Research Study, 1989) p.33

[22] Steven T. Ross, *American War Plans 1945-1950* (London, Frank Cass, 1996) p.12

F. THE STRATEGIC AIR COMMAND

The Strategic Air Command or SAC was established March 21, 1946 and was the designated entity within the Air Force for operational planning and execution of US strategic air campaigns against the Soviet Union. One of the early influential strategic thinkers, Bernard Brodie, began to look at both nuclear weapons and strategic bombing. Brodie concluded, that "strategic bombing would be our chief offensive weapon" [23] in war with the Soviets. Even though, large scale strategic bombing had been touted as a decisive strategy during World War II, studies afterwards showed this was not necessarily the case; for instance, "in 1944, the peak year of the Allied bombing effort, production of all German military hardware exceeded-in some instances-far exceeded-the output of previous war years when the bombing was not so intense."[24] Nuclear weapons changed that equation.

SAC had the task of planning the employment of the nations limited number of nuclear weapons, for the most effect against the Soviet Union. SAC "was both a separate major Air Force administrative command under the Air Force Chief of Staff and a specified command within the JCS national unified and specified command system."[25] SAC however, even though a new organization, was also a victim of the postwar drawdown with limited capabilities and personnel shortages. The organization had America's newest bomber the B-29, of which by 1948, only 32 were modified to carry atomic bombs; further, the B-29 had a 2,000-mile range, which did not allow it to reach the Soviet Union form the continental United States.[26] Although additional aircraft were coming into the air

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[23] Ibid, p.37

[24] Fred Kaplan, *The Wizards of Armageddon* (Stanford, CA, Stanford University Press, 1983) p.36

[25] David Alan Rosenberg, *The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960,* International Security, Vol. 7, No. 4 (Spring, 1983), p.10

[26] Steven T. Ross, *American War Plans 1945-1950* (London, Frank Cass, 1996) pp.12-13

force, to include the longer range B-36 and B-50, by 1949, SAC had 121[27] bombers with which to conduct an "atomic air offensive"[28] against the Soviet Union.

During this time, SAC was still a nascent force, capable of limited offensive operations, but growing as "the dominant force in operational planning for nuclear war."[29] This occurred nearly simultaneously with the creation and establishment of the USAF as a separate armed service and the Department of Defense as the head of the nation's armed forces. The first commander of SAC was General Curtis Lemay, who had commanded bombing operations against Japan. He would later become Chief of Staff of the Air Force. Lemay held the position that "the services [USAF] highest priority mission was to deliver the SAC atomic offensive, in one fell swoop telescoping mass and time."[30]

In the late 1940s, the nation's priorities were on drawdown of wartime forces and economic growth rather than conflict with the Soviet Union. The budget decisions of the Truman administration, made large standing ground and naval forces unlikely, forcing the nation to rely on aerial delivery of atomic weapons as both a deterrent and a warfighting system. The Air Force believed itself to be the only force able to deliver the nations nuclear weapons to the Soviet Union. SAC was the mechanism to execute this concept. Further, the position of SAC as a specified command with in the JCS system allowed SAC an advantage in achieving their procurement goals within the DoD.[31]

The conflict in Korea proved useful and frustrating for SAC. The command considered Korea "as an all-out training ground for the bigger issues

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[27] Ibid, p. 13

[28] David Alan Rosenberg, *The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960,* International Security, Vol. 7, No. 4 (Spring, 1983), p.12

[29] Ibid, p. 19

[30] David Alan Rosenberg, *The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960,* International Security, Vol. 7, No. 4 (Spring, 1983), p. 19

[31] Ibid, p.10

that loomed just over the Siberian horizons."[32] For SAC, Korea was a conventional bombing campaign against operational and tactical targets that proved good training for the crews; but there were few strategic targets in North Korea. The targets SAC considered worthy were "off limits" in Manchuria, nevertheless SAC as an organization learned lessons and improved its skills during the three years of the Korean conflict. The capability of SAC was demonstrated early on in the conflict, in that within nine days of alert, SAC units were flying combat mission in Korea compared to several months required in World War II.[33]

Korea also spurred the technological development of weapons systems; in particular, SAC began to receive the first jet bomber in the medium range B-47, followed by the more capable B-52. Additionally, medium range missiles were in use and showed promise as longer-range systems. By 1954, the Air Force was in receipt of 40 percent of the military budget, which allowed for a larger SAC force.[34] By way of comparison, between 1941 and 1955, the United States Air Force had five major strategic bomber programs under development and that reached production (see Table 1).[35] There were an additional seven programs that were studied and tested but not approved for production.

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[32] Richard G. Hubler, *SAC: The Strategic Air Command* (New York, Van Rees Press, 1958) p.103

[33] Ibid, p.111

[34] David Alan Rosenberg, *The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960,* International Security, Vol. 7, No. 4 (Spring, 1983), p. 22

[35] Michael E. Brown, *Flying Blind: The Politics of the US Strategic Bomber Program* (Ithaca, NY, Cornell University Press, 1991) p. 27

TABLE 1. U.S. BOMBERS OF THE EARLY COLD WAR

Program	Began	Ended	Total Number Built
B-36	1941	1954	366
B-45 (Jet)	1944	1948	142
B-47 (Jet)	1944	1957	1,923
B-52 (Jet)	1946	1962	744
B-58 (Jet)	1951	1962	116

The reliance on nuclear weapons ensured the Air Force a preeminent role in defense and strategic planning. A 1953 defense program identified three priorities based on the Eisenhower's administrations "New Look," the priorities: offensive striking power, tactical nuclear weapons and defense against nuclear attack.[36] The first two priorities clearly benefited the Air Force with their tasking to attack the Soviet homeland as well as advancing Soviet armed forces. This benefit was codified in the 1954-57 budgets, with the Air Force receiving 47 percent of the defense budget while the Army received 22 and the Navy 29 percent respectively.[37]

The increased budget allocation, certainly allowed the Air Force to increase force structure and acquire newer aircraft. The Air Forces early bombers were World War II era B-29s, followed by an improved B-29 version, the B-50. Another World War II era project was the B-36, a massive six engine, long-range bomber that never completely met expectations. Advances in jet engines allowed for the development of long-range higher speed, jet bombers.

The initial jet solution had been the medium range B-47 that although capable, relied on aerial refueling or bases closer to the Soviet Union, bases that could not be counted on once a conflict began. The Air Force needed a bomber

[36] Ibid, p.29

[37] Ibid, p.29

that could strike from the continental United States. Although this requirement had existed during World War II, its importance renewed as the Cold War progressed. Range, payload and accuracy still defined a bomber's effectiveness.

The B-52, an improved version of the B-47 was next. The B-52 was capable of reaching the Soviet Union from the United States. However, as Soviet defensive technology improved, the prospect of high flying jet bombers penetrating Soviet airspace, began to seem less likely. SAC moved towards faster airplanes, the supersonic B-58 and B-70. Neither system provided a solution to a high probability penetration of Soviet airspace. The B-58 lasted barely 10 years in service; the B-70 was cancelled before reaching operational service. Improvements in the payload and accuracy of missiles also contributed to the decline of multiple SAC bombers.

The Air Force clearly benefited from early fascination with the atomic bomb. The Air Force having the background in strategic bombing, a new, destructive weapon and the only delivery system at the time was in a position to capitalize on the fear of the Soviet threat and provide the decisive instrument of retaliation in the event of conflict with them. In a sense, the Air Force became totally focused on nuclear weapon delivery, some would argue even one-dimensional as a service. As Carl Builder writes:

> The Strategic Air Command (SAC's) concept of war is an extension of the Air Forces experience in World War II with the bomber offensives and the "maximum effort" raids, only this time in the form of an all-out nuclear exchange with the Soviet Union, one that invokes the Single integrated Operational Plan (SIOP). This is the war that justifies the forces, plans, and procedures SAC has worked so long and hard to perfect.[38]

Although this perhaps overstates the case, the Air Force provided superb tactical air support to ground forces in Korea and later Vietnam. Although in the

[38] Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore, MD, Johns Hopkins University Press, RAND Corporation Research Study, 1989) p.136

case of Vietnam, the Army found helicopter gunships as an organic close air support platform that avoided over reliance on and bureaucratic conflict with the Air Force. In any case, the Air Force certainly viewed the atomic bomb and its delivery as the essential weapon for the essential mission; that role would define it as a service during the early Cold War and indeed throughout the Cold War. The Air Force however, was rather isolated in this position, strong though it was within the Defense establishment.

G. EARLY COLD WAR NAVAL POWER

The United States Navy emerged from World War II the predominant naval force in the world. The Navy also was a transformed force. The Navy had entered the war a predominantly battleship centric fleet, it had ended the war with aircraft carriers and submarines as its primary weapons platforms. The aircraft carrier had the effect of expanding the effective range of a battleship. The submarine was an effective blockading weapon as well as reconnaissance platform. In fact, the Navy viewed its mission as essentially unchanged, that mission was command of the sea and the air above it.[39] The Navy had transformed itself in the sense of its expanded surface, aerial and subsurface capabilities. It is also useful to also describe the broader sense of the Navy. As Carl Builder defines the Navy:

> Who is the Navy? It is the supranational institution that has inherited the British Navy's throne to naval supremacy. What is it about? It is about preserving and wielding sea power as the most important and flexible kind of military power for America as a maritime nation. The means to those ends are the institution and its traditions, both of which provide a permanence beyond the people who serve them.[40]

The Navy viewed nuclear weapons and strategic bombing in a different light than the Air Force in terms of both policy and strategy. The Navy saw the

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[39] Kenneth J. Hagan, *This Peoples Navy* (New York, The Free Press, 1991) p.335

[40] Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore, MD, Johns Hopkins University Press, RAND Corporation Research Study, 1989) p.31

newly formed Air Force as an opponent for a monopoly on air power assets. Historically, airpower advocates viewed Naval Aviation as an air asset that should be incorporated as part of a single independent air arm. With the arrival of nuclear weapons and the supposed success of strategic bombing, the Air Force believed that victory in the next war would be achieved by a massive, sustained strategic atomic and conventional bombing campaign of the Soviet homeland. Whereas the Navy believed that, the strategic bombing campaign was only one part of a greater scheme of defense of Europe and the resource areas of the Middle East.

During the late 1940s, nuclear weapons delivery was becoming a key capability for the US military. The Navy was quick to recognize this and moved to meet the requirement. Then Under Secretary of the Navy, John L. Sullivan wrote to President Truman in 1946, "In order to enable Carrier Task Forces to deliver atomic bombs, it will be essential to modify the carrier aircraft and alter aircraft carriers…This will require advanced peacetime preparations." [41] The challenge for the Navy at the time was much the same as for the Air Force; the current atomic weapons were outsized, heavy and complex devices that did not lend themselves to small airframes. Nevertheless, the Navy undertook modifications to its largest carriers to operate larger aircraft with heavier bomb loads.[42] Additionally, the Navy while adopting its ability to deliver atomic weapons was also looking at nuclear science as a basis for vessel propulsion systems.

A concurrent dispute was occurring between the newly formed Air Force and the Navy over control of roles and missions. The Navy saw its effort to adapt aircraft carriers and aircraft to deliver nuclear weapons as a logical expansion of capability not only to support Navy missions but the overall strategic needs of the nation. The Air Force took the opposite view. The Air Force viewed the Navy's

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[41] Kenneth J. Hagan, *This Peoples Navy* (New York, The Free Press, 1991) p.336

[42] Jeffery G. Barlow, *Revolt of the Admirals: The Fight for Naval Aviation, 1945-1950* (Washington D.C., The Naval Historical Center, 1994) p.107

carrier force as both a wasteful divergence of funds for a robust strategic air arm and a vulnerable and obsolete asset. The Air Force regarded carriers as unable to effectively engage a land power such as the Soviet Union. The carriers vulnerability to both submarine and land based air attack coupled with the smaller delivery capability of carrier aircraft, reduced their usefulness in any strategic campaign. In the end, the Navy and Air Force reached tenuous agreement on the role of naval aviation in atomic weapons delivery albeit "both for tactical purposes and, in assisting in the overall air offensive, for strategic purposes as well."[43]

H. BOMBER AND SUPERCARRIER

The debate over roles and missions also took place in the development of weapons systems. In particular, the Air Force desired the B-36 bomber, whereas the Navy desired the so-called "supercarrier." Both systems represented an offensive capability for their respective services. Each service saw the others system as inadequate to the future task of defeating the Soviet Union.

The B-36 was a World War II design for a long-ranged heavy bomber (6 pusher engines, 230 ft. wingspan, 163 ft. length) that could strike Europe from the continental US.[44] The program was plagued by development problems and production priorities, which focused on already proven bombers then in service. The wars end did highlight the shortfalls of the B-29 and the accompanying need for forward bases. Therefore, the B-36 program moved ahead and the aircraft entered service in 1948. It was criticized immediately, as too big, too slow and vulnerable to the jet fighters then being developed by both sides. Yet, to the Air Force, the B-36 represented a progression of strategic bombing and at the time, was the only intercontinental rage bomber available to the Air Force.

Equally, the Navy had also realized the need to upgrade its fleet of aircraft carriers from the early World War II *Midway* class designs. In late 1945, the

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[43] Jeffery G. Barlow, *Revolt of the Admirals: The Fight for Naval Aviation, 1945-1950* (Washington D.C., The Naval Historical Center, 1994) p.130

[44] Michael J.H. Taylor, ed., *Jane's Encyclopedia of Aviation* (New York, Crescent Books, 1993) p. 265

Navy had initiated studies of "large, carrier-based bombers and a large aircraft carrier to operate them."[45] This eventually produced a design designated CVB-X (later 6A) which was intended to be a "single purpose, special type carrier, designed solely for conducting atomic strikes with 100,000-pound, long range attack aircraft."[46] The need for a larger, more advanced carrier was indicative of the Navy's view of incorporating atomic weapons in strike operations and the need to enhance the overall effectiveness of aircraft carriers. The intended targets would be on the periphery of the Soviet Union and other targets that supported naval operations.

The opposition of the Air Force centered around the perception that with this new carrier, the Navy was intent on developing larger carriers and aircraft able to conduct strategic bombing. Behind this thought, was the calculation that the money spent on the carrier, could be better used to improve and develop strategic bombers. In the end, Secretary of Defense Louis Johnson cancelled the new carrier and B-36 procurement continued. Johnson was to maintain a pro-Air Force stance throughout his tenure from March 1949 to September 1950. This coupled with an overt effort by the Air Force to ensure its preeminence with in the United States military, created an antagonistic relationship among the services.

Although the extended details of the inter-service conflict that took place during this time are beyond the scope of this document, it is necessary to note its occurrence. The Air Force and Navy both coveted a larger share of a limited peacetime budget. Both services faced the challenge of how best to face the new Cold War security environment. These two services disagreed on strategy, role and missions further aggravated by the mandate to unify the services under a Department of Defense. Service cultures, budgets and futures were at stake in the approval of their key projects of the early Cold War. While the Air Force

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[45] Jeffery G. Barlow, *Revolt of the Admirals: The Fight for Naval Aviation, 1945-1950* (Washington D.C., The Naval Historical Center, 1994) p. 132

[46] Ibid, p.137

emerged victorious, the Navy maintained its independence and air arm. In both cases, the delivery of atomic weapons was at the heart of debate. The service able to best do this would retain primacy in defense planning and thinking throughout the early Cold War.

I. CONCLUSION

Nuclear weapons certainly had an impact on both the Air Force and the Navy in the early Cold War years. The impacts were different for each service. On one hand, the Air Force had emerged from World War II as an independent force committed to air power and the concept of strategic bombing. On the other hand, the Navy, emerged from the war as a force changed from a predominantly battleship force to that of a carrier based force. Further, the Air Force worked successfully to achieve dominance in US defense policy during this time.

The development of nuclear weapons with their destructive economy, seemed tailor made for aerial bombardment. The early nuclear weapons were bulky and heavy and therefore were deliverable at long-range only by large aircraft. However, physics and engineering technology were continuing to refine weapons design to make them smaller and lighter. Even so, the United States armed forces saw these weapons as critical to any war with the Russians. This belief was critical in the early development of US war plans to attack the Soviet Union. The Air Force believed that a massive, sustained aerial attack on the industrial and population targets in the Soviet Union, similar to those conducted against Germany and Japan during World War II would be the decisive action in a war.

To this end, the Air Force created force structures-namely the Strategic Air Command (SAC) which had the sole mission of strategic attack of the Soviet Union. Furthermore, the Air Force embarked on a strategic bomber production program throughout the early years of the Cold War. Further, the Air Force received increasing proportions of defense budgets, even during the fiscal constraints of post World War II. In addition to increased budgets and aircraft development, the Air Force defined U.S strategic thinking during the early Cold

War. The missions to attack the Soviet war making industry, atomic delivery capability and retard a Soviet advance into Western Europe, were developed by the same planners and thinker that had fought the strategic bombing campaign of World War II. This primacy for the Air Force was the result of a convergence of technology, capability and geopolitics.

By comparison, the Navy viewed atomic weapons as a useful tool in their arsenal that could be used in a conflict with the Soviets. The Navy was not committed to the concept of strategic bombing like the Air Force. The Navy viewed the Air Force mission, as a part of a much broader operation the US would need to conduct against the Soviets. However, as the Air Force began to garner a greater share of defense budgets and dominance in strategic planning, the Navy began to develop an atomic delivery capability.

This development took shape in the form of a new fleet of larger aircraft carriers that could accommodate larger aircraft capable of carrying the atomic bomb and the new jet aircraft. The Air Force saw this development as a threat to not only its primacy in strategic bombing, but to its budget priorities. Although the Navy never intended to usurp the Air Force role of strategic bombing, this was the perception. During the Truman and Eisenhower administrations, the Department of Defense had limits to what budget could be expended on expensive weapons systems. In this event, the Navy lost its new aircraft carrier to the Air Forces B-36 bomber. The Navy also was challenged for its entire aviation fleet, to be incorporated into the Air Force, to create a completely independent air arm. This change did not occur and the Navy retained its air fleet.

Nevertheless, as the Korean conflict improved military budgets, the Navy was able to develop new carriers and aircraft to deliver nuclear weapons. Further, the Navy embraced nuclear science as a propulsion system for ships and submarines. Nuclear weapons represented a challenge for the Navy, as they almost represented the demise of the Navy that had won the Second World

War, the weapons also had the effect of reducing the Navy's traditional position as a dominant service in the nations political and security thinking.

In both cases, nuclear weapons represented changes for the Navy and Air Force. The early Cold War also represented a change for the United States in it role in geopolitics. The prospect of having to fight a numerically superior Soviet Union on multiple fronts around the world required a force capable of restricting their ability to wage war. The Air Force's strategic bombers, coupled with atomic weapons represented that force. That force could have been complimented with an enhanced Naval air arm, however, jealously over expanded budget and fear of reduced roles and mission squandered that opportunity. Nuclear weapons affected the Navy and Air Force in vastly different ways and not in a uniformly positive manner. In the early Cold War, the Air Force was able to develop a vast, technologically superior strategic bombing force. The Navy spent much of that same period, fighting for its very existence. The transformation for these services was either immaculate in nature or brutal in its potential impact. This was no less true for the United States Army during this time.

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III. THE ARMY'S ATOMIC FORCE STRUCTURE

A. INTRODUCTION

The US Army emerged from World War II as an experienced combined arms force. The Army's equipment, organizations and doctrine reflected the expertise learned during four years of conflict in both Europe and the Pacific. However, in the years immediately after the end of the war, the Army much like the other services, rushed to reduce its numbers. The Army had the primary mission of constabulary duty in Germany and Japan, helping to rebuild these countries. Moreover, World War II had seen the maturation of airpower as a combat arm and its definitive demonstration in the use of two atomic bombs on Japanese cities.

The uniting of airpower, in particular heavy bombers, and the atomic bomb seemed to herald a new era of warfare. The atomic bomb was indeed a new weapon of immense destructive power and strategists and leaders both political and military were still learning its potential. The thinking ranged from a weapon that would end all life on earth, to simply another larger explosive device. For certain, atomic weapons represented an increase in destructive economy, what took several hundred bombers with thousands of high explosive bombs to do in World War II, now took one bomber with one weapon. The emergence of the new weapon was soon followed by the creation of an independent air force, and some observers thought that this portended the primacy of air power over land power. The Army for its part wanted to learn what nuclear weapons could mean for tactical use and for the Army's role in National Strategy.

The Army, saw the destructive force of the new weapon, yet understood that in the immediate post war period, the weapons could only be delivered by heavy bombers, aircraft the army no longer had. Converting its utility to tactical purposes was a prime concern. Nevertheless, the Army faced a larger problem during this period with regard to atomic weapons. This problem was primarily a bureaucratic one, specifically, "It was the prevention of an Air Force atomic

monopoly, rather than a quest for some specific battlefield capability, that became the Army's nuclear "problem" of the late 1940s."[47] However, this concern would be quickly overshadowed by another more pressing concern, that of winning in the conflict in Korea.

Of equal and perhaps greater concern, the Army faced a new National Security Strategy centered on nuclear weapons. The Eisenhower Administration unquestionably was in favor of a strategic attack against the Soviet Union with atomic weapons in certain circumstances. This intention remained in spite of Army reservations about the efficacy of that strategy. The Army's opposition notwithstanding, Eisenhower remained unconvinced, stating that "a major war will be an atomic war and the army's role in such a war would be to maintain order in the aftermath."[48] Of course, the Eisenhower administration was first in favor of deterrence of Soviet actions.

The Korean War while not a nuclear conflict, provided the Army the first opportunity for a new type of combat that it had not faced in World War II. In Korea, the Army faced a massed infantry army as opposed to a blend of infantry and armored forces such as the Germans had utilized. This new threat, coupled with the Army's initial unpreparedness to fight, created a dangerous situation that required the application of massed firepower, tactical skill in its soldiers and leaders and undoubtedly luck to avert disaster. The conflict in Korea also saw the first opportunity for atomic weapons use in an operational or tactical combat environment.

This Chapter will provide an analysis of the Army's efforts to adjust to the realities of combat in Korea. Although the conflict in Korea is not the focus of this thesis, it is an essential part of the context of the Army's efforts in the early Cold War. Second, this chapter will look at what types of atomic delivery systems the

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[47] John J. Midgely, Jr., *Deadly Illusions: Army Policy for the Nuclear Battlefield* (Boulder, CO, Westview Press, 1986), p.2

[48] As quoted in A.J. Bacevich, *The PENTOMIC Era: The U.S. Army between Korea and Vietnam* (Washington, D.C., National Defense University Press, 1986), p.39

Army sought and how the Army adopted atomic weapons into its force structure. A subsequent chapter will review in detail, the doctrinal impacts of atomic weapons for the Army. Finally, this chapter will look at the Army's political and interservice conflicts with the Eisenhower administration and the Air Force over strategy, roles and missions during this period.

B. THE KOREAN CONFLICT

June 1950, found the United States military, in particular the Army, unprepared for combat on the Korean peninsula. The conflict in Korea was somewhat a surprise; not only in the North Korean attack, but also in that the US decided to respond in Korea. The U.S. military response over Korea was unexpected especially after Korea had been removed from US security strategy. Nevertheless, the US decided to defend South Korea with a land force that until then was focused on constabulary duty in Japan. The North Korean Army savaged the initial American ground force into Korea, Task Force Smith. Task Force Smith came to represent the failure of the post-World War II Army. Interestingly, at the end of the Cold War and following Operation Desert Storm, "No More Task Force Smith's" became Chief of Staff of the Army General Gordon Sullivan's rally cry against apathy in the ranks. The lesson of an unprepared, under trained and inadequately armed force had a long life within the Army.

The Army entered the Korean conflict with a force structure of ten combat divisions, five separate regimental combat teams and a total strength of 591,000.[49] Further, these units were generally under strength, not trained or ready for combat and equipped with World War II equipment, which while functioning was inadequate for the tasks in Korea. In fact, the Army had decided to adjust its brigade and battalion level unit structure in order to retain its 10-division force structure.[50] In essence, regiments or brigades went from three

[49] Allen Millet and Peter Maslowski, *For the Common Defense* (New York, The Free Press, 1984) p. 491

[50] David T. Fautua, *The "Long Pull" Army: NSC-68, the Korean War, and the Creation of the Cold War U.S. Army*, (The Journal of Military History, Vol. 61, No. 1, Jan. 1997), p.99

battalions to two, with the battalions under strength from 100% of authorized personnel.[51] Since the end of the war, there had been no significant modernization of the Army. With the exception of food, clothing and medical supplies, the Army had not procured any new equipment for its units.[52]

It was in this state that the Army entered the Korean conflict in 1950. As COL Arthur Conner points out:

> Of the 3,202 medium "Sherman" tanks in the United States in 1950, 1,326 were unserviceable. [For the Eighth Army in Japan] Authorized 221 recoilless rifles, Eighth Army fielded only 21. While 13,780 two-and-a-half-ton trucks were on hand, only 4,441 were in running condition; of the 18,00 "jeeps" in the command, 10,000 were unserviceable.[53]

These figures indicate multiple shortfalls for the Army. First, old equipment that had not been overhauled or refurbished since the end of the war, second, certainly a budget that allowed for only a portion of equipment to be properly maintained or allowed for new equipment to be procured and third, and perhaps most important, an absence of leadership to set priorities and focus efforts.

In Korea, the Army found itself fighting a conflict unlike any in its recent experience. The Army's latest combat had been its large-scale offensives in Europe and the Pacific during World War II. In Korea and indeed Europe, the Army was fighting or preparing to fight a continual defense across a wide frontage with limited units.[54] This coupled with general lack of combat experience led to initial failures of Army units. The Army rapidly recovered and

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[51] Major Robert A. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-76, Leavenworth Papers* (Leavenworth KS, Combat Studies Institute, US Army Command and General Staff College, August 1979) p. 7

[52] COL Arthur W. Connor Jr., *The Army, Transformation, and Modernization, 1945-1991: Implications For Today* (Carlisle Barracks, PA, Strategic Studies Institute, U.S. Army War College, September 2002) p.32

[53] Ibid, p.33

[54] Major Robert A. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-76, Leavenworth Papers* (Leavenworth KS, Combat Studies Institute, US Army Command and General Staff College, August 1979) p. 9

relearned the lessons of combat. Senior leaders and units began to develop tactics appropriate to the environment and adjust to the environment in Korea. Further, as industry geared up to support the conflict, improved weapons and technology eventually began to arrive in theater.

The initial weeks of the conflict saw the US Army defending all the way down the Korean peninsula. Then counterattacking back up the peninsula to near the Chinese border by the end of 1950. As the conflict continued, the Chinese intervention led to mass attacks or “human wave” style attacks against US units. The Army found itself relying on the massed firepower of infantry and artillery occasionally aided by armor. This position was not the expected operational or tactical environment the Army envisioned. The Army predominantly expected to fight a massed armored formation in “tank country” which it identified as the plains of Northern and Central Europe; the geography there offered open and extended fields of fire for tank cannon. Yet, in Korea, the Army found itself facing an enemy in the North Korean and Chinese armies, which fought as an infantry and artillery-centered force and did so in constricted and canalized terrain. This as opposed to an armored centric force and more open terrain such as it expected to face in the Soviet Army in Europe. Fighting an infantry centric force requires massive firepower such as provided by well-equipped infantry, massed artillery and air power and a sound defensive doctrine. Whereas fighting an armored centric force primarily requires other armor although backed by the same massed artillery and air power.

In some cases in Korea, tanks were used as supplemental artillery systems, with large dirt ramps being constructed at given angles of elevation. The tanks were then driven on to these ramps and used to augment regular field artillery pieces. However, the use of field artillery became critical in defeating the North Koreans and later the Chinese forces. The use of artillery to aid in defensive operations was especially insightful. As Major Robert Doughty points out:

> In Korea, it was not unusual to have massed fire from as many as 14 battalions, with each firing 10 volleys within the space of two minutes. In one operation, the 38th Field Artillery Battalion fired 11,600 rounds in 12 hours, a rate of one round per minute per 105mm howitzer.[55]

The coordinated and integrated use of artillery and infantry to conduct effective defenses was a highlight of the Army's success in Korea. In another example, the battle for Porkchop Hill in April 1953 saw nine filed artillery battalions fire 37,000 rounds in one 24-hour period.[56] Although this massed use of artillery placed strains on the supply system, the tactics' success reaffirmed its utility in commander's minds. Massed firepower ruled the battlefield. This reliance on massive firepower either delivered by artillery or by airpower, has remained relatively unchanged even today. Of course, with today's technological enhancements that allow greater accuracy, the need for a massive supply line is somewhat reduced. Certainly, the Korean experience reinforced the effectiveness of a defensive doctrine coupled with mass firepower, even at the expense of the ability to effectively maneuver or sustain an offensive.

However, it is interesting to note, the war in Korea was in a way a blueprint for the war the Army expected to fight in Europe. The Eighth Army in Korea was created to fight the conflict in Korea (and remains so today), to defeat the North Korean and Chinese Armed forces and to a bigger purpose show US resolve to defeat Communism. Whereas the Seventh Army in Germany was "purposely constructed to fight a long, tough-and expensive- battle against the Soviets and their Communist ideology."[57] The Seventh Army was a symbol of U.S. commitment to Europe and a manifestation of U.S. and Western values and

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[55] Major Robert A. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-76, Leavenworth Papers* (Leavenworth KS, Combat Studies Institute, US Army Command and General Staff College, August 1979) p. 11

[56] Boyd L. Dastrup, *King of Battle, A Branch History of Field Artillery* (Ft. Monroe, VA, TRADOC Branch History Series, Office of the Command Historian, United States Army Training and Doctrine Command, 1992) p. 258

[57] David T. Fautua, *The "Long Pull" Army: NSC-68, the Korean War, and the Creation of the Cold War U.S. Army* (The Journal of Military History, Vol. 61, No. 1, Jan. 1997) p. 113

resolve. In both cases, the Army envisioned a primarily defensive conflict; in essence, a smaller US Army facing a numerically superior enemy, this because of a National Strategy that relied less on ground forces and more on airpower and nuclear weapons. The primary difference between Korea and Europe, being the Korean and later Chinese reliance on massed infantry supported by tanks versus the Soviet reliance on massed numbers of tanks and artillery supported by infantry. The prospect of fighting a massed Soviet armored formation in Germany and Western Europe retained a prime position in the defense and foreign policy thinking of the U.S. Army.

With the conflict in Korea and the potential for conflict in Europe, the Army had long been thinking about how it might utilize atomic weapons in combat. As mentioned above, the reliance of the U.S. Army on artillery during combat in Korea leads to the possibility of substituting an atomic weapon for massed artillery. Of course, the main drawback of the early atomic devices was their size, weight and complexity. Additionally, the need for a heavy bomber to deliver the device, made their rapid use somewhat problematic. The rapidly changing tactical situation meant the ground commander would need instant communications with the aircraft and the armed aircraft loitering overhead on a constant basis. Further, atomic weapons effects were classified, so both the Air Force and Army were unable to develop guidelines for effective use in tactical situations. Therefore, with this in mind and overlaid with the experience in Korea, the Army increased its study of the weapon and its possible use on the battlefield.

During the Korean conflict, the Army had rushed the production of numerous new weapons systems. This included new tanks, helicopters and numerous other battlefield systems. The Army had certainly reinforced the belief in the superiority of massed artillery in support of defensive positions. Starting in 1951, the Army rapidly developed new self-propelled artillery systems in 105mm,

155mm and 203mm (8-inch) calibers to improve its fire support capability.[58] Although these systems represented improvements, the Army also began to look at atomic weapons as the true equalizer it needed. The conflict in Korea and the expected one in Europe had reinforced within the Army the belief that massed firepower would be needed to offset a numerically superior enemy.

As mentioned above, the tactical situation in Korea had proved difficult for the introduction of an atomic weapon. General MacArthur had been queried as to the possible use of atomic weapons. He saw the weapons as useful in isolating Chinese forces in North Korea if the Chinese entered the conflict.[59] MacArthur had viewed the weapons as useful at the operational level as a way to separate echelons of enemy forces and restrict their movement by creating radiated areas that Chinese forces were unequipped to cross. In fact, the Army had sent a team to the Far Eastern Command (FECOM) to study the possibility of employing an atomic weapon. The study found the following:

> a. The policies, procedures, and the means available for Operation "Hudson Harbor" were inadequate for successful tactical employment of atomic weapons.
>
> b. Timely identification of large masses of enemy troops has been extremely rare.
>
> c. Troops in the forward areas are, in general, dug-in in such a manner as to be afforded protection from airburst of atomic weapon.[60]

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[58] Boyd L. Dastrup, *King of Battle, A Branch History of Field Artillery* (Ft. Monroe, VA, TRADOC Branch History Series, Office of the Command Historian, United States Army Training and Doctrine Command, 1992) p.260

[59] Roger Dingman, *Atomic Diplomacy during the Korean War* (International Security, Winter 1988, Vol. 13, No 3) p.62

[60] Memorandum for Chief of Staff, U.S. Army, November 20, 1951 (Declassified Document Reference System, Naval Postgraduate School, Dudley Knox Library) Authors Note: I was unable to find a further reference for Operation Hudson Harbor.

The Army once more understood that an air delivered atomic weapon presented tactical and operational challenges for ground commanders. This challenge was certainly exacerbated by continued friction with the Air Force over target selection and control of air support. The lack of accurate data on weapons effects also presented problems for both services. The comment that troops in forward areas would be protected was undoubtedly based more on supposition than on clear understanding of effects.

The tactical and operational difficulty of using an atomic weapon, coupled with the inter service conflicts over use of the weapon presented the Army a clearer path. The team sent to FECOM also made another recommendation for the Army:

> That the Army, as a matter of the utmost urgency, develop a ground-to-ground vehicle, within its own organization, which will effectively deliver atomic missiles within range adequate for support of ground operations, and that a proportionate number of such weapons be provided to Far Eastern Command.[61]

This recommendation certainly reinforced decisions already taken or under consideration within the Army. The Army had begun development of an atomic cannon in the summer of 1950, although it was not tested until May 1953, after the cease-fire in Korea.[62] Nevertheless, the Army had begun to develop its nuclear capable forces, which would significantly shape the Army throughout the Cold War, but certainly in the 1950s.

C. ARMY NUCLEAR FORCES

Combining the lessons of Korea with the anticipated conflict in Europe, the Army began in earnest to develop an atomic delivery capability. This capability was accompanied by increasing study within the Army about how the use atomic weapons. Throughout the late 1940s and early 1950s, the Army and other services studied the possible scenarios and uses for atomic weapons. The Army

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[61] Ibid.

[62] Boyd L. Dastrup, *King of Battle, A Branch History of Field Artillery* (Ft. Monroe, VA, TRADOC Branch History Series, Office of the Command historian, United States Army Training and Doctrine Command, 1992) p. 261

became focused on the integration of atomic weapons onto the battlefield, based in large part on its experience in the Korean conflict; although the realities of budget and Defense policies were also a significant consideration.

For the Army, the intense study was primarily centered at the Command and General Staff College (CGSC) at Ft. Leavenworth, Kansas. Senior officers and students alike began to grapple with how these weapons might be used on the battlefield and the lessons from Korea were incorporated as well. One of the first published studies from CGSC was entitled "Atomic Weapons in Land Combat" by Colonel G.C. Reinhardt and Lieutenant Colonel W.R. Kintner.[63] This paper was the beginning of a wave of professional military writing on the subject. As John P. Rose points out:

> The Army recognized that a dynamic change had occurred in the military environment with the advent of atomic technology and that it must think anew if it were to respond anew. In their writings, military officers developed and debated notions of ground combat operations on an atomic battlefield primarily in terms of firepower and mobility…. Answers varied. Attempts to assess the change that atomic weapons cause on the battlefield were interpretive and encompassed the interaction between firepower, mobility, and dispersion.[64]

Of course, any new technology introduced onto the battlefield affects the interaction of firepower, mobility and dispersion. Yet coupled with the lessons of reliance on firepower from Korea, the Army certainly believed that atomic weapons were a significant answer to that problem. It is also interesting to note the amount of writing increased as the conflict in Korea continued and as awareness of atomic weapons possible use there or elsewhere increased. In the period from 1950 to 1954, the CGSC Professional Journal *Military Review* published 32 articles on atomic weapons in warfare; correspondingly, the period

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[63] Major Robert A. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-76, Leavenworth Papers* (Leavenworth KS, Combat Studies Institute, US Army Command and General Staff College, August 1979) p. 13

[64] John P. Rose, *The Evolution of U.S. Army Nuclear Doctrine, 1945-1980 (*Boulder, CO, Westview Press, 1980) p.56

1955 to 1959 saw 132 articles published.[65] The Eisenhower Administrations reliance on "massive retaliation" no doubt contributed to this amount of writing, even though the Army was not envisioned as the executor of the concept.

Nonetheless, the Army was developing a set of doctrinal principles for the atomic battlefield. As John Midgley found in a 1953 Army Training Circular entitled *Staff Organization and Procedure for Tactical Employment of Atomic Weapons*:

> Atomic weapons prepare the way by creating casualties and confusion. The battle is won by maneuver. It is necessary that atomic weapons be regarded as a gigantic preparation, but only as a preparation, and that the exploitation by maneuver be regarded as the major element of the battle plan.[66]

This concept although written in 1953, looks stunningly similar to the general concept of maneuver from World War I. It was with this operational and tactical concept in mind that the Army expanded its weapons development. As mentioned above, the Army's atomic cannon was the first effort at a ground based delivery system.

The atomic artillery concept had actually begun during World War II, although it had obviously not become a reality given the size of the actual atomic weapons then. However, as atomic weapons technology developed, the Army revisited the possibility. The atomic artillery was a 280mm cannon (nicknamed *Atomic Annie*) and was designed to fire both conventional high explosive and atomic artillery ammunition. The gun did successfully fire an atomic shell at Frenchmen's Flat, Nevada in May 1953.[67] The system although not ready in

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[65] Ibid, p. 57.

[66] John S. Midgley, Jr., *Deadly Illusions: Army Policy for the Nuclear Battlefield (*Boulder, CO Westview Press, 1986) p. 16.

[67] Boyd L. Dastrup, *King of Battle, A Branch History of Field Artillery* (Ft. Monroe, VA, TRADOC Branch History Series, Office of the Command historian, United States Army Training and Doctrine Command, 1992) p. 261.

time for Korea, still represented the Army's first atomic delivery capability, a critical asset within the Army's control and not that of the Air Force.

The atomic cannon, however, did not provide the ultimate solution for the Army's concept of the atomic battlefield. The gun system had a range of only 30,000 yards, short of the desired 45,000 yards; further, the system was complex to operate and required two days to properly emplace.[68] The gun was a technological achievement but not tactically or operationally useful. All said the atomic gun gave the Army an initial capability, but one that fell short of its expectations. Cannon artillery was and still is limited by range, its redeeming qualities being its rate of fire and variety of munitions in comparison to aircraft delivered weapons. The range limitation coupled with technological limitations of making an atomic artillery shell into the 155mm or 203mm (8-inch) shell size, limited the Army's options in this area. The Army did pursue cannon delivered atomic munitions throughout the Cold War, although the prime years of service are beyond the scope of this paper, the chart is provided for comparison:

TABLE 2. US ARMY CANNON DELIVERY SYSTEM (NUCLEAR CAPABLE)[69]

System	Range	Service Dates
M65 -280mm "Atomic Annie"	30km	1952-1955
M110A2 (203mm or 8 inch)	22km	1962-1995
M109A2/3/4/5/6 (155mm)	18km	1963- Still in service

[68] Boyd L. Dastrup, *King of Battle, A Branch History of Field Artillery* (Ft. Monroe, VA, TRADOC Branch History Series, Office of the Command historian, United States Army Training and Doctrine Command, 1992) p. 261

[69] Ibid, p.263. & David Miller, *The Cold War: A Military History* (New York, St. Martins Press, 1998) p. 436. *Authors Note*: The M109 system is still in service, although all 155mm nuclear artillery shells have been withdrawn from service and demilitarized.

Given the limitation of cannon delivered systems, the Army simultaneously turned to free-flight rockets and guided missiles. The Army began to develop a wide range of rockets and missiles, in an attempt to provide additional firepower for commanders in Korea. The conflict in Korea came to end before any of these newly developed system could be employed. Nevertheless, the Army forged ahead with development of a variety of surface-to-surface rocket and missile systems. As the chart below illustrates, the Army developed rocket and missile systems throughout the Cold War:

TABLE 3. US ARMY ROCKET & MISSILE SYSTEMS 1953-1991[70]

System	Munitions	Range	Service Dates
Corporal (Rocket)	High Explosive	138 km	**1953-1964**
Honest John (Rocket)	High Explosive & Nuclear	38 km	**1954-1972**
Little John (Rocket)	Nuclear	16 km	**1954-1964**
Redstone (Rocket)	Nuclear	400km	**1958-1964**
Sergeant (Rocket)	High Explosive & Nuclear	140km	**1961-1972**
Pershing 1 & 1A (Missile)	Nuclear	740km	1962-1978
Pershing 2 (Missile)	Nuclear	1,800 km	1983-1991
Lance (Missile)	High Explosive & Nuclear	91 km	1972-1991

The early development of rockets gave the Army and expanded set of capabilities, over the atomic cannon. However, these systems also had their drawbacks, in particular complexity, responsiveness and accuracy. The Corporal and Redstone missiles were liquid propelled and complex in preparation for

[70] David Miller, *The Cold War: A Military History* (New York, St. Martins Press, 1998) p. 437

firing. The Honest John and Little John system were solid fuel, free flight rockets and so while more responsive and easier to fire, they were inaccurate.[71]

Concurrently, the Army had begun to take an active role in air defense of the continental United States, which further fed the desire for rocket systems. The Army had developed several surface-to-air missile systems designed to protect the country from Soviet bombers. In all cases, the Army's cannon, rocket and missile systems represented a large-scale, long-term investment of its budget. Of course, this desire for rockets and missiles with ever increasing range and the ability to fulfill several roles also was viewed as a threat by the Air Force.

The Army and Air Force conflict over missile systems were symbolic of the era for the Army. The Air Force saw the Army's long-range missiles and rockets as encroaching on its "strategic" mission. As A.J. Bacevich discusses:

> In terms of missions and claims on the defense budget, however, the Army's acquisition of long-range missiles would occur at Air Force expense. Despite the Air Force's comparative robustness throughout the post-Korea era, that service had no intention of allowing the Army anything that even resembled a strategic weapon. Successful Army missile initiatives could undercut the rationale for Air Force bomber or missile programs.[72]

These conflicts added to the Army's increasing isolation in the Eisenhower Administration. The administrations "New Look" placed a high value on regaining control of defense expenditures after Korea. The "New Look" relied, in COL Arthur Connors words, "on an expanded strategic air force and reliance on technology, which allowed for a severe reduction in conventional forces."[73] Even so, the Army continued to develop weapons systems that could deliver atomic

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[71] Boyd L. Dastrup, *King of Battle, A Branch History of Field Artillery* (Ft. Monroe, VA, TRADOC Branch History Series, Office of the Command historian, United States Army Training and Doctrine Command, 1992) p. 270

[72] A.J. Bacevich, *The PENTOMIC Era: The US Army between Korea and Vietnam* (Washington D.C., National Defense University Press, 1986) p.90

[73] COL Arthur W. Connor Jr., *The Army, Transformation, and Modernization, 1945-1991: Implications For Today* (Carlisle Barracks, PA, Strategic Studies Institute, US Army War College, September 2002) p.38

weapons and began to look at changes in its unit force structure and organization. The Army was investing a bulk of its funding into missiles and other related systems and consequently allowing "its needs for improved conventional equipment to go unfulfilled,"[74] However, the Army did undertake a significant reorganization of its forces.

Several senior commanders had decried the still in force World War II era unit organizations. Major General James M. Gavin reinforced the conclusion, after war games in Europe, that "it was necessary to redesign the infantry division into relatively autonomous and widely dispersed "battle groups", each one capable of sustained combat on its own."[75] The Army conducted several other studies with a view towards combat on an atomic battlefield. The result of these experiments was known as the "PENTOMIC" division. The PENTOMIC concept was so named because it was centered on multiples of five units within the divisional structure.

The PENTOMIC reorganization of the Army began with the 101st Airborne Division in September 1956.[76] The PENTOMIC division consisted of five battle or combat groups with five companies in each group and each company with five platoons.[77] The five battle groups were intended to be self-sustaining in combat, as the concept of operations had these groups widely dispersed on the battlefield. The PENTOMIC structure also provided the division with an Honest John rocket battery and eventually 203mm or 8-inch howitzers to deliver atomic

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[74] A.J. Bacevich, *The PENTOMIC Era: The US Army between Korea and Vietnam* (Washington D.C., National Defense University Press, 1986) p.103

[75] Major Robert A. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-76, Leavenworth Papers* (Leavenworth KS, Combat Studies Institute, US Army Command and General Staff College, August 1979) p. 16

[76] Ibid p. 16

[77] A.J. Bacevich, *The PENTOMIC Era: The US Army between Korea and Vietnam* (Washington D.C., National Defense University Press, 1986) p.105

or conventional munitions.[78] It was in the PENTOMIC division's concept of operation, and subsequently the organization that problems for the Army rapidly emerged.

The PENTOMIC concept envisioned the unit operating on a broader battlefield than had previously been experienced. Specifically, the belief that in the future, the use of atomic weapons by both sides would require dispersed units. Broad frontages for defense were expected, hence the need for self-sustainment by units. Further, the Army envisioned units with the ability to fight on both a nuclear and non-nuclear battlefield. Chief of Staff Maxwell Taylor told Army leaders in February 1957 that "The Army had to be prepared to prevent or stop a small war as well as conduct a nuclear conflict."[79] The specifics of doctrinal thought to include the PENTOMIC Division concept of operation during this time will be discussed in a subsequent chapter.

The PENTOMIC structure was applied across the Army throughout the late 1950s. The Army completed PENTOMIC reorganization in 1960 settling with 14 active duty divisions with one of two designations, infantry or airborne; armored divisions retained a more traditional structure.[80] The PENTOMIC structure had shortfalls in both its conceptual foundation and the actual implications of the structure. A RAND study of the evolution of Army divisions points out:

> The battalion-size battle groups did not possess sustainable combat power, while shortcomings in mobility and logistical assets also left the division ineffective. The division did not possess enough vehicles to fulfill the Pentomic doctrinal concepts of timely massing and dispersion of forces…. In the end, Pentomic division

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[78] Boyd L. Dastrup, *King of Battle, A Branch History of Field Artillery* (Ft. Monroe, VA, TRADOC Branch History Series, Office of the Command historian, United States Army Training and Doctrine Command, 1992) p. 271

[79] John B. Wood, *Maneuver and Firepower: The Evolution of Divisions and Separate Brigades* (Washington D.C., United States Army Center of Military History, 1998) p.279

[80] John B. Wood, *Maneuver and Firepower: The Evolution of Divisions and Separate Brigades* (Washington D.C., United States Army Center of Military History, , 1998) p.286

> organization was unwieldy and unmanageable and proved to be less than robust vis-à-vis task organizing to suit specific missions.[81]

The PENTOMIC structure was intended for the Army to fill a role on a nuclear battlefield in light of 'Massive Retaliation' type strategic thinking. This wholesale Army effort occurred in spite of the fact that the Army fundamentally disagreed with the concept of 'Massive Retaliation'. As Maxwell Taylor pointed out in his memoirs, "Massive retaliation could offer our leaders only two choices, the initiation of general nuclear war or compromise and retreat."[82] Of course, 'Massive Retaliation' certainly placed the Air Force in a powerful position with in the Defense Department. This further forced the Army to make decisions and adopt policies designed to justify its existence in relation to the Air Force.

D. CONFLICTS

'Massive Retaliation' clearly placed a large emphasis on strategic airpower to deliver an atomic strike on the Soviet Union. The Air Force and specifically the Strategic Air Command certainly benefited from the policy. The administration's reliance on the deterrent value of an atomic offensive meant that it could reduce defense expenditures in other areas; clearly reducing manpower in the Army was an easy target for budget reductions. Of course, the Army resisted this line of thinking because it rejected the foundation of 'Massive Retaliation' to begin with. The Army saw the distinct possibility that Soviet aggression would take place without nuclear weapons, such as it had in Korea. So reducing the Army's size and budget would place it in a position similar to that which it had found itself in 1950.

The Eisenhower administration had articulated in NSC 162/2 that both tactical and strategic nuclear weapons were to be considered for use when "militarily desirable".[83] The affect of this document however, went further, in that

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[81] Richard W. Kedzior, *Evolution and Endurance: The US Army Division in the Twentieth Century*, (Santa Monica CA, RAND, Arroyo Center, 2000) p. 27

[82] Maxwell D. Taylor, *The Uncertain Trumpet* (New York, Harper and Brothers, 1959) p.5

[83] Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (Bloomington, IN, Indiana University Press, 1973) p. 402

it called for an expansion of the Air Force. The Air Force was to grow to 137 wings with 54 of them in the Strategic Air Command.[84] Nevertheless, the technological advent of 'tactical' nuclear weapons coupled with their prominence in a National Security document was certainly seized upon by the Army as a way to define relevance for itself during this time. As General Taylor had pointed out, "nuclear weapons were the going thing and, by including some in the division armament, the Army staked out its claim to a share of the nuclear arsenal."[85]

However, in acquiescing to the need for nuclear forces, the Army was facing up to the realities that despite its resistance to 'Massive Retaliation', it was unable to convince the administration or the other services of the foundation of that resistance. Namely the resistance centered on the concept that the military and specifically the Army must think beyond an all-out nuclear exchange and prepare not only for preventing war but also other lesser conventional contingencies.

This thinking was clearly in opposition to the administration and for the Air Force, a threat to its stature and budget within that administration. General Mathew Ridgeway had been the first Army Chief of Staff to oppose the administration's policy both privately and publicly. His efforts had almost no effect on the administration or within the services. General Maxwell Taylor took up these misgivings, when he became Chief of Staff. Taylor, as pointed out above, was still opposed to the course the Eisenhower administration had set out, but was not about to punish the entire Army over his opposition. Taylor advocated a concept of 'Flexible Response', which Taylor describes in his memoirs as "the need for a capability to react across the entire spectrum of possible challenge, for coping with anything from general atomic war to infiltrations and aggressions…"[86]. General Taylor also tried to persuade his

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[84] Ibid , p.403

[85] As quoted in, John B. Wood, *Maneuver and Firepower: The Evolution of Divisions and Separate Brigades* (Washington D.C., United States Army Center of Military History, 1998) p.279

[86] Maxwell D. Taylor, *The Uncertain Trumpet* (New York, Harper and Brothers, 1959) p.6

fellow service chiefs and the administration against a strategy relying only on nuclear weapons. He was unsuccessful; he then took his concerns public in the form of testimony before the Senate in 1958, saying "he found the Army at less than adequate readiness to counter possible Communist challenges".[87] This along with his previous disagreement forced Taylor's retirement.

This conflict between the Army and both the Eisenhower administration and the other services occurred as both strategies, budgets and service doctrine all conjoined over the emerging reality of the Cold War. This Cold War reality included events such as the US conflict in Korea, the French involvement in Vietnam (and possible US involvement) and continuing Communist actions throughout Eastern Europe. The Army certainly drew different conclusions about these events than seemingly the administration did. The Army saw its position on the need for conventional and nuclear capable ground forces reinforced by these events, whereas others seemed to view them as anomalies not to distract from the greater albeit potential strategic atomic campaign envisioned. During this period, the Army pursued nuclear capabilities as both a self-preserving act to retain a portion of budget relevance and as an acknowledgement of the realities of the "atomic age" and the need for military forces to deter conflict.

E. CONCLUSION

The Army's evolution during from 1950 to 1957 was a troubling period that saw the Army with out direction and embracing technology it did not truly accept in support of a strategy it did not truly agree with. The Army's experience in Korea found it initially unprepared for any conflict much less the one it ultimately faced there. However, the Army was able to adjust to the tactical and operational realities of combat against a massed infantry and artillery-based army. Yet it also found that the supposedly "absolute" weapon was not even a factor, due in

[87] Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (Bloomington, IN, Indiana University Press, 1973) p. 421

part to a lack of political will to use it and in part a scarcity of useful targets or effective procedures to attack those targets.

Nevertheless, the Army rapidly began to embrace atomic weapons and their associated delivery systems as a way to retain relevance in an increasingly airpower dominated strategic military culture. The concept of "massive retaliation" concentrated much of its conceptual and political effort in the large-scale use of strategic airpower and atomic weapons against the Soviet Union in the event of Soviet aggression. In this instance, the nation's military strategy was driven by technology. The Army felt the concept of 'massive retaliation' removed from possibility any other strategic options for the country's leaders and indeed the military. Even so, the Army's objections to this thinking found no sway with the Eisenhower administration, which continued on this course and its resultant defense and budgetary policy.

Consequently, the Army embarked on an internal series of changes that lacked long-term direction and resulted in short term and rather cosmetic changes to the force. The Army embraced atomic weapons in part to retain a share of the defense budget and to preserve legitimacy, by articulating a need for atomic weapons at the operational and tactical levels for potential use against Soviet forces. The changes to its force structure in the form of the PENTOMIC division were an attempt to meld atomic weapons and capability as well as conventional force capability into a multi-purpose unit. In both cases, the Army invested large sums of budget and intellectual capital into these changes that were not long lived for the most part. Interestingly, in the case of nuclear delivery systems, the Army retained that capability with its short and medium range rockets and missiles, up through the end of the Cold War. In any event, the Army embraced the very new technology that it had initially decried as a poor basis for national strategy. This technology then became the basis for the preservation of the Army in the "New Look" based Eisenhower administration. The Army's drifting journey in the early Cold War was defined by interservice

rivalry, unclear strategic roles and ill-conceived force structure decisions as a way to offset that rivalry and uncertainty.

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IV. THE ARMY'S ATOMIC AGE DOCTRINE

A. INTRODUCTION

The Early Cold War represented a new challenge for both the US and the Soviet Union over control of Europe. Externally, the Soviets found themselves facing a now dominant United States, in both military and economic terms. The US nuclear monopoly coupled with its untouched industrial base gave the United States a distinct advantage in the post war environment. By contrast, the Soviet Union had endured large-scale combat on it territory for four years, damaging its already limited industrial infrastructure as well as reducing its working age population. It was in this light that Stalin desired to create strategic "buffer" in Eastern Europe and further, to develop atomic weapons in order to balance the United States. The standoff in central Europe between the Soviets and its client Warsaw Pact and the United States and its client NATO defined the Cold War for its duration.

The armed forces of both nations had perfected combined arms warfare during World War II. The battles across Europe against the German army had educated generations of military leaders from both sides and energized the material development process to provide effective weapons systems. As the Cold War developed and nuclear weapons became more available, both armed forces began to consider their use in conflict at increasingly lower level of tactical conflict. The U.S. Army invested heavily in nuclear delivery systems and other force structure developments in an attempt to better operate on the nuclear battlefield. The U.S. Army gained additional knowledge and experience in Korea even though nuclear weapons were not used there. Nevertheless, the difficulties in understanding how and when to utilize nuclear weapons on the next battlefield would consume both militaries for the duration of the Cold War.

As mentioned before, early U.S. warplans focused on strategic air bombardment of the Soviet homeland. The role of ground forces was not clearly defined beyond a few general tasks. Certainly a conventional defense of

Western Europe was anticipated, although the ability of NATO and US ground forces to substantially delay a Soviet ground offense was questionable. In 1953, the U.S. Joint Chiefs of Staff anticipated that a US and NATO force of 31 divisions would face between 30 to 80 Soviet divisions in Central Europe.[88] Additionally, Phase I of the 1957 DROPSHOT plan anticipated 10 US divisions in support of a total requirement of 60 NATO divisions to hold the Rhine-Alps-Piave line.[89] Yet the realities of U.S Army force structure during this period portray a somewhat different picture. For instance, the Army maintained 20 divisions on active duty during the Korean War.[90] These divisions were deployed across the world, with 8 in Korea during that conflict, 5 in Europe and 7 retained in the United States as a reserve.[91] Clearly the U.S. Army forces committed to defending Western Europe were intended no to match Soviet forces equally. Rather their intent was to occupy Soviet ground forces while the strategic air campaign reduced Soviet ability to support the ground campaign.

Interestingly, Phase II and III of DROPSHOT anticipated a counter attack against Soviet forces, and then later occupation of major portions of the Soviet Union; this occupation task would require 38 U.S. divisions.[92] In 1957 the Regular Army comprised 18 divisions, plus 27 National Guard divisions and 11 in the Army Reserve.[93] These units of course were not all at full strength in personnel or equipment, so their ability to conduct the missions intended under the DROPSHOT plan could not be accurately analyzed. The planning, while

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[88] Steven T. Ross, *American War Plans 1945-1950* (London, Frank Cass, 1996), p. 146-7

[89] Anthony Cave Brown, *DROPSHOT: The United States Plan for War with the Soviet Union in 1957* (New York, The Dial Press, 1978) p.215-6 The higher number of 80 anticipated divisions not in East Germany, but in European Russia and able to be quickly moved into East Germany and Czechoslovakia to support the Soviet offensive.

[90] John B. Wilson, Maneuver and Firepower: The Evolution of Division and Separate Brigades (Washington D. C., United States Army Center for Military History, 1997) p. 244

[91] Ibid, p.256

[92] Anthony Cave Brown, *DROPSHOT: The United States Plan for War with the Soviet Union in 1957* (New York, The Dial Press, 1978), p.244

[93] John B. Wilson, Maneuver and Firepower: The Evolution of Division and Separate Brigades (Washington D. C., United States Army Center for Military History, 1997) p. 256

detailed in force requirement estimation did not take much account of these forces operating in areas that had been attacked by nuclear weapons and the subsequent need to deal with radiation and massive casualties. US planning expected ground forces to attrit Soviet ground forces attacking in Western Europe and at some later point, counter attack and occupy the Soviet homeland. Within this framework, the Army struggled to develop doctrine and force structure that anticipated conflict in Europe, most likely involving nuclear weapons on the tactical battlefield.

The previous chapter looked at the specific weapons systems and force structure the Army created around atomic wepons. This chapter will look at Soviet strategic and operational doctrine during the early Cold War and specifically its potential application in Europe. It will then look at how the US Army responded to that threat and how it envisioned fighting that conflict. Clearly, nuclear weapons were part of the Army's concept. Finally, the chapter will look at the Army's doctrinal developments during the period and how they incorporated atomic weapons and the changing force structure.

B. SOVIET EARLY COLD WAR STRATEGY

At the end of World War II, the Soviets found themselves in possession of a vast new empire, encompassing possessions and client states in the Far East to include North Korea, portions of Northern Japan and Eastern Europe. At the same time, four years of bitter conflict on Soviet soil had left the nation physically and economically devastated. Nevertheless, the Soviets retained a large force in Eastern Europe ostensibly as a defensive force, but also to consolidate the hard-won victory of the Red Army. The forces in Eastern Europe and at the other edges of the Soviet empire were nevertheless reduced, as the Soviet homeland required the manpower then occupied in the armed forces. At the end of the war, Soviet armed forces numbered 11.3 million, by 1948 demobilization had returned 8.5 million to work at restoring the Soviet society, industry and infrastructure.[94]

[94] Peter G. Tsouras, *Changing Orders: The Evolution of the World's Armies, 1945 to the Present* (New York, Facts On File, 1994) p. 37-8

So, the immediate focus was on holding the gains from the war by retaining Eastern Europe and deterring the west, followed by reconstruction of the Soviet Union, which would be achieved by retuning manpower to industry.

With the above priorities in mind, Stalin still understood the potential for conflict with the West. Certainly the United States, with its undamaged industrial base, represented an economic and military threat to Soviet Communism. Post war Soviet thought on the next possible conflict with the U.S. was not dissimilar to US thoughts about the next conflict. Specifically, the Soviets considered that:

> A future war was expected to be global, although local conflicts were thought to be quite probable. It was presumed that the war would be protracted and would require forces of millions to achieve victory. The war aims would be achieved through the united efforts of the armed services, with the ground forces playing the leading role and the other services supporting them.[95]

Of course Stalin's "permanent operating factors"[96] which dealt with the weapons, size, strength and morale of Soviet military forces also influenced Soviet strategic efforts, even though the factors were originally intended to guide the Soviets to victory against the Germans. The factors and Stalin's overriding personality also focused Soviet learning from the war on its later, more militarily successful stage as opposed to its less triumphant early years, which saw massive defeat of Red Army forces across the battle front with Germany. This selective learning also supported the Soviet leadership's efforts to rebuild the nation, as well as foment additional social unrest and support for Communist ideology in Eastern Europe, while maintaining strength and resolve against the United States. More specifically, Stalin and the Soviet leadership "maintained, reorganized and reequipped a large and formidable ground force capable of deterring potential United States use of atomic weapons by holding central and

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[95] Andrei A. Kokoshin, *Soviet Strategic Thought, 1917-91* (Cambridge, MA, MIT Press, 1999), p.112

[96] Ibid, p.112, the five factors are: (1) stability of the rear; (2) morale of the troops;(3) quantity and quality of divisions; (4) weapons the army has; and (5) organizational ability of military command personnel. These are provided as reference to Soviet thinking of the period.

western Europe hostage to Soviet ground power."[97] Of course, this force was large as it had a twofold task, defend Soviet gains from the war and support the Socialist regimes in Eastern Europe.

Soviet forces in Eastern Europe centered on the GOFG or Group of Occupation Forces, Germany. This force had a mission, much like U.S. forces in Germany, the GOFG maintained order, established local governments ideologically supportive of Moscow and of course to defend against western attack should it occur. In fact a 1946 Soviet military plan for eastern Europe was entitled "A Plan for the Active Defense of the Territory of The Soviet Union", which was centered on defeating western aggression and then counterattacking to restore the borders established at the end of the war.[98] This plan was a codification of the war experience against the Germany. In as much as the German army had invaded the Russian homeland, Soviet forces had withdrawn trading hundreds of miles of steppe to buy time for Soviet industry to produce more weaponry and allow the effects of winter to stall German advances. Then with Soviet power rebuilt, a massive offensive to drive the Germans out of the country. This plan was a replay of that experience, substituting US forces for the German Army. With this emerging mission and the lessons from the war, Soviet forces also began to upgrade the structure and equipment of their armed forces.

C. EARLY COLD WAR SOVIET GROUND FORCES

In the immediate postwar period, the Soviet Military internalized the lessons from its late war operations against Germany. It was during that period that Soviet Army commanders at regiment and above perfected Soviet style combined arms operations. In essence, Soviet military operations remained unchanged in nature from what had been executed in late 1944 and 1945. Postwar Soviet operational art emphasized, "heavy firepower and the rapid forward projection of mechanized and heavily armored formations to the depth of

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[97] David M. Glantz, *Soviet Military Operational Art: In Pursuit of Deep Battle* (London, Frank Cass, 1991), p.161

[98] David M. Glantz, *The Military History of the Soviet Union: A History* (London, Frank Cass, 1992) p. 180

the battlefield."[99] To this end Stalin and the military began to adjust the structure and outfit the Soviet ground forces. For instance, Soviet wartime Rifle divisions became Motor Rifle divisions, and were reorganized and reequipped such that by 1953, their firepower was seven times what it had been during the war.[100] The Soviet Tank divisions adjusted their structure to resemble that of German SS Panzer divisions they had faced in the war.[101]

This period did not place large emphasis on nuclear weapons in support of operations, although Stalin devoted increasing resources to a Soviet nuclear weapons program, which, supplemented by a successful espionage campaign against the United States, resulted in the first Soviet nuclear detonation in 1949. Even so, the integration of nuclear weapons and their impact on ground operations did not become accepted until the mid-1950s. As Andrei A. Kokoshin points out

> Soviet predictions about a future war in that period were unvarying. They merely projected the previous war into the future….Atomic and later thermonuclear weapons scarcely affected Soviet political and military thinking in the early postwar years, and continued to be overshadowed by ideology and propaganda.[102]

However, to say Soviet military thinkers did not seriously consider nuclear weapons is not accurate. Soviet thinkers did consider the use of these weapons, much in the same way their western counterparts did.

The Soviet military reforms based on lessons from the war were incorporated into reorganized and equipped formations. The Soviets envisioned their ground forces bearing the main burden of accomplishing military and political objectives. This would be achieved through a "strategic offensive", which

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[99] David M. Glantz, *Soviet Military Operational Art: In Pursuit of Deep Battle* (London, Frank Cass, 1991), p.173

[100] Peter G. Tsouras, *Changing Orders: The Evolution of the World's Armies, 1945 to the Present* (New York, Facts On File, 1994) p.39

[101] Ibid, p.39

[102] Andrei A. Kokoshin, *Soviet Strategic Thought, 1917-91* (Cambridge, MA, MIT Press, 1999), p. 114-5

was a “main and decisive form of operations” to defeat enemy forces, possess territory, and achieve victory.[103] Again taking lessons from operations against the Germans, the Soviets envisioned a large-scale operation of massed armored and mechanized formations. This represented the mission of the forces in Eastern Europe in the early Cold War.

As referenced above, the GOFG initially intended to defend the Soviet possessions in Eastern Europe, counter attacking once the enemy forces had been defeated. To accomplish this, the GOFG possessed two combined arms armies (the 3d Shock Army and 8th Guards Army), which in 1946 had a total of 16 divisions (5 rifle divisions, 5 motor divisions and 6 tank divisions).[104] Of course this represented forces positioned forward and does not account for forces in Eastern Europe and the western Soviet Union, which could be quickly moved into East Germany. The 16 divisions in Eastern Europe represented a fraction of the estimated 175 total Soviet divisions in 1948.[105] The Soviet forces in East Germany fluctuated during the late 1940s, although later, after the 1958 Berlin crisis the totals increased to between 20-24 divisions.[106] This force faced the U.S. Army in West Germany, and represented the key forward Soviet presence of the Cold War.

C. COUNTERING THE THREAT

The US Army’s experience during the Korean War had reinforced the need for a doctrine able to provide the Army a battlefield advantage against a numerically superior enemy. Subsequently, the Army’s incorporation of nuclear

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[103] David M. Glantz, *Soviet Military Operational Art: In Pursuit of Deep Battle* (London, Frank Cass, 1991), p. 167-8

[104] David M. Glantz, *The Military History of the Soviet Union: A History* (London, Frank Cass, 1992), p.184

[105] John Erickson, Lynn Hansen and William Schneider, *Soviet Ground Forces: An Operational Assessment* (Boulder, CO, Westview Press, 1986), p. 21 *Authors note*: Exact totals of Soviet Forces are difficult to identify as some units were cadre units only and not filled to full combat strength. Further, Soviet reorganization also altered the strength and composition of units, which were counted as divisions but in fact were nearer to regiments in size. David Glantz contends there were a total of 180 Soviet divisions in 1948-with 16 in East Germany.

[106] See authors note above- exact numbers are difficult to come by- my research has so far confirmed this.

weapons was intended to offset the Army's smaller size in comparison to the Soviet forces it faced in Europe. The fiscal policy of the Eisenhower administration was termed "security with solvency" and was intent on not allowing defense spending to grow at the expense of the rest of the U.S. economy.[107] This aspect, taken in concert with the European nations struggling to return their societies and economies from the destruction of the war, meant that military leaders would be restrained in their ability to spend on new weapons and large standing forces. Nuclear weapons were a key part of this economy that political leaders intended, as David Yost points out:

> TNF [Theater Nuclear Forces] would, it was believed, allow the United States and its allies to limit spending on conventional forces, including operational reserves, while providing a effective posture for deterrence and defense in Europe. During much of the 1950s high-level military and political leaders assumed that in the event of war TNF would be used as extensively as necessary to help defeat Soviet offensives in Europe in conjunction with strategic nuclear strikes against the Soviet Union.[108]

This economic challenge was one of several that faced Army leaders in dealing with nuclear weapons.

An equal challenge was that of developing doctrine that also accounted for Soviet use of nuclear weapons on the battlefield. The possible use of nuclear weapons required dispersed forces across the battlefield to ensure that one nuclear weapon could not destroy significant portions of a formation. This dispersed force had to then rapidly reform in order to defeat the advancing Soviet formations.

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[107] Russell F. Weigley, The American Way of War: A History of United States Military Strategy and Policy (Bloomington, IN, The Indiana University Press, 1973) p. 400

Allan R. Millet and Peter Maslowski, *For the Common Defense: A Military History of the United States of America* (New York, The Free Press, 1984) p. 511

[108] David S. Yost, *The History of NATO Theater Nuclear Force Policy: Key Findings from the Sandia Conference* (London, Frank Cass, Journal of Strategic Studies, Vol. 15 No. 2, June 1992) p. 230

Total numbers of Soviet units were mentioned above, but it is useful to consider Soviet and U.S. ground units in some detail. Both armies had learned from their experience in World War II and the U.S. Army had the added experience of Korea. In Korea the Army had the experience of trying to use nuclear weapons in a tactical role, albeit these early attempts were limited by the type and size of weapons available at the time. Although nuclear weapons were an expected part of any future battlefield, both the U.S. and Soviet units were still optimized for conventional combat.

The U.S. Army attempted, with its PENTOMIC units to develop a unit and associated doctrine capable of both conventional and atomic combat, a dual-purpose unit. Of course, the critical difference between the two types of combat was in the expected weapons employed, which would create a different battlefield environment, and therefore alter the tactics used. Conventional combat would not alter significantly from what each side experienced in the Second World War. However, in the case of atomic combat the expectations were an acknowledged unknown despite numerous exercises and weapons tests that were intended to improve knowledge and assist in development of tactics. Of concern was the expected profligate use of nuclear weapons to augment or replicate the effects of traditional artillery fire. For example, in an exercise called 'Carte Blanche', NATO forces used 355 weapons inside West Germany in the span of two days.[109] Army leaders saw this possibility as unlikely due to the U.S. limited stockpile in the event of war and excessively destructive, given that U.S. forces were defending Germany and in the process would destroy the country.

Western Europe and specifically the border area between West and East Germany was where the main battle between U.S. and NATO forces and Soviet and Warsaw Pact forces was expected to take place. West Germany was approximately 700 kilometers from North to South and 300 to 400 kilometers East to West, which from a tactical and operational military perspective provides

[109] Peter Paret, Editor, *Makers of Modern Strategy from Machiavelli to the Nuclear Age* (Princeton, NJ, 1986) p.747

limited depth.[110] The terrain in Southern Germany is mountainous- abutting the Alps; this terrain is unfavorable for attacking armored formations, the area having narrow valleys, surrounded by mountains providing defenders the advantage. Central Germany is partially open with medium height hills and low mountains interspersed. This terrain also favored the defender, easily canalizing an attacker into the flat but relatively narrow valleys. Moving north, the terrain flattens out providing greater mobility for armored formations. Of course, the northern plains also represented the farthest distance to travel in order to threaten Germany's key industrial and economic centers and subsequently the ports on French and Belgian coast.

The correlation of forces, or the match up of U.S. to Soviet Army forces in Europe is illustrative of the challenge the U.S. Army faced. The U.S. Army divisions were part of the overall NATO force arrayed against the Soviets in West Germany. On balance during the Early Cold War, the Soviet Army maintained a force of between 16 and 22 divisions in East Germany. During the early years of NATO, the involved nations committed to an overall structure of 30 divisions, with NATO relying on nuclear weapons to offset the greater numbers of Soviet units.[111] In fact, NATO had only 16 to 18 divisions on-hand during this period.[112] Of those 30 NATO divisions, 5 were U.S. Army divisions and the remainder, filled by the other NATO members. Although there had been initial force structure goals much higher, European nations were politically unwilling to support larger formations, for fear of excessive defense spending while also sustaining economic and social recovery from the war.

Throughout the period of this paper (1947-1957), the US Army maintained a 5-division force structure in Europe. Throughout the Early Cold War period, the Army redesignated unit headquarters several times, even though the units and

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[110] David Miller, The Cold War: A Military History (New York, St. Martins Press, 1998) p.237

[111] Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York, St. Martins Press, 1981) p. 288

[112] Klaus Knorr, editor, *NATO and American Security* (Princeton, NJ, Princeton University Press, 1959), 30

equipment did not significantly change. This structure contained four infantry divisions and one armored division, along with three armored cavalry regiments that arguably could equate to a 6th division if employed together.[113] Of course, cavalry units were intended as reconnaissance forces rather than main combat units. Within the U.S. Army sector in West Germany, those 5 divisions faced between 8 and 10 Soviet divisions, depending on how the Soviets attacked.[114] Numerical overmatch was a reality for the U.S. Army throughout the Cold War. The best way to offset that disparity occupied the Army for the duration.

D. ATOMIC DOCTRINE AND UNITS

Developing tactical and operational doctrine is difficult even in ideal circumstances. For the Army, "doctrine provides a military organization with a common philosophy, a language, a purpose, and a unity of effort. "[115] The constant change of improving technology can rapidly render doctrinal proposals useless. The entire process of military development is an ongoing interaction between the national strategy to be executed and supported, the available technology that places boundaries on what is feasible and finally the development of doctrine and unit force structure to support execution. The Army's challenge of doctrinal development in the case of atomic weapons, was limited understanding of their effects, coupled with other limitations on delivery and target acquisition. In addition, the Eisenhower administrations reliance on "Massive Retaliation" as its strategy placed both budgetary and bureaucratic pressure on the Army. The budgetary pressure forced the Army to decide on a tradeoff between maintaining force structure and investing in weapons technology, a set of decision process that the Army still engages in today. The bureaucratic challenge was in competing for an equal input into military strategy, roles and missions. Given the eminence of the "Massive Retaliation" strategy,

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[113] John B. Wilson, *Maneuver and Firepower: The Evolution of Division and Separate Brigades* (Washington D. C., United States Army Center for Military History, 1997) p. 256

[114] David M. Glantz, *The Military History of the Soviet Union: A History* (London, Frank Cass, 1992), p. 184

[115] The United States Army, *Field Manual 3-90 Tactics* (Washington D.C., Headquarters, Department of the Army, July 2001) p. xiii

the Air Force became the predominant service, and nuclear weapons became the key system. In this environment, the Army began to develop doctrine for the atomic battlefield.

The Army's doctrinal development took place at the Command and General Staff College at Ft. Leavenworth, Kansas. Ft. Leavenworth also trained the Army's mid-grade officers in Army history, operational and tactical doctrine and leadership all in preparation for their jobs as battalion operations officers, battalion executive officers or division and corps level planning and operations staff. As such, Ft. Leavenworth was the Army's key intellectual center for approaching the complex issue of the atomic battlefield.

In 1953, two Army officers wrote one of the initial, in-depth studies of atomic weapons and their impact on ground forces. In their book, *Atomic Weapons in Land Combat*, Colonel G.C. Reinhardt and Lieutenant Colonel W.R. Kintner analyzed these then new weapons and how the Army might employ them in possible scenarios. In evaluating their use in the offense, Reinhardt and Kintner write:

> The concentration of men and guns that once barred frontal assault may now comprise the most remunerative target for atomic weapons in the enemy's entire position. Instead of searching out his weakest point for assault, the army equipped with atomic missiles may deliberately strike at the foe's strongest. Having destroyed him there, we scatter his weaker elements by exploiting columns of armor and swift infantry followup.[116]

Of course this concept brought back visions of World War I style mass attacks against static defensive positions, albeit with a new element in the form of the atomic weapons replacing the days long artillery preparation. Simultaneously, Reinhardt and Kintner also considered Army forces using nuclear weapons as part of a defense.

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[116] Colonel G.C. Reinhardt & Lieutenant Colonel W. R. Kintner, *Atomic Weapons in Land Combat* (Harrisburg, PA, The Military Service Publishing Company, August 1953), p.36

In this case of a defense, the problem of targeting the weapons was raised, as was the need for Army forces to increase their flexibility. Reinhardt and Kintner again:

> The use of this weapon by defending armies, however, requires special conditions for success. Concentrations, either of enemy troops or material, are prerequisites to justify the dispatch of atomic missiles…Consequently an opponent must be compelled to concentrations on or near the battlefield-by the strength of our defense, by some stratagem, by the brilliance of our maneuver or, preferably a combination of the three. An unqualified reliance upon building up a static defensive strength through sheer mass leaves us wide open to hostile atomic missiles utilized as a superartillery preparation. We ourselves will have presented a "concentrated target" by attempting to make the enemy do so.[117]

In both instances, these considerations for employment harkened back to previous wars, or required exact conditions for successful employment. The use of atomic weapons in an attack did not offer a new form of maneuver, rather a slight variation on the traditional frontal attack. In the defense scenario, atomic weapons were useful only when the enemy force massed, allowing an atomic weapon to be used on that target. Further, in the defense, the conditions that would cause an enemy to mass were in fact the very same conditions he would look for in selecting an atomic target, i.e. a massed U.S. Army force. It was this realization that increasingly led Army leaders to consider how to achieve an advantage in a seemingly stalemated tactical situation. As the Assistant Commandant of the CGSC wrote in 1956:

> In summary, concepts for atomic warfare are, just as in the past, aimed at the objective—the destruction of the enemy forces. There may be only a slight difference in offensive and defensive tactics; each must rely on dispersion, mobility, and flexibility. The offense will be characterized by rapid exploitation of atomic effects to seize deep objectives on wide fronts. Defense will be resilient instead of

[117] Ibid, p.56-7

> tied to a position. Integrity may have to be maintained by "rolling with the punch," rather than by holding a line.[118]

On the atomic battlefield, the attacker may not have any distinct advantage over a defender. Each side would attempt to utilize the same procedures to gain the advantage and atomic weapons possessed by both sides would not provide the key to success.

The Army's solution was the PENTOMIC division, which would have improved battlefield mobility, command and control and importantly, its own organic atomic delivery systems. The Army expected the atomic battlefield would be "vastly larger in width and depth than those of previous wars".[119] In addition, the vulnerability of a massed formation to an atomic strike on the expanded battlefield created a need for units to be dispersed and then able to rapidly reform.

In another work written in 1958, two more Army officers attempted to refine the previous work and further define the tactics for the PENTOMIC units. Colonel Theodore C. Mataxis and Lieutenant Colonel Seymour L. Goldberg wrote *Nuclear Tactics, Weapons and Firepower in the PENTOMIC Division, Battle Group, and Company*. This work reviewed nuclear weapons effects and protective measures, reviewed PENTOMIC force structure, updated the current Army atomic delivery systems capabilities and articulated tactics for the PENTOMIC units.

These authors benefited from the several years of Army exercises involving various unit structures and tactics that Reinhardt and Kintner did not have. The authors understood to a greater degree the challenges and stalemates that atomic weapons presented at the tactical level. In regard to the offense, Mataxis and Goldberg write:

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[118] John P. Rose, *The Evolution of U.S. Army Nuclear Doctrine, 1945-1980* (Boulder, CO, Westview Press, 1980) p. 75

[119] Major Robert M. Doughty, *The Evolution of US Army Tactical Doctrine, 1946-1976* (Ft. Leavenworth, KS, Combat Studies Institute, US Army Command and General Staff College, August 1979) p. 17

> Attack like defense will change radically on the atomic battlefield. Speed, dispersion, flexibility- those keynotes of our whole era will take over the battlefield. Offensive tactics will be based on the atomic weapon; masses of atomic firepower will replace massed manpower in the attack… The soldier will perform the technical tasks and the finishing touches to the attack, but coverage and application of force will be strengthened by use of atomic weapons…the dispersed, fluid, highly mobile warfare, and the tremendous area destructiveness of atomic weapons all place a premium on initiative which will favor the aggressive attacker.[120]

Again, the emphasis on offensive operations is apparent even though there is an acknowledgement of the overwhelming impact that atomic weapons would have. Add to this the continuing importance of flexible forces and tactical formations.

By contrast, Mataxis and Goldberg wrote of the defense:

> We must have such coverage of the area that we protect our atomic delivery means and logistic support from constant attack while at the same time we present a continuous barrier of troops and obstacles against which the enemy must mass if he wishes to move forward. We must be ready to move in any direction as required by the situation. We must be ready to use offensive action to destroy the enemy. Above all we must make the atomic weapon work for us.[121]

In this last sentence is the crux of the challenge the Army faced in developing doctrine for the atomic battlefield. In attempting to consider how to "make the atomic weapon work" for the Army, the Army developed new force structure as well as doctrine that emphasized four tenets: dispersion, mobility, firepower and self-containment.[122] This in turn meant that units had to conduct multiple functions such as the normal tactical missions of offense, defense and self-protection but also logistics and maintenance and further, be properly equipped to do so. This was the foundation of the PENTOMIC concept, self-contained

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[120] Colonel Theodore C. Mataxis and Lieutenant Colonel Seymour L. Goldberg, *Nuclear Tactics, Weapons and Firepower in the PENTOMIC Division, Battle Group, and Company* (Harrisburg, PA, The Military Publishing Company, October, 1958) p. 211-2

[121] Ibid, .157

[122] John P. Rose, *The Evolution of U.S. Army Nuclear Doctrine, 1945-1980* (Boulder, CO, Westview Press, 1980) p. 66-73

units with nuclear delivery capability, able to operate in a dispersed fashion but also able to quickly reform. Further, these units were intended to fight on a conventional battle as well as a nuclear one.

However, the Army's studies and exercises of various units and tactics led to some disturbing conclusions. The tactics and techniques needed to fight a conventional battle were ill suited for the anticipated atomic battle. Additionally, with the need for self-contained units, the force structure was still increasing personnel requirements, rather than the anticipated decrease in size given the need for dispersed, smaller units. The Army understood that atomic weapons used at tactical level had the potential to destroy or at the very least incapacitate entire units up to the battalion level. The Army's experience of World War II and Korea had indicated a need to be able to replace individuals and perhaps small units up to platoon size. However in an atomic conflict, the Army would have to replace much larger formations and would need a support and logistics infrastructure in order to do so. As Lawrence Freedman points out:

> The Army, which had argued all along that the integration of nuclear weapons into its inventory would increase rather than decrease its troop requirements (on the grounds that limited nuclear warfare would turn into a campaign of attrition in which the side with the largest reserves was the most likely to prevail) found it increasingly difficult to develop nuclear tactics.[123]

The Army of course was not dismayed to understand that all the issues associated with tactical nuclear combat pointed towards a need for increased manpower. The increased need for manpower and equipment still did not have an associated doctrine for the employment of these units. The concepts for use focused on dispersion and rapid reformation and of course anticipated the loss of units on a nuclear battlefield and the need for replacements. Further, the Army was not in favor of creating two distinct force structures, one for nuclear war and one for conventional war. Although the Army would have welcomed such a

[123] Lawrence Freedman as quoted in, *Makers of Modern Strategy, From Machiavelli to the Nuclear Age* (Princeton, NJ, Princeton Press, 1986) p. 748

possibility, it would have considered it only provided it received appropriate funding, and not at the expense of other systems or projects. This idea was considered, but quickly abandoned given the Eisenhower administration's fiscal stance.

The intent behind the PENTOMIC units was primarily to create an organization that could fight on an atomic as well as a conventional battlefield. A secondary concern of the Army was using this PENTOMIC reorganization to show efficiency, therefore justifying the Army's budget to support new weapons and equipment as well as force structure. Nevertheless, between 1956 and 1959 the Army lost 163,814 soldiers from its previous total of 1, 025,778.[124] Further, between 1953 and 1960, the Army budget was reduced from $16 billion to $9.3 billion, despite the reorganization of Army divisional structure and the addition of new weapons systems, primarily nuclear delivery type systems.[125] This background is essential to understanding the shortcomings of the PENTOMIC divisions, and perhaps the ultimate motivation behind the PENTOMIC units.

E. CONCLUSION

The Army's struggle to develop doctrine that would support its growing atomic weapons inventory is indicative of any military force attempting to capitalize on new technology. Even so, the Army developed doctrine that could not be executed by the associated force structure it had created to fight on the nuclear battlefield. Further, the Army's true reason for the new force structure of the PENTOMIC units was as much about bureaucratic necessity, given the fiscal realities of the Eisenhower administration, as it was about embracing the realities of atomic combat.

Yet given the balance of ground forces in Europe, the Army had to acknowledge the potential of atomic weapons to make up for conventional force

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[124] MAJ Robert A. Doughty, *The Evolution of U.S. Army Tactical Doctrine, 1946-76* (Leavenworth, KS, Combat Studies Institute, U.S. Army Command and General Staff College) p.19

[125] John B. Wilson, *Maneuver and Firepower: The Evolution of Division and Separate Brigades* (Washington D. C., United States Army Center for Military History, 1997) p. 286

shortfall. The U.S. Army faced nearly a 5 to 1 deficit in tanks along with almost a 3 to 1 shortage in both artillery pieces and personnel. Atomic weapons were the best solution, given the political realities of the period, to reduce that offset. This "best solution" despite the associated consequences of their use, especially in profligate amounts as was expected.

The challenge for the Army was in developing forces and doctrine able to fight on a conventional as well as nuclear battlefield and doing so without creating two different forces or a single Army that was not fiscally maintainable. In the case of the PENTOMIC units, the goal was this so-called "dual capability" of a force able to fight conventional or nuclear. Yet the Army's doctrine called for dispersed forces, able to quickly mass to defeat an attacking enemy formation. This was where the PENTOMIC units encountered their most significant conceptual and organizational challenge. The PENTOMIC units were organized to facilitate decentralized command and control and enhanced self-sustainability. Yet the doctrine of the time required dispersed forces able to quickly form into a more traditional mass battle formation. The PENTOMIC units could not accomplish this, having only enough transportation assets to move one of the five battle groups at any one time.[126] Clearly, the force structure was incompatible with the doctrine. Further; the Army had no budgetary support for an increase in its total size, or for, new equipment not associated with nuclear weapons delivery.

Yet in this case, the Army persisted with the incompatibility, with senior Army leaders accepting this situation in deference to a greater goal. That goal being retention of an equitable portion of the defense budget, in the face of a national security strategy that placed little import on ground forces, and was strongly in favor of strategic air bombardment as the primary military mission. To be fair, the PENTOMIC structures were well intentioned, as was the doctrinal effort. The PENTOMIC units were the product of intelligent officers attempting to

[126] John B. Wilson, *Maneuver and Firepower: The Evolution of Division and Separate Brigades* (Washington D.C., United States Army Center for Military History, 1997) p. 276

produce a tactical and operational solution to a new technological reality on the battlefield. Army leaders were faced with a dilemma that had few positive outcomes regardless of decision. Were Army leaders to commit to the PENTOMIC units, dual capability and nuclear weapons as the new standard for Army divisions, they risked committing to an untested formation that was also under equipped for the missions it was expected to execute. However, if Army leaders abandoned nuclear weapons and their delivery systems as part of the new force structure they risked further alienation within the US defense establishment and the Eisenhower administration in general. By abandoning the Army's "nuclear stake", the Army would surrender its already limited say in policy and strategy formulation to the Air Force and Navy. This would then lead to a further reduction in Army budget, something Army leaders could not seriously consider.

The Army faced on overmatch in ground forces in Europe, a fiscally restrictive executive branch and a defense and security establishment focused on strategic bombing as a unitary solution to the nations principle security threat. Additionally, given its recent experience against a numerically superior opponent in Korea, the Army found that atomic weapons offered the most promising solution to those problems. Army leaders attempted to reconcile the national strategy, emerging technology and doctrinal concepts and force structure, all within a fiscally constrained and bureaucratically challenged atmosphere. Army leaders attempted to divine a sustainable solution to this quandary that would not hobble the Army at one of its more vulnerable times in recent history.

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V. CONCLUSION

A. INTRODUCTION

The early period of the Cold War represented a challenging time for the US Army. The Army entered the Cold War focused on garrison and constabulary duty in Germany and Japan; and rapidly reducing its overall size through rapid demobilization. Further, interservice competition with a newly created Air Force over roles and missions increased the Army's sense of isolation within the defense establishment. The Army was also struggling with the emerging reality of nuclear weapons. The Army found itself fighting in Korea, against the very type of Communist aggression the nations nuclear weapons were intended to deter. Add to this, a political unwillingness to use those very weapons, and the Army had to achieve on the ground what nuclear weapons could not achieve coupled with massive strategic airpower.

The interservice rivalries of the early 1950s are well documented. A newly independent air arm had stripped the Army of direct control over two assets it valued most: tactical air forces and control and direction of most cargo or heavy lift aircraft. These two shortfalls still preoccupy the Army today. To further exacerbate problems, the Air Force was the benefit of an overall faith in heavy strategic bombing as a war-winning tactic. A natural extension of the strategic bombing operations was to marry these aircraft with nuclear weapons. In so doing, an economy of assets was produced, with one aircraft able to do what had previously taken 100. This advantage provided policymakers with a relatively easy decision in terms of effort of defense resources; aircraft and bombs were cheap in comparison to massive ground formations or naval ships. Additionally, the belief in bombing as a way to rapidly reduce an enemy provided the Air Force an easy path to predominance in its infancy.

By contrast, the Army struggled with its role in the nuclear age. The Army was changing to adjust to new realities of warfare based both in its experience in Korea and its expectation of conflict in Europe. In each case the Army fought or

anticipated fighting a numerically superior enemy and sought a technological offset to this situation. The role of the Army in the early Cold War was increasingly unclear, as the US security strategy was dominated by the Air Force with its focus on strategic bombing. While the need for ground troops was never completely disregarded, the Army was increasingly conceived as a force of "exploitation" rather of "decision" in a future conflict. In this position, the Army was forced to embrace nuclear weapons as a way to both retain a central role in US security strategy and adjust to the reality of an "atomic battlefield". In sum, the Army invested a great deal of intellectual capital; force structure and budget in atomic weapons, atomic related doctrine and associated force structure.

B. THE COMPARISONS- THEN AND NOW

The Army's challenges of the early Cold War have considerable resonance today, as again the Army faces a new challenge in it potential foes and areas of combat. The Army also faces the task of capitalizing on new information age technology. By contrast, the early Cold War Army also faced a new enemy in the Soviet Union and new technology in the form of atomic weapons. The chart below outlines a comparison of the early Cold War and the current day:

CHART 1- COMPARISON OF PERIODS

Early Cold War (1947-1957)	Current (1995-2004)
• Constabulary Duty- Germany & Japan	• Constabulary Duty- Balkans
• Decision by Close Combat	• Decision by Precision
• Achieve Mass by Firepower	• Achieve mass by precision and with standoff
• PENTOMIC Division able to fight nuclear to conventional	• Modular units able to conduct a variety of missions
• New Technology- Nuclear Weapons	• New Technology- Information Age
• Interservice Conflict	• Interservice competition
• Continuing Conflict- Global Empires	• Continuing Conflict- Korea
• Limited Conflict-Korea	• Limited Conflict- Iraq & Afghanistan
• Enduring Conflict- Cold War	• Enduring Conflict- GWOT
• Shadow Conflict- WW2	• Shadow Conflict- Cold War

This chart identifies key aspects of the Army in both periods of time. At the start of both periods, the US Army was engaged predominantly in constabulary or, in its modern term, stability operations. The tactics of the period dictated decision by close combat of forces. The lesson of the Army's Korean experience showed that in the face of a numerically superior enemy, firepower, in the case of Korea artillery, mass was achieved by firepower. Conversely, in the late 1990s, the improvement of precision munitions, allowed commanders to strike targets and achieve mass through precision. Of course, the new technology in the early Cold War was the atomic bomb; the new technology of today is an amalgam of information technologies, allowing improved communications and situational awareness.

The Early Cold War saw bitter interservice conflict over roles, missions, and budget. Today, the directives of the Goldwater-Nichols Act have forced the services to operate "jointly". While interservice competition is still evident, the relationships between the services, in particular the Army and the Air Force, have greatly improved; although the Army still desires greater control over tactical

aircraft engaged in close air support, and an increase in transport or lift aircraft to better and more rapidly deploy Army forces. Nevertheless, the ability of joint forces to effectively conduct operations has been proven in recent US operations from Afghanistan to Iraq.

The final set of comparisons concerns the overall strategic and geopolitical environment the Army operated in during these periods, specifically the conflicts involved. There are three categories: Limited, Enduring and Shadow[127]. A Limited Conflict is one in which a portion of the Army was involved in the execution of combat operations. As discussed, in the Early Cold War, the Korean War was clearly the paradigmatic "limited" conflict of the period. The current period sees the Army fighting in both Iraq and Afghanistan with a portion of the Army's forces. In both cases, a limited size Army force, presented significant challenges for the Army in supporting these conflicts.

The category of Enduring Conflict represents a greater requirement for strategic focus for the United States, but also the direction and structure of the Army. More directly, an Enduring Conflict represents a long-standing commitment of US national will to achieve a goal or desired strategic endstate. In the first period, the Cold War itself was the enduring conflict. The current parallel is the United States self-declared Global War On Terrorism. Clearly the Cold War entailed two nation-states with aligned groups of supporting nations, whereas the current Global War on Terrorism represents much less clear alignments of nations and other actors. In both cases, the Army had to incorporate new technology, fight limited conflicts, while maintaining its primary focus on the greater potential conflict it might have to conduct.

Finally, a Shadow Conflict represents the most recent previous conflict that established the basis for the Army's doctrine, equipment and structure. The Early Cold War had World War II as its Shadow Conflict. For the present period,

[127] I have extrapolated these concepts from Steve Metz and Raymond Millen and their Monograph from the US Army War College entitled: FUTURE WAR/ FUTURE BATTLESPACE: The Strategic Role of American Landpower

the Shadow Conflict is the Cold War. In both cases, the Army faced multiple requirements for a variety of actual and potential conflicts. In the Early Cold War, the Army utilized the structure, equipment and the soldiers that had fought and defeated the German and Japanese armies just a few years previous. In the current period, the Cold War is fading from the Army's collective memory with both time and newer warfighting experience.

C. THE IMPACTS

Nuclear weapons clearly had an impact on the Army of the Early Cold War. The Army was faced with a dual dilemma, in that it did not fundamentally accept the need for nuclear weapons as the basis for national strategy much less their battlefield utility. On the other hand, the Army was faced with the possibility of losing an increasing share of the defense budget and defense roles and missions to the Air Force, which had been able to rapidly capitalize on the current strategic thinking about nuclear weapons and their role in the developing and possible conflict with the Soviet Union.

The Army's embrace of nuclear weapons gave it a tactical and operational capability to enhance its effectiveness in the expected conflict in Europe against Soviet armored formations. The Early Cold War saw a significant investment of the Army's budget on nuclear delivery systems, both rocket and cannon. In the Early Cold War, the invested approximately $1.5 billion in nuclear delivery systems, this equates to nearly $15.8 billion in 2003 adjusted dollars.[128] These delivery systems were then incorporated into new force structures of Army infantry divisions.

The new formations known as PENTOMIC divisions were intended to fight both conventionally and on an atomic battlefield. The divisions possessed their own organic atomic delivery systems and new tactical doctrine intended to benefit from these new weapons and systems. The emerging doctrine harkened back to World War I, as it anticipated the use of atomic weapons to blast a hole

[128] Stephen I Schwartz, Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons since 1940 (Washington, D.C., Brookings Institute Press, 1998) p. 149

in the enemy formation that would be rapidly exploited by Army units. Conversely, Army units were to be employed in a dispersed fashion to reduce vulnerability to enemy atomic weapons. Doctrine written by the Army was never able to anticipate with any confidence what level of nuclear weapons use could be expected.[129] Further, the ability of units configured for conventional ground combat were incompatible for expected atomic battlefields, which envisioned small, dispersed units able to control land by use of atomic firepower, while presenting a small target for enemy atomic weapons.[130]

The PENTOMIC Divisions ultimately failed as "dual capable" units, lacking the manpower and needed equipment to function as intended on the nuclear battlefield. The concept of "dual-capable" units, while exciting initially, was shattered by the reality that such a unit was unable to master either of the tasks its was given. The prospect of creating two forces, one for conventional combat and the other for atomic war, was not seriously considered, as the budget implications to field such forces were enormous. Even though the units intended to fight on the nuclear battlefield were eventually scrapped, the possibility of that type of conflict did not recede. The Army retained a nuclear delivery capability for the duration of the Cold War as much to retain a reliable share of the defense budget as to fulfill some clear battlefield necessity.[131]

D. CONCLUSION

The Early Cold War saw the Army struggle with atomic weapons in terms of its role as an executor of national strategy; of developing usable land combat doctrine and finally, how it structured its forces. Although the Army disagreed with the national strategy centered on 'massive retaliation', it was unable to offer

[129] John J. Midgley Jr., Deadly Illusion: Army Policy for the Nuclear Battlefield (Westview Press, Boulder, CO 1986) p. 76

[130] Ibid, p.76

[131] Ibid, p. 176-7

a viable and agreeable alternative. From this dilemma, the Army embraced atomic weapons with no clear idea of what doing so would mean to the Army. As A. J. Bacevich writes:

> Deluded by the chimera of nuclear weaponry, hotly pursuing the false ideal of dual capability, driven by reasons of expediency to seek a share of deterrence, the Army never was able to articulate a coherent operational concept that would both overcome reigning skepticism about land power and provide a comprehensive strategy that overcame the deficiencies of massive retaliation.[132]

The Army found itself accepting these weapons and developing ways to incorporate them into the formations and doctrine based on an incomplete and unclear picture of what this new technology truly involved. The Army's investment of both financial and intellectual capital to atomic weapons was a dangerous institutional trap. This trap presented the Army with more problems than solutions, and ultimately resulted in a shallow but understandable decision to embrace the weapons even though the prospect of fighting on a nuclear battlefield became an unsolvable tactical and operational quandary. Given the doctrinal insolvency, the Army still embraced these weapons if for no other reason than to retain a position within the defense establishment and an appropriate share of defense resources. The Early Cold War represented a challenging time for the Army. Certainly, nuclear weapons represented a Utopian solution for many of the perceived national security challenges of that time. Even so, technology alone cannot replace trained and thinking soldiers; technology can enhance the effectiveness of soldiers but only if it is part of a stable and solid existing foundation.

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[132] A.J. Bacevich, *The PENTOMIC Era: The U.S. Army Between Korea and Vietnam* (Washington D.C., National Defense University Press, 1986) p. 148

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