THE FUTURE ROLE AND NEED FOR NUCLEAR WEAPONS IN THE 21ST CENTURY

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2007
INSS RESEARCH PAPER

US AIR FORCE
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OVERVIEW

The 2001 Nuclear Posture Review (NPR) presented a unique strategy that included the concept of a new strategic triad encompassing offensive strike capabilities, defenses, and responsive infrastructure, all supported by robust command, control, computer, communications and intelligence, surveillance, and reconnaissance capabilities. The NPR provides a roadmap for a more integrative and flexible approach to our defensive posture. Conventional weapons technologies continue to advance and, as a result, place the US in an extremely advantageous position regarding nonnuclear strike capabilities. This concept of prompt global strike (PGS) influences the role of nuclear weapons significantly in that it presents a new outlook on the balance of nuclear and nonnuclear components of our national deterrent.

Funding for US weapons programs, procurement/production, and sustainment of a nuclear mission show a significant downtrend. Nuclear weapons stockpile stewardship is the current process for managing our nuclear arsenal. This includes active surveillance of the US stockpile. We continue to operate and maintain nuclear weapons in a constantly changing, post-Cold War strategic and political environment. As movement continues into the 21st century, our stockpile continues to age. The Reliable Replacement Warhead (RRW) program promises to make stockpile management more affordable. Given the dynamic security environment of the world, RRW is the proper path forward for the 21st century.

The value and role of nuclear weapons is not as clear as it once was because these events present issues and challenges that redefine the role of nuclear weapons. This paper discusses the US nuclear policy regarding our adversaries and how the US handles adversaries that have a different perspective, the new nuclear weapons states, and non-state actors with no return address who have *nothing to lose*. A further examination of deterrence, identifying what it takes to deter, in today's environment is included. A review of the literature revealed nuclear weapons are still considered a deterrent. However, a new deterrence *doctrine* is needed in this post-Cold War era.

INTRODUCTION

> *"Time reporter: The US says you are trying to acquire chemical and nuclear weapons."*
> *Osama bin Laden: Acquiring weapons for the defense of Muslims is a religious duty. If I have indeed acquired these weapons, then I thank God for enabling me to do so. And if I seek to acquire these weapons, I am carrying out a duty. It would be a sin for Muslims not to try to possess the weapons that would prevent the infidels from inflicting harm on Muslims."*

[*] The opinions expressed in this paper are those of the author and do not necessarily reflect the opinions and policies of the US Air Force, the Department of Defense, or any other branch of the US Government. The paper is approved for public release; distribution is unlimited.

Background

The future role and need for nuclear weapons in the 21st century is a debated discussion. Already a plethora of sources exists on this very topic. However, a few common themes are evident: future of nuclear deterrence, deep force reduction cuts for nuclear weapons, nuclear transformation post-Cold War, deterrence and security environment, effectiveness of deterrence theory, making nuclear weapons obsolete, nuclear weapons and security, and changing nuclear policy. There are many opinions/concerns about nuclear weapons and their impact on the 21st century world environment. More specifically, concerns include how, and/or if, nuclear weapons can impact the threats in the 21st century environment. Furthermore, it is evident a revisit of these subjects is required to see if anything has changed and/or if everything is still appropriate for the times. Several nuclear policy and strategy analysts have done their analyses based on these concerns. And, it has been determined that world events caused political changes that have impacted the role of nuclear weapons in the US arsenal. These analyses yield several opposing views regarding the need for nuclear weapons. Based on whether analysts are nuclear weapons proponents or opponents, other debate ensues regarding the appropriate roles, policies, and associated force structure that support the US nuclear deterrent. Despite the debates and differences in opinion, there are two consistent messages amongst all the analyses:

1. Nuclear weapons exist and cannot be "uninvented," so they must be dealt with at least for the near future; and
2. Consensus is needed within the nuclear weapons community regarding the future role of nuclear weapons[1].

This paper summarizes the major concerns of analysts who strongly advocate the need for consensus regarding the future role and need for nuclear weapons in the 21st century based on today's reality. This reality includes the existence of nuclear weapons. The basis of this advocacy rests on the proponent's argument that there is still a role for nuclear weapons. Because nuclear weapons currently exist and are not going away anytime soon, opportunities to rethink how best to use them and in what capacity are now imminent. This advocacy and analysis will further support a continuing need for nuclear weapons.

Problem Statement

Since the end of the Cold War (and the resulting changes in international threats to security, politics, and foreign policy), NPRs (and resulting nuclear policy) have not clearly addressed the fundamental question of why we have/need nuclear weapons and the role nuclear weapons play in the 21st century. At times there seems to be an *aversion* to addressing our purpose and possession of nuclear weapons. The subject has either been too controversial or not a high-enough priority.

Part of the *aversion* is exaggerated by a lack of consensus regarding nuclear weapons roles by senior policy makers or decision makers.

Research Framework and Questions

In 1990, Michele Flournoy, Senior Associate for the Center for Strategic and International Studies, very eloquently suggested a logical framework that is still useful for examining the future role of nuclear weapons. This framework is used as a general discussion plan in this research report. Flournoy advocated "two challenges [must be overcome]" when trying to attempt this examination:

1. "Frame the issues properly by asking the right questions," and
2. "Answer those questions."[2]

Additionally, "before consensus can be built on answers, agreement must be sought on which issues are important and on how to think them through."[3] Critical questions to this examination are:

- What are the emerging threats to US security in the new world order [suggesting they should be characterized by how serious and imminent they are]?
- What role, if any, can nuclear weapons play in meeting new threats [suggesting *old roles* need to be re-examined and new ones considered, including roles nuclear weapons *cannot* play]?
- What deters the use of nuclear weapons by emerging nuclear weapon states?
- What role will nuclear weapons play in extended deterrence for Europe?
- How should a reduced nuclear force be structured?
- How do we get there from here [consider the bottom line of what is politically and economically feasible]?[4]

Methodology

A combination of literature review and empirical research was used in this effort. The literature review consisted of reviewing open-source materials, course study/audit, and personal interviews to provide a historic background and develop an understanding of the current geopolitical, geostrategic, and technological environment/context. Current and past literature included think-tank products, white papers/books/articles, and national nuclear security agency forums and conference briefs/documentation. Information was also collected via nuclear policy analyst/strategist/advisor interviews. The empirical analysis included examination and exploration of trends/effects redefining, continuing, or impacting the deterrent role of nuclear and nonnuclear weapons, and future options for determining an appropriate nuclear weapons force structure and supporting nuclear weapons complex infrastructure.

Assumptions

Overall, the literature review revealed consensus that nuclear weapons provide at least a deterrent role. Even amongst the arguments from nuclear abolitionists, the underlying reality is that nuclear weapons cannot be disposed of in the near-term, so until they can be eliminated (if that is ever agreed upon), the nuclear weapons community needs to think realistically about the role for existing nuclear weapons. The literature review also revealed another sort of consensus. "Most. . . agreed that political and economic realities dictate [necessary] reductions in nuclear weapons. The question is not *if* nuclear weapons will be reduced, but *how far* reductions will go and how fast. "[5] Therefore, this discussion will proceed from two basic assumptions:

1. Nuclear weapons are here for some time to come, and
2. There will be a reduction in nuclear weapons. Discussion pertaining to moral issues regarding nuclear weapons is not a part of this report.

Implications/Recommendations

If the nuclear weapons community (such as Department of Defense [DoD], Department of Energy [DOE], Congress) can agree on the role and need for nuclear weapons in the 21st century, better decisions can be made regarding the appropriate nuclear weapons force structure/inventory, nuclear targeting policies, and the corresponding nuclear infrastructure support. Concluding remarks at a workshop on the role of nuclear weapons by Wolfgang Panofsky, Center for International Studies and Arms, Stanford University, reflect the literature review for this paper. "Most conferees agreed that there is, at a minimum, a role for nuclear weapons in deterring war….but for 'any mission beyond that, the burden of proof is on the advocates.'"[6] The following pages bear the burden of proof in advocating appropriate 21st century roles for a reduced US nuclear weapons force.

NUCLEAR DETERRENCE

> *Nuclear fission was discovered accidentally in Nazi Germany on December 21, 1938, nine months before the beginning of the Second World War. It was a discovery that in the long run would sharply limit national sovereignty and change forever the relationship between nation-states, and it came as a complete surprise.*
>
> —Richard Rhodes

The Origins of Nuclear Weapons, the Nuclear Arms Race, and Nuclear Deterrence

The idea for the atomic bomb was born from a discovery involving a physical energetic reaction. This discovery was inevitable given certain scientific breakthroughs of the times: understanding of and splitting the atom, the artificial creation of radioactivity, and the artificial creation of basic elements beyond uranium. [7] But the discovery, and its ensuing developments, occurred in a place and at a time in history where the opportunity was ripe for pursuing both its

peaceful and military utilities. Nazi Germany invaded Poland in September of 1939, only nine months after they discovered nuclear fission. Shortly thereafter, Hitler threatened Britain with a "weapon against which there was no defense," whereby the British deemed one of the following:

1. "Hitler was bluffing;
2. The Nazis had developed a deadly poison gas;
3. Hitler was referring to the German Air Force, the Luftwaffe; or
4. The Germans had developed the atomic bomb."[8]

The context of this time in history is noteworthy. "The world was at war. The new tool of nuclear energy, like all tools, might also serve as weapon of War. "[9] Perhaps the scientists did not intend to create a weapon of such devastating destruction that would forever change the course of our world in terms of warfare. Nevertheless, Rhodes eloquently coined this development as the "first round of nuclear proliferation," and the reason for it was the same as it is for proliferators today, "possession of such a weapon seemed the only defense against an enemy similarly armed."[10] More directly, a documented quote from two German refugee physicists as a warning to the British government at that time opined "If one works on the assumption that Germany is, or will be, in possession of this weapon, it must be realized there are no shelters available [and]…[t]he most effective reply would be as a counter-threat with a similar bomb. Therefore, it seems to us important to start production as soon and as rapidly as possible, even if it is not intended to use the bomb as a means of attack [inference: vs. for deterrence, through threat of use]. "[11]

Thus, the world's arms race began, with its players aspiring towards the *goal* of being the first to develop the atomic bomb and the *objective* to use it *operationally* during the war or *strategically* as a war deterrent. Once the news of nuclear fission spread throughout the scientific world community, Germany, the US, Britain, France, Russia, and Japan initiated atomic bomb development programs. But, it became a matter of priorities (economic, political, and scientific validation and credibility) as to which country would enjoy inaugural success. Three stimuli drove the US atomic bomb development program, the Manhattan Project: Einstein's letter to Roosevelt in 1939 regarding the use of the energy from uranium for bombs, "the imaginary German clock" whereby the US inaccurately assessed (unknown until later) the Germans to have a two-year lead on them in terms of developmental efforts, and "the clock of war itself, of the young men dying in the battlefields of Europe and Russia and the bloody Pacific beaches."[12]

Under the pressure to succeed, nuclear weapons were introduced by the US into our world in 1945. The Manhattan Project efforts produced four bombs within its first three years as an official program: one tested at the Trinity bomb range site, one dropped on Hiroshima and another

dropped on Nagasaki (the first and only operational uses of nuclear weapons that occurred within one month after the first nuclear test), and the fourth anticipated to be dropped on another Japanese city. [13]

There were several reasons for the operational use of the atomic bomb so soon after the test. Army Chief of Staff, General George Marshall's comments regarding the use of the bombs on the Japanese cities included the following.

> We regarded the matter of dropping the bomb as exceedingly important. We had just gone through a bitter experience in Okinawa [the US lost over 12,500 men, either killed or missing in action, and Japan had lost over 100,000]. This had been preceded by a number of similar experiences in other Pacific islands north of Australia. The Japanese had demonstrated in each case they would not surrender and would fight to the death. . . It was expected that resistance in Japan, with their home ties, would be more severe. We had had 100,000 people killed in Tokyo in one night of [conventional fire] bombs, and it had had seemingly no effect whatsoever. . . The [conventional fire bombs] destroyed Japanese cities, yes, but their morale was not affected as far as we could tell, not at all. So it seemed quite necessary, if we could, to shock them into action. . . we had to end the war, we had to save American lives. [14]

Prior to the surrender of the Japanese in World War II, two different atomic weapons were dropped on two different heavily populated Japanese cities. It is estimated 140,000–150,000 Japanese were killed by these two atomic detonations. "The closing days of the Second World War mark[ed] a turning point of entry into a new era [the start of the nuclear age] when human kind for the first time acquired the means of its own destruction."[15] And thus, the emergence of nuclear weapons birthed the initial role for nuclear weapons: operational use for swift war termination.

After the impact of the ensuing devastation and destruction set in, the US (and the rest of the world) was forced to examine the role of its nuclear weapons. "[Once]. . . nuclear weapons were invented, and their horrific destructive power demonstrated in Hiroshima and Nagasaki in 1945, the least harmful way of using them. . . [would be] through nuclear deterrence: the indirect use of such weapons (in the form of threats to use them) in order to prevent an enemy's nuclear aggression or large-scale conventional attack. "[16] There are use and nonuse roles for nuclear weapons. "[T]he fact that Japan surrendered. . . the day after the attack on Nagasaki vindicated the view that strategic bombing with atomic weapons could have decisive results. "[17] In fact, according to Henry Stimson, British Secretary for War during the Japanese surrender, in an attempt to explain the reason for the American decision to drop the bomb noted that the atomic bomb "was more than a weapon of terrible destruction; it was a psychological weapon."[18]

Some historians have argued another reason to use the bombs was to *deter the Soviets* (these historians argue Truman and Winston Churchill understood the US-Russian dynamics of the early Cold War). Some conclusions resulting from these history-changing events are as follows:

1. A follow-on role for use of nuclear weapons is in their nonuse for deterrence against attack;
2. Dramatic nuclear weapons effects were deemed decisive for war termination; and
3. These threats effectively influenced the will/morale of the adversary (a prerequisite for effective deterrence and a precursor to effective nuclear deterrence). These events established some unique roles for the use of nuclear weapons that have persisted throughout the nuclear age.

A Summary of the Cold-War Era

The time period between the mid-1940s and through the end of the 1980s was dominated by the rivalry between the US and its allies and the Union of Soviet Socialist Republics (USSR) and its allies. The US ideology of democracy and economic system of capitalism clashed with the Soviet ideology of Communism. American journalist Walter Lippman "popularized the term cold war. . . to suggest that relations between the USSR and its World War II allies. . . the United States, Britain, and France. . . had deteriorated to the point of war without the occurrence of warfare. "[19] This environment had a profound effect on international and military policy. Two major alliances formed as a result: the North Atlantic Treaty Organization (NATO) and the Warsaw Pact. Both the US and the Soviets pursued a massive buildup of nuclear weapons to such an extent that the world security balance was primarily bipolar.

The Evolution of Nuclear Deterrence

> *Nuclear deterrence is a violent paradox: its purpose is to threaten to use nuclear weapons in order not to use them in the end.*
>
> —Tom Sauer

Deterrence can be described and defined in many different ways. However, specific definitions and descriptions to aid the discussion of the role and need for nuclear weapons in the 21st century are included. Air Force Doctrine Document 2-1. 5, *Nuclear Operations*, describes deterrence as "a state of mind created in an adversary's (or potential adversary's) leadership. "[20] The military tools used to make deterrence work include both nuclear and nonnuclear, including conventional, forces. Deterrence is not a concept that was born with the advent of nuclear weapons, nor were nuclear weapons initially created for deterrent purposes. Nuclear weapons do, however, affect the nature of deterrence.

The effect of the advent of this *psychological weapon* with its horrendously destructive power is captured in the words of Bernard Brodie, naval strategist, and father of Cold War

deterrence theory (as quoted in the primer on strategic nuclear policy by David Kunsman and Douglas Lawson). Brodie concludes "nuclear weapons. . . changed the world of military strategy: The first and most vital step in any American security program for the age of atomic bombs is to take measures to guarantee to ourselves in case of attack the possibility of retaliation in kind. . . [I]n making this statement. . . [I, Brodie]. . . am not for the moment concerned about who will *win* the next war in which atomic bombs have been used. Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to *avert* them. It can have almost no other useful purpose. "[21] This paradigm became the inaugural indoctrination of nuclear deterrence regarding war prevention and the avoidance of conflict that has formed the basis of American nuclear policy and strategy through the period of the Cold War to the post-Cold War period. ". . . [A]nd since that time nuclear weapons have been the centerpiece of our military strategy for avoiding global conflict through a policy of deterrence, including deterrence of conventional conflicts, on a scale which might escalate to nuclear war and of political blackmail, through the threat of nuclear retaliation. "[22]

A basic definition of deterrence is preventing someone from doing something. [23] Military Joint Publication 1-02 defines deterrence (the legacy view) as the prevention from action by fear of the consequences and adds that deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction. [24] Strategic deterrence is defined in United States Strategic Command's (USSTRATCOM) Deterrence Operations Joint Operating Concept (DO JOC) as the prevention of adversary aggression or coercion that threatens US vital interests and/or US national survival. [25] It convinces adversaries not to take grievous courses of action by means of decisive influence over their decision making. [26] Strategic deterrence is not synonymous with nuclear deterrence. Strategic refers to the nature of the threat to US interests. Deterrence is a function of adversary perceptions. Nuclear deterrence, therefore, is the possession of nuclear weapons capabilities to achieve deterrence.

As previously noted, the concept of deterrence existed well before the creation of nuclear weapons. "Nations have used the threat of military force to punish or deny the actions of rivals for centuries, but the near instantaneous mass destruction potential of nuclear weapons was new."[27] Serge Sur, French university professor and expert on international relations, contended the following on this subject.

> Deterrence must be distinguished from the nuclear weapons themselves. The existence of a doctrine which guarantees the effectiveness of weapons through their non-use, making deterrence a means of keeping the peace and not an instrument of war, is. . . neither contemporaneous with the emergence of nuclear weapons nor a logical consequence of their existence…[Their] first appearance involved their offensive use, falling outside any context of deterrence. Deterrence

> means that the State abiding by it intends to *forbid* an *action,* and *not force an action to be taken*. As a result, above and beyond non-use, deterrence is *per se* and by nature defensive and stabilizing. [28]

In this context, nuclear weapons are deemed the military tools or instruments used for the deterrence.

The distinction between nuclear deterrence strategy, nuclear deterrence policy, nuclear deterrence theory, and nuclear deterrence doctrine helps clarify the ensuing discussion on nuclear deterrence. Nuclear deterrence theory indicates concepts with postulates and assumptions, whereas nuclear deterrence strategy is the application of the theory to real-world scenarios and situations. [29]

> . . . [S]trategic doctrine. . . consists of 'a set of operative beliefs, values, and assertions [based on applicable deterrence theories] that in a significant way guides official behavior with respect to strategic research and development (R&D), weapons choice, forces and operational plans. ' Strategic doctrine, therefore, provides a framework for decisions about what weapon systems are required and their utility in times of both peace and war. As such, it deals with a combination of technical and political issues. . . [but] there are often major ambiguities in the strategic doctrines that states develop. . . The strategic doctrine of nuclear deterrence provides a good illustration of this. [30]

Nuclear deterrence policy includes the written or verbal declarations describing the courses of action for nuclear weapons adopted and pursued by the US government. In essence, nuclear deterrence theory is the foundation of applicable nuclear deterrence doctrine, which guides associated nuclear deterrence strategy and policy.

The history of nuclear deterrence doctrine (and, therefore, the corresponding strategy and policy) has undergone an evolution based on multiple variations of nuclear deterrence theory. Ronald Lehman, Director of the Center for Global Security Research at Lawrence Livermore National Laboratory, summarizes the Cold War history of nuclear deterrence doctrines in Table 1.

Table 1. Summary of Cold War Deterrence Doctrine

Year	Doctrine
1954	Massive Retaliation
1963	Flexible Response
1965	Assured Destruction/Damage Limiting
1967	Mutual Assured Destruction
1974	Sufficiency
1976	Rough Equivalence

1979	PD-59/Countervailing Strategy
1981	NSDD-13/Peace through Strength
1983	Strategic Defense Initiative
1989	Weapons of Last Resort

Source: Compiled from information presented by Ronald F. Lehman, "Deterrence, Disarmament, and Post-Cold War Stability: The 'Haves' and the 'Have Nots,'" paper presented at the NATO Advanced Research Workshop on Strategic Stability in the Post-Cold War World and the Future of Nuclear Disarmament in Warrenton, VA, 6–10 April 1995 (Livermore, CA: Lawrence Livermore National Laboratory, 1995), 9.

So as not to detour into a discussion on the different doctrines, Table 2 defines several of the doctrines that were more consistent throughout the Cold War.

Table 2. Nuclear Posture Options, Cold-War Era

Posture variant	Descriptor
Assured retaliation	Deterrence rests on the necessary and sufficient capability to destroy the opponent's modern economy and society by inflicting "unacceptable" damage
Minimum or finite deterrence	Deterrence requires only the ability to destroy a small number of cities and other value targets
Enhanced retaliation	Deterrence requires the capability for assured retaliation, as above, plus sufficient forces and command/control for flexible targeting and protracted conflict
Defense dominance/defense transition	Deterrence will fail eventually and the US should also have a capability to defend its national values against attack—defenses also reinforce deterrence
Nuclear superiority	Deterrence requires that the US be able to prevail in any nuclear conflict by maintaining survivable and enduring forces and command/control superior to that of any adversary

Source: Stephen J. Cimbala, *Nuclear Weapons and Strategy: US Nuclear Weapons for the 21st Century* (New York, NY: Routledge Taylor and Francis Group, 2005), 31.

David Krieger, President of Nuclear Age for Peace Foundation, provides a good summary of the history of deterrence. "After the Soviet Union tested its first nuclear weapon in 1949, the dangerous game of deterrence began. Both the US and the USSR warned that if attacked by nuclear weapons, they would retaliate in kind massively. They also extended their respective so-called nuclear deterrence *umbrellas* to particular countries within their orbits. As the arsenals for

each country grew, they developed policies of Mutual Assured Destruction [MAD]. Each country had enough weapons to completely destroy each other. "[31]

It is important to point out the common assumptions that persist throughout the different doctrinal variations because they point to the importance of the impact of context. Paul, Harknett, and Wirtz in their 1998 work on the role of nuclear weapons illustrated how significantly context impacts answers to questions concerning the role of nuclear weapons.

> In the spring of 1946, a collection of essays by Frederick Dunn, Bernard Brodie. . . presented a set of first principles for understanding the nuclear age. Entitled *The Absolute Weapon: Atomic Power and World Order*, the volume assessed the likely impact atomic weapons would have on international politics and how they would affect the establishment of a new postwar international order. Shortly thereafter, however, a more narrowly defined question came to dominate scholarship: what role would atomic weapons play in superpower relations? As the world descended into the Cold War, the dynamics of bipolar competition and nuclear weapons issues became inextricably linked in the minds of policymakers and security analysts. The emergence of a mutual condition of strategic vulnerability to nuclear attack raised the stakes of conflict profoundly. The superpower nuclear relationship set the context for both the study and conduct of world politics. . . The analysis presented in Brodie et al. was extrapolated from a very limited basis of experience and knowledge. . . [but what] is remarkable about the volume is the relative consensus that it presents. . . By contrast, the contributors to *The Absolute Weapon Revisited* diverge widely in their analysis of nuclear weapons and emerging twenty-first-century international politics. The experience of five decades of living with nuclear weapons has fostered conflicting perspectives on the significance of these weapons for state relations.[32]

All the variations of nuclear deterrence doctrine stemming from variations of nuclear deterrence theory were based on a bipolar world and focused on the adversarial relationship between the two *superpowers*, the major nuclear weapon states, the United States and the Soviet Union. According to Herman Kahn, Cold War nuclear theorist, three types of nuclear deterrence existed:

- Type I—use of threats to deter an attack on the US;
- Type II—deter an adversarial provocative action other than an attack on the US; and
- Type III—a graduated scheme where US response to adversarial action would raise the stakes to a level unacceptable to the adversary. [33]

Additionally, there are two basic strategies of deterrence: deterrence by punishment and deterrence by denial. Deterrence by punishment involves a strategy of threats of retaliation in response to attack; deterrence by denial involves a strategy of building up/maintaining defensive and intelligence systems to neutralize or mitigate attacks. [34] The focus of deterrence by punishment is that of aggressors' unwillingness to suffer damage as a result of their aggression;

the focus of deterrence by denial is that of the aggressors' perception that aggression would be unlikely to succeed. [35]

Nuclear deterrence is applicable throughout the entire spectrum of conflict to include prewar and post-war phases. Nuclear deterrence has evolved from deterring conflict (war prevention) to include the following activities that may occur across the spectrum of conflict: deterrence against nuclear use or threat of use, deterrence against uses of other weapons of mass destruction (e. g., chemical, biological, radiological, and high explosives)[36] or threat of their use, deterrence against escalation (war already in progress), or deterrence against retaliation (war already in progress). The evolution occurred because of the revelation that nuclear deterrence is not guaranteed to prevent all types of war as history has shown, but it has been successful in preventing total war. Its utility, though, is still applicable across the full spectrum of conflict.

Nuclear deterrence works on a relational basis between two or more entities. Dr. Clayton Chun, US Army War College Chairman for the Department of Distance Learning, purports "Along with credibility and capability, the concept of deterrence depends on an assumption of rationality between the relevant parties."[37] Surge Sur describes the relational nature of deterrence in a similar way.

> [The]. . . substance of deterrence. . . rests on *immaterial elements,* the anticipation of behavior and the credibility of its occurrence The build-up of equipment, the redundancy of systems, provides it with impressive backing, but who can say they are not. . . illusory? [Deterrence]…stems from a tacit understanding between partners who agree to regard it as credible vis-à-vis themselves and adjust the[ir] conduct accordingly. . . Its purpose is to prevent aggressive behavior by means of threat, not the use, of weapons, where such behavior is that of another nuclear Power, or one of its allies acting in liaison with it. [38]

The *immaterial elements* are areas to consider influencing when attempting to discourage adversary actions through deterrence. They are detailed by Chun to include "opponents' particular interests, capabilities, culture, ideologies, and other functions."[39]

Successful deterrence, or more realistically, the effectiveness of deterrence, is based on several criteria: credibility, capability, and commitment or willingness to respond. "Deterrence against weapons of mass destruction rests in the credibility and believability of US responsive action. This requires US nuclear forces to be capable of responding to crisis at any level. "[40] A similar notion is captured by Joseph Pilat, technical staff member at Los Alamos National Laboratory. "The credibility of nuclear deterrence has been estimated, at least in the minds of US policy makers, largely by relying on measures of existing capabilities. If the capability did not exist to undertake the threatened action should deterrence fail, the deterrent threat was not viewed

as credible"[41] Credibility is tied to the *usability* of the nuclear weapons. This leads to a paradox of sorts for deterrence. "[The]. . . more *usable* a weapon is, the more the deterrent value it has, and the less likely it will be used. "[42] Joint Publication 3-12, *Doctrine for Joint Nuclear Operations,* indicated force capabilities, US national determination to use them, and adversary perception of both capability and will are what contribute to effective deterrence. [43]

The effectiveness of deterrence is enhanced by communication—the notion of declaratory policy. Two parts of this communication process are essential for an effective declaratory policy: the sender's intent regarding use of weapons must be clear to the receiver, and the receiver's perception of the sender's intent must be understood and believed. This underscores the impact of nuclear declaratory policy on nuclear deterrence. Declaratory policy makes the circumstances and/or US intent for nuclear retaliation clear to the enemy. [44] Yves Boyer, director for a French research foundation specializing in nuclear matters, clarifies the notion of perception and its effect on deterrence. "[45] . . . [P]erception of nuclear deterrence. . . derives from its purely declaratory aspect, which explains and justifies, the 'wherefore' of a nuclear arsenal and the 'how' of its use." In relation to the previous discussion of capabilities and credibility, Pilat assesses the relationship amongst these criteria to be symbiotic. "[There is a]. . . relationship between declaratory policies and real capabilities over decades of deterrence. The United States has always held that for nuclear weapons to provide a credible nuclear deterrent function, they must be capable of being utilized in the event deterrence fails. Otherwise, it is believed, deterrence would not be sustainable. "[46]

A key factor in influencing perception is captured in the concept of knowing the adversary. This is the most challenging of all the previously mentioned criteria for effective deterrence. Adversary discernment is covered in more detail during the discussion of deterring different aggressors. Suffice it to say, "Deterrence theory assumes that utility, defined in terms of the political and material well-being of leaders and their states, can be readily measured [and, therefore, an area of influence for deterrence activities]. But. . . [these areas] are subjective concepts. . . [and] are perceived differently by different leaders, making it extremely difficult for outsiders to determine, let alone measure. "[47]

The relationship between capacity, will, and communication regarding nuclear deterrence is summarized as follows:

> . . . [F]or deterrence to work, the adversary must be convinced of our will and capacity to respond decisively. On this score, ambiguity and uncertainty play very much against us. . . [but] even at the height of the Cold War, no one possessed an exact understanding of how deterrence worked. In the end, it may have been the very uncertainty that surrounded the nuclear enterprise - the how, the when, and the where of our nuclear response - that imbued it with the greatest

> deterrent value. . . [T]his very uncertainty [of nuclear response], coupled with the certainty that we will respond, should prey on the minds of adversaries and ultimately provide the rationale for nuclear weapons. [48]

Joint Publication 3-12 also advocates this declaratory policy of *calculated ambiguity* because the resulting doubt in the mind of the adversary increases the chances that hostile leaders are deterred based on the fact that they will be unaware of the US threshold for nuclear action versus inaction. Communication by means of declaratory policy is an area where the need for consensus is critical. ". . . [T]he United States cannot afford to allow nuclear weapons to lose their deterrent value by lack of coherent guidance and policy. . . For the United States to continue to use nuclear weapons to provide a high level of deterrence in the post-Cold War era, it must state a clear policy of their purpose and intended employment. "[49]

Even in meeting all the criteria for effective deterrence, deterrence can fail. ". . . [N]o matter how well the United States designs its deterrent policy, there remains some possibility that deterrence could fail and conventional weapons would be ineffective against strategically critical targets. "[50] So, plans need to be in place for deterrence to fail (to control escalation and ultimate destruction). As Keith Payne, former Deputy Assistant Secretary for Defense Forces and Policy, solemnly reminds readers "A single failure of deterrence against even second-rate weapons of mass destruction (WMD) power could lead to intolerable levels of destruction."[51] "The dilemma of nuclear deterrence. . . is that it can fail. . . [but if] nuclear weapons are not used after a deterrence failure, and if this happens a couple of times, the effect of deterrence will automatically fade away. "[52] Pilat underscores a similar view. "The United States has always held that for nuclear weapons to provide a credible deterrent function, they must be capable of being utilized in the event deterrence fails. "[53] This view mandates the continued need for nuclear weapons if deterrence is to be effective, even after a deterrence failure.

A conclusion of the discussion of nuclear deterrence is not complete without discussing its benefits and risks. Benefits of nuclear deterrence are best captured in the concept of world stability. Nuclear deterrence retains "the incomparable advantage of reflecting a passive stabilization. . . [and] tends to prevent a degradation in the field of nuclear weapons and aims to keep their dangerous features out of reach. "[54] The concept of world stability implies the prevention of war. The different types of war affect world stability at different levels. Not all wars cause world instability. So, nuclear deterrence can fail and yet not affect world stability. Nicole Gnesotto, defense analyst for a European think tank, contends "nuclear deterrence is no longer a factor of maximum stabilization - [it]. . . will not prevent all war. . . but it does retain its value as a global political stabilizing factor, if only by preventing local wars from degenerating

into generalized conflicts. "[55] When the criteria for effective deterrence previously discussed are met, nuclear deterrence will work creating a stabilizing effect. In regard to this application of what is known as *existential deterrence,* whereby the fear of a nuclear counterattack always prevails, Lawrence Freedman, professor of war studies at King's College, London, connotes "The Emperor Deterrence may have no clothes, but he is still the Emperor."[56]

The risks of nuclear deterrence (which encompass the risks of the existence of nuclear weapons) include the unintended consequence of nuclear proliferation, safety risks, and risks of failed deterrence. "Nuclear deterrence provoked an unprecedented arms race that has in many ways been ruinous and senseless. For some, the idea in acquiring ever more sophisticated weapons was to keep control of the game and make up, by the quality of their nuclear weapons, for a disproportionate conventional inferiority. For others, the aim was to counterbalance the enemy's technological lead by ceaselessly accumulating extremely powerful weapons that were put at the service of an unambiguous nuclear doctrine. "[57] The existence of nuclear weapons and their deterrent role warrant scrutiny of proliferation concerns and both purposeful and accidental use of nuclear weapons. Louis Rosen, former Los Alamos Neutron Science Center Director, argues "the major danger to our survival, today, is accidental or inadvertent nuclear war. . . which might result from. . . unintended escalation of conventional war, third-party use of a few nuclear weapons, accidental or unauthorized launch of nuclear weapons, [or] major [nuclear weapon system] malfunction. . . . "[58] Nuclear weapons effects are such that they not only produce devastating physical effects (such as radiation, fallout, and extreme heat), but also negative psychological and political effects. Long-term deterioration of relations with other countries can result from the use of nuclear weapons. [59] Stephen Cimbala, political science professor at Pennsylvania State University, suggests nuclear weapons are dangerous in the following ways.

1. Nuclear weapons can be used for coercive bargaining or war by rogue states as part of regional 'denial of access' or local intimidation strategies;
2. Nuclear deterrence [in its incompatibility with new information technology paradigms] may contribute to accidental or inadvertent nuclear war;
3. [with] the spread of nuclear weapons. . . [they] may find their way into American or allied cities, to deadly effect;
4. Nuclear deterrence has moved from its Cold War setting, as an all-purpose comfort zone. . . into a more complex. . . paradigm;
5. Nuclear deterrence may be superseded by post-nuclear advanced technology weapons. . . ; and
6. The psychology of national leaders and non-state actors is as relevant to the likelihood of nuclear war as is the spread of nuclear weapons or the effectiveness of deterrence systems. [60]

In the end, the benefits perhaps outweigh the dangers. Rosen concludes ". . . [although] deterrence, on its own, is not a permanent solution to the problem of avoiding nuclear catastrophe. . . it should be seen as [an enabler]. . . in reducing the probability of global conflict."[61]

The Future Evolution of Nuclear Deterrence

The direction of the future evolution of nuclear deterrence has been a subject of debate since the end of the Cold War. ". . . [T]he debate about the roles of nuclear weapons (and those of other countries) has entered a new phase, propelled by the transformation of the international political landscape and the altered foreign policy challenges and opportunities that these changes bring about. "[62] Specifically, this event marked a significant point in history regarding the international security environment and the world balance of power. Expectations for eliminating nuclear arsenals stemmed from an unrealistic optimism concerning international relations even as states continued to acquire nuclear weapons. "Paradoxically the end of the Cold War raised both the expectations for the elimination of the gigantic nuclear weapons arsenals and the likelihood of the first atomic explosion since 1945. "[63] Nuclear opponents and proponents made predictions as to what the future held in store regarding nuclear weapons. ". . . [O]ptimists assumed that a post-nuclear era had arrived in warfare. . . [but the] optimism about nuclear marginality in the face of the post-nuclear military era was premature, if not entirely wrong. . . [because of] the continued existence of nuclear weapons and of the knowledge of how to make them. . . . "[64] Nuclear opponents argued this event provided an opportunity to *denuclearize* our world or *delegitimize* nuclear weapons, therefore, supposing no further need for nuclear deterrence. Nuclear proponents understood nuclear deterrence worked, as evidenced by the success of the Cold War, but realized it might need to change because the opposing nuclear-equipped power was no longer an adversary. Many proponents called for a minimum nuclear deterrent posture (reference Table 2 and Appendix A for further details on minimum deterrence).

World stability is what needs to be preserved in the midst of all this change, and thus, the impetus for the reexamination of deterrence. That stability can be enhanced by continuing some doctrine for nuclear deterrence. "[It]. . . has. . . to be adapted to the geo-strategic context of the aftermath of the Cold War. . . In the absence of an immediate and obvious threat, everything seems. . . to call in question the purpose of nuclear deterrence. . . . "[65] So, "nuclear deterrence looks like the factor most likely to remain a permanent part of international relations, at least until a more devastating or efficient weapon is invented. Moreover, this posture is taken not because of achieving 'general and complete nuclear disarmament,' but because of the presumably considerable 'inherent advantages' of nuclear weapons as a means of sustaining national security

and 'civilizing' international relations by making nations more responsible "[66] (Reference Appendix B for information on classic deterrence theory). Nuclear deterrence is still needed, but Cold War deterrence, *old-think,* is no longer appropriate. ". . . [O]ld style [deterrence] cannot explain or predict many of the important things that academics and policy makers need to know about the new world order. Deterrence is not totally irrelevant to the avoidance of future war, including war between nuclear armed states: far from it. Its burial is immature. But deterrence as it was explained in the Cold War was too. . . rational and insufficiently political. "[67]

EXAMINATION OF ROLES FOR NUCLEAR WEAPONS

> *What distinguishes 1992 from the end of other modern great power conflicts in 1815, 1919, and 1945 is that the Cold War was not punctuated by direct hostilities or by battlefield employment of the central military asset that defined great power status. A great military superpower collapsed without even a hint that it would employ its military capability to save itself. The fact that the denouement of the Cold War followed the same pattern of nuclear nonuse from 1946 to 1992 might explain why so little scholarly attention has been paid to examining the role of nuclear weapons in the twenty-first century.*
>
> —T.V. Paul, Richard J. Harknett, and James J. Wirtz

Background

The US debate regarding nuclear weapons continues today. This debate is encompassed by the single question posed to international deterrence conference attendees by Admiral Lanxade in 1993, "What role should we assign nuclear weapons in the post-Cold War world?"[68] The Lanxade question continues to pervade the conscience of the US. "The question is a simple one, the answers are not."[69] One would think that after 60 years of *successful* nuclear deterrence, proven symbolically by the ending of the Cold War and with no subsequent use of nuclear weapons in combat since 1945, all questions regarding the role of nuclear weapons would have already been answered to everyone's satisfaction and there would be unanimous agreement. But there is not unanimous agreement. The *success* of nuclear deterrence during the Cold War is still questioned by some. As discussed previously several criteria must be met for effective deterrence. Nuclear weapons by themselves are ineffective. Stanley Erickson, Lawrence Livermore National Laboratory, confirms this in his analysis on threat strategies. "Weapons alone do not deter. The threat of damage and destruction does. "[70] The criteria for effective deterrence that contributed to the past *success* of nuclear deterrence are variables that have been changing at an exponential rate since the end of the Cold War. The dynamic nature of these variables mandates a *revisit* on nuclear deterrence in order to correctly answer the questions regarding the roles of nuclear weapons.

The issue of nuclear weapons, and all it entails, is a politically sensitive subject, so much so that several strategists and policy analysts have noted there is a taboo regarding any subject

matter concerning nuclear weapons. Therefore, senior policy makers shy away from making it a priority. Serge Sur notes "It is not that nuclear weapons have not attracted attention. Thinking about the role and the future of deterrence has not been pursued on the scale one might have expected for several reasons: the urgent nature of other issues [specifically, the war on terror and the war in Iraq], inertia arising from the status quo, a desire to avoid adding confusion, the lack of foreseeable or acceptable solutions, [or] a concern to maintain minimum consensus. . . . "[71] There is also a serious lack of consensus about nuclear weapons policy amongst senior decision and policy makers. This lack of consensus, coupled with the political sensitivity, invites a state of *inertia*. Tom Sauer, Research Fellow at the Institute for International and European Policy, assesses the situation as follows. ". . . [O]ne could have expected that the US would have changed its posture from a Cold War-style maximum deterrent policy to a minimum deterrent right after the Cold War. These expectations were shared by a lot of knowledgeable scientists, (former) diplomats and policy-makers. . . [but] the US was. . . [not] willing to drastically change its own nuclear posture. No major effort took place to transform the existing Cold War posture fundamentally. *Nuclear inertia* reigned. "[72] He adds that the "roots of this inertia" lay in domestic politics stemming from a lack of consensus amongst the most senior leaders and policy makers. [73] Because the issue of clearly defining the role of nuclear weapons is one that has long-term repercussions and its follow-on solutions require multiyear developments, it is imperative that the US gain consensus in these issues.

Current and Past Roles for Nuclear Weapons

Nuclear weapon capabilities currently exist. Within the new concept of capabilities-based planning, it must be determined if these nuclear weapon capabilities meet a need in accordance with current and future threat assessments. If the answer is yes, then appropriate roles can be established. If the answer is no, then capability gaps are identified, which may also reveal new roles for nuclear or other weapons. Once the need and role for nuclear weapons is established, then an appropriate force structure, including numbers and types of nuclear weapons, can be projected. Finally, the nuclear weapons infrastructure requirements are derived from the force structure requirements.

The latest QDR and NPR indicated there is a continued need for nuclear weapons because of the deterrence they can provide. Additional roles associated with deterrence have been suggested, but the detailed analysis is yet to be done. Establishing the continued need for some type of nuclear deterrence presupposes the continued need for nuclear weapons.

Nuclear weapons can fulfill a variety of roles within in the context of deterrence. Before an examination of what roles are appropriate to meet today's threats and those of the future, it is

helpful to identify the available roles for nuclear weapons. An executive report on the rationale and requirements for nuclear forces produced by the National Institute for Public Policy (NIPP) in 2001 indicated a fairly comprehensive list of roles for US nuclear weapons: deter escalation by regional powers to the use of WMD; deter regional powers or emerging global powers from WMD or massive conventional aggression against the US or its allies; prevent catastrophic US and/or allied wartime casualties in a conventional war; provide unique targeting capabilities in support of US deterrence and wartime goals; and enhance US influence in crisis. [74] These and other roles are discussed in detail below.

Deterrence: The role of nuclear weapons in deterrence was discussed earlier. However, when identifying the role of nuclear weapons in deterring escalation, WMD, or aggression, an implied role is intervention. "Should deterrence fail, in most instances, the United States will have an interest in containing the conflict. This [could] mean. . . use of nuclear weapons. "[75]

Stability: Regarding the previous discussion on the need for continued nuclear deterrence to provide world stability, it is apparent that nuclear weapons play a role in providing world stability. The relationship between nuclear weapons, the deterrence they provide, and world stability is highlighted by Tom Sauer when he states "Because of their unique destructive characteristics, nuclear weapons are paradoxically not perceived as real weapons to be used, but as instruments of deterrence. . . to prevent the enemy from attacking vital interests. The main consequence for international politics is. . . its stabilizing effects. "[76] What is interesting to note here is that there is value in not using nuclear weapons.

War Prevention and War Termination: An additional role for not using nuclear weapons is war prevention, one dimension of nuclear deterrence. "Since nuclear weapons were invented, and their horrific destructive power demonstrated in Hiroshima and Nagasaki in 1945, the least harmful way of using them has been through nuclear deterrence: the indirect use of such weapons (in the form of threats to use them) in order to prevent an enemy's nuclear aggression or large-scale conventional attack. "[77] There is a role for nuclear weapons in both war prevention (nonuse) and war termination (use). However, the first and only operational use of nuclear weapons by the US was for war termination. "The proposition that wars have been prevented by the mere threat of nuclear bombardment is unprovable, but nonetheless believed by. . . most students of contemporary strategy. Similarly, wars have been terminated by the actual imposition of countervalue pain: World Wars I and II both fit this model, in a manner that is considerably more provable. "[78] The *countervalue* effect of nuclear weapons is described by George Quester within the context of the first use of nuclear weapons. "Since 1945, nuclear weapons have been seen primarily as *a countervalue* instrument, significant for how it affects the motivations of the

opposing side rather than what it can do to its capabilities. It was nuclear weapons that *persuaded* the Japanese to surrender and *persuaded* the Soviets not to exploit their advantage in conventional forces in Europe, rather than crippling the Japanese forces to pave the way for an amphibious invasion of Japan or repelling the Warsaw Pact's arrays of tanks. "[79]

Diplomatic tool: Nuclear weapons are obviously military tools. Therefore, nuclear weapons are also diplomatic tools. A Defense Science Board Task Force on nuclear capabilities concluded "They were (and are) instruments of national policy more than weapons of military operations…. "[80] They have a role to play in shaping foreign policy decisions. Rosen adds "deterrence. . . should be seen as enabling our political system to adapt to the hazards of the nuclear age by progressively reducing the probability of global conflict. "[81]

Dissuasion: Dissuasion involves activities that discourage adversaries and potential adversaries from taking courses of action that are hostile to US interests. Ryan Henry, Principal Deputy Under Secretary of Defense for Policy, indicates dissuasion seeks to "shape the nature of military competitions in ways favorable to the United States by including restraint in the behavior of adversaries; channeling. . . [their] strategies and resources in less threatening directions; and complicating. . . [their] military planning. "[82] In essence, dissuasion seeks to influence adversary behaviors. Henry adds "dissuasion can be thought of as 'pre-deterrence' - preventing an adversary from developing: capabilities before they can be used; and courses of action before they can be adopted. In some circumstances, we may be trying to dissuade adversaries from expanding, improving, or transferring a capability while deterring them from using it. "[83] A nuclear weapon can be *a tool of influence* because of its inherent destructive effects.

Assurance: Nuclear weapons play a role in assuring allies and friends within the context of extended deterrence.

Defeat: The overwhelming devastation and destruction nuclear weapons can render speaks directly to the ability to defeat adversaries. Nuclear force size and type are factors when the adversary has nuclear weapons capabilities that are comparable to those of the US.

Last resort: As previously discussed, nuclear weapons are not only a military tool, but also a diplomatic tool to be used to influence actions and behaviors of opponents. Conventional weapons can be used to impact enemy decisions, but depending on the scenario, the messages sent to aggressors may not be strong enough. When all else fails, nuclear weapons play the ultimate role whether it be that of deterrence, dissuasion, or defeat. As Sir Michael Quinlan, Director of the United Kingdom's Ditchley Foundation, succinctly stated, "Nuclear weapons are of a different order: they trump all competitors."[84]

Unique targeting effects: Nuclear weapons possess the technology and release unique effects to defeat targets that no other types of weapons can defeat such as deeply buried and distributed tunnel targets and storage. Sir Quinlan offers insight that "no one can fight against. . . [nuclear weapons] with other [nonnuclear] weapons. "

THE 21ST CENTURY ENVIRONMENT

> *In the first decade of the 21st century the United States must assess the world not through the eyes of World War II, or the Cold War, or even 9/11. Instead, Americans need to recognize that ours is a world lacking a single organizing principle for foreign policy like anti-fascism or anti-communism. We face many new present dangers, several long-term challenges, and countless opportunities…[We need] a new national security strategy tailored to both the world we inhabit and the world we want to create.*
>
> —G. John Ikenberry and Anne-Marie Slaughter

New Threat Environment

Flournoy's framework recommended identifying new world threats to security first in order to properly examine the role of nuclear weapons in the 21st century. Recurring themes regarding new threats include a summary by Ikenberry and Slaughter (asterisk indicates threats that are affected by nuclear weapons and associated technologies/capabilities):

> ***Volatile Situations in the Middle East:** Regional disorder, continuing Israel/Palestine conflict and the need for peace between the two, terrorism and civic violence in from Islamic/Islamist movements, Iran seeking capacity to develop nuclear weapons, the continuing war in Iraq.
> ***Global Terrorist Networks:** "Global insurgency with a criminal core," increased potential for terrorists to acquire nuclear weapons.
> ***Proliferation of WMD Anchors Transfer of Nuclear Weapons and Associated Technologies:** ''Breakdown of global non-proliferation regime," Pakistani and North Korean nuclear weapons events.
> ***Asia:** Rise of China, growing South Korean anti-American sentiment, strained Sino-Japanese relations, shifting distribution of power.
> **Global Pandemics:** AIDS, avian flu.
> **Energy Crisis:** US consumption/dependence on oil from other countries, global warming.
> **Global Economy:** Negative effect of deficits on international financial stability.[85]

The literature review also revealed threats arising from international system changes resulting in an increase in "failed or failing states or rogue states, e. g. , Libya or Syria, those that appear willing to flout the 'rules of the road' established by the status quo powers and behave in unanticipated ways…[and] are, therefore, unpredictable and potentially dangerous. "[86] Other possible threats to the nation identified by Lawrence Livermore National Laboratory's Center for Global Security Research (arranged in order of highest to lowest risk) and assessed by leading

scientists and policymakers in *After Globalization* workshops include (asterisk indicates threats that are affected by nuclear weapons and associated technologies/capabilities):

*****Nuclear weapons in a terrorist attack;
*****Limited regional nuclear war, natural diseases or manufactured diseases;
*****Major nuclear war, human control of future biological forms (e. g., malicious applications of biotechnology, new biological forms);
*Blunting of US force projection (e. g., new air defense and air combat technologies);
*Gained and lost control of nature (e. g., weather, geology);
*Information attacks; and
*Asymmetric attacks. [87]

Flournoy recommended examining these new threats and characterizing how serious and imminent the threats are. There is no doubt that including these threats in national-level policy guidance documents indicates their seriousness and imminence. The 2001 NPR references to terrorist or rogue states armed with WMD and aggressors armed with modern military technology, including nuclear, biological, and chemical weapons and their delivery platforms, give hints as to the seriousness of the new threats in today's environment. The 2001 National Security Strategy (NSS) indicated "the international security environment in 2002 was more dangerous than during the Cold War. . . [and] referred to a threatening combination of 'tyrants, terrorists, and technology [i.e. , WMD]. '"[88] The 2006 QDR followed suit as noted by its emphasis on a strategy for deterrence that is effective for WMD states, states with advanced military capabilities, or terrorist networks. President Bush, during his National Defense University student graduation address, adds further confirmation: "…[T]his is still a dangerous world, a less certain, a less predictable one. . . Unlike the Cold War, today's most urgent threat stems not from thousands of ballistic missiles in Soviet hands but from a small number of missiles in the hands of these states, states for whom terror and blackmail are a way of life. They seek weapons of mass destruction to intimidate their neighbors and to keep the United States and other responsible nations from helping allies and friends in strategic parts of the world. "[89]

New Policy Environment

"Strategy is the art of matching instruments of power—in this case nuclear weapons—and related doctrine to the goals of national policy. Any comprehensive discussion of nuclear policy must examine the role of nuclear weapons in achieving US foreign policy and defense policy goals. "[90] Policy and decision makers must understand nuclear policy in order for consensus to occur on the roles for nuclear weapons. The following discussion focuses on the impact of major nuclear policy documents on the roles of nuclear weapons.

QDR (2001): The 2001 QDR indicates a viable role for nuclear weapons in meeting 21st century threats and challenges. Multiple references to new threats involving failed or failing

states, rogues states, and terrorists with increasing access to WMD indicate the unpredictability of the 21st century security environment. There is consensus that use or threat of use of WMD can be deterred by nuclear forces ". . . use of WMD against forces in large-scale conflict with the United States might be deterred by the US nuclear arsenal."[91] Additionally, nuclear deterrence was identified as either remaining to play a vital role or having a reduced role in US national security, but it was not identified as a role that will go away. [92]

NPR (2001): The 2001 NPR indicates a viable role for nuclear weapons in meeting 21st century threats and challenges. The 2001 NPR presented a unique defense strategy that included the concept of a new strategic triad, which includes offensive strike capabilities (nuclear, nonnuclear, and nonkinetic), defenses (both active and passive), and responsive infrastructure. Robust command, control, computer, communications and intelligence, surveillance, and reconnaissance capabilities would support the triad. It provides a roadmap for a more integrative and flexible approach to our defensive posture. "[T]he NPR was intended by the Bush administration to serve two closely related purposes: to create a vision for transformed nuclear forces more effectively aligned with security challenges facing the nation and more integrated with transformed conventional forces and other instruments of national power; to develop a coherent approach to achieve the president's objective: a national security strategy with lower nuclear salience, reduced warhead numbers, and a less adversarial character."[93] It used the 2001 QDR as a foundation. Admiral Mies (retired) summarizes the following details regarding the NPR.

> The NPR mirrored and reinforced the strategic premises and conclusion of the QDR. In a fluid and unpredictable security environment, the NPR concluded that broader, more comprehensive frameworks for nuclear strategy, policies, and force structure are required *to: . assure* allies and friends of US commitments,…*dissuade* adversaries from actions inimical to US interests or those of our allies and friends. . . deter threats and coercion against the United States, its military forces, allies, and friends. . . decisively *defeat any* adversary while defending against attack if deterrence fails. These NPR objectives - assure, dissuade, deter, defeat - were portrayed as a decisive break from America's traditional Cold War doctrine of deterrence. In truth, none of these. . . originated within the NPR or QDR; most had been subsumed in the broad interpretation of "deterrence" and were objectives of our Cold War strategy. But there was a perception that many of these concepts had fallen into disuse since the end of the Cold War. The NPR appropriately forced us to think about. . . them more overt[ly]. [94]

This document indicates a slight paradigm shift in the role for nuclear weapons, but it maintains a role for them. "[Although the new]. . . approach has the potential to reduce dependence on nuclear weapons in the strategic deterrent. . . [c]urrent nuclear forces. . . will

remain core capabilities for some time, and these forces must be sustained and modernized while other capabilities of the new triad are being developed and fielded. "[95]

Table 3 depicts the differences between the Cold War posture and this new posture.

Table 3. The New Strategic Triad

	Cold War Strategic Posture	New Strategic Triad Posture
Force structure	Strategic nuclear offense (old triad) Theater nuclear offense Conventional offense (largely distinct)	Strategic nuclear offense (old triad) Theater nuclear offense Strategic conventional offense Strategic defense Theater defense (blended/overlapped)
Weapons mix	Kinetic	Kinetic and nonkinetic
Intent of use	Nuclear weapon effects Physical application for physical and psychological effects	Strategic effects Physical and psychological applications and effects
Command and control (C2)	Strategic warning and C2	Strategic warning, nuclear C2 homeland defense warning, and strategic C2 Conventional C2
Planning	Threat-based nuclear targeting	Integrated effects-based/ capabilities-based/multisystem

Source: James M. Smith, "The New Framework, the New Strategic Triad, and the Strategic Military Services," *Nuclear Transformation: The New US Nuclear Doctrine* (New York: Palgrave Macmillan, 2005), 136.

NSS (2002): The 2002 NSS indicates a viable role for nuclear weapons in meeting 21st century threats and challenges. "The new strategy reflects a changed security environment and newly formulated strategic objectives: assure friends and allies, dissuade future military competition, deter threats against US interests and allies, and defeat adversaries if deterrence fails."[96] It also discusses the need to stop rogue states, terrorists, and other adversaries via deterrence or dissuasion before they are able to threaten or use WMD. [97] Nuclear roles for assurance, deterrence, dissuasion, and defeat have already been presented.

National Defense Strategy (NDS): The 2005 NDS describes four threat challenges to the security environment and indicated US vulnerabilities and likelihood of occurrence for each: traditional (lower likelihood, lower vulnerability), disruptive (lower likelihood, higher vulnerability), irregular (higher likelihood, lower vulnerability), and catastrophic (higher likelihood, higher vulnerability). [98] Nuclear weapons have a viable role in meeting these 21st

century threats and challenges, especially in the traditional challenge area (using nuclear forces for traditional deterrence) and the catastrophic challenge area (using nuclear weapons for deterring WMD).

QDR (2006). The 2006 QDR directly indicates a viable role for nuclear weapons in meeting 21st century threats and challenges. "[T]o help shape the choices of countries at strategic crossroads, strengthen deterrence, and hedge against future strategic uncertainty, the Department [of Defense] will develop a wider range of conventional and nonkinetic deterrent options while maintaining a robust nuclear deterrent."[99] It also states nuclear weapons will be maintained in a manner appropriate for 21st century deterrence requirements. [100]

US Air Force (USAF) Posture Statement: This posture statement indicates a viable role for nuclear weapons in meeting 21st century threats and challenges. "America's ICBM [intercontinental ballistic missile] force remains the foundation of our Nation's nuclear deterrent capability."[101]

US Navy Chief Naval Officer (CNO) Guidance: This guidance indicates a viable role for nuclear weapons in meeting 21st century threats and challenges. "To support. . . [national security strategy] priorities, we will achieve the following objectives. . . Increase our emphasis on continuing to field credible, proven ballistic missile defense capability. . . Strengthen transnational, global and regional maritime deterrence with enhanced capability to detect, track, intercept and neutralize WMD. . . . "[102]

As described above, major shifts have occurred in national-level policy and guidance based on the new threat environment. It is difficult to capture all of the changes in the scope of a paper like this. Table 4 reflects the new strategic framework that guides our nation's policies and strategies.

Table 4. The New Strategic Framework

	Cold War Strategic Framework	New Strategic Triad Framework
Threat	USSR reasonable, rational, informed predictable deterrable	Proliferant states, failed/failing states, and nonstates different, uncertain rationality unpredictable? undeterrable?
Strategic focus	Contain/deter	Disarm/prevent/preempt Deter/defeat/dissuade/assure
Diplomatic imperatives	Arms control, nonproliferation	Counterproliferation (active and passive), prevention/preemption
Military imperatives	Credible nuclear offense (defense uncertain)	Effective strategic offense and defense (deterrence uncertain)
Allies	US nuclear umbrella	Theater missile defense

Source: James M. S Smith, "The New Strategic Framework, the New Strategic Triad, and the Strategic Military Services," *Nuclear Transformation: The New US Nuclear Doctrine* (New York: Palgrave Macmillan, 2005), 134.

Discussion about the role and need for nuclear weapons would not be complete without some allusion to proliferation concerns, the Treaty on the Nonproliferation of Nuclear Weapons (NPT), arms control policies (ACP), and controls on special nuclear materials (SNM).

NPT/ACP: The main objective of the NPT is to prevent the spread of nuclear weapons. Article VI is designed to continue arms control and disarmament efforts, both nuclear and nonnuclear. Article VI also includes a pledge to pursue good-faith negotiations on effective measures to stop the nuclear arms race, nuclear disarmament, and a treaty on complete disarmament under strict and international control. The US reaffirmed the substance of these pledges in 1995 and 2000. The US is committed to the NPT and takes its Article VI obligations seriously.

The 2001 NPR seems to indicate this is not the case. However, the NPR reflects a future vision where nuclear deterrence continues in a slightly diminished, but still critical role for the defense of the nation. The NPR's call for nuclear weapons modernization is not a call for new nuclear weapons. This has been mistakenly understood to mean that the US is not taking the NPT and its Article VI obligations seriously. Nuclear modernization is not prohibited by the NPT and has not been an issue in the Article VI debates. The current administration is committed to reducing the number of nuclear weapons and reliance on them in support of the NPT and its Article VI obligations. Under the Moscow Treaty, the number of operationally deployed strategic warheads will be reduced to 1700–2200 by the end of 2012. President Bush stated his support during his remarks at National Defense University, "I am committed to achieving a credible deterrent with the lowest possible number of nuclear weapons consistent with our national security needs, including our obligations to our allies. My goal is to move quickly to reduce nuclear forces. "[103] This vision has been both incorporated into the national security strategy and policy documents and carried out during his tenure.

Law of Armed Conflict (LOAC): The principle of proportionality is especially applicable and must be considered when using nuclear weapons due to their destructive effects. Collateral damage must be minimized at all costs. Joint Publication 3-12 states "the law of armed conflict does not prohibit nuclear weapons use in armed conflict. "[104] See Appendix C for a further discussion on LOAC.

International Law: Joint Publication 3-12 discusses the political considerations that accompany a decision to employ nuclear weapons. The "abhorrence of unrestricted warfare" has

been restricted and codified by laws of war; however, "while the belligerent that initiates nuclear warfare may find itself the target of world condemnation, no customary or conventional international law prohibits nations from employing nuclear weapons in armed conflict."[105] See Appendix C for a further discussion on international law.

Control of SNM: Control of SNM contributes to nonproliferation and ACP in that it yields transparency to nuclear-capable states or those acquiring nuclear capabilities. Technologies for detection, tracking, and identification need to be robust for accurate SNM control.

The Anatomy of Deterrence—What It Takes to Deter

What deters the use of nuclear weapons by emerging nuclear weapon states?
—Michele A. Flournoy

Several historic roles for nuclear weapons were presented previously in this paper. To determine if these and/or other roles are appropriate for the 21st century, it is essential to understand what it takes to deter today based on new international threats. The NIPP assessed in their 2001 executive report on rationale and requirements for nuclear forces that the nature of our new adversaries and the "new features of the post-Cold War period greatly magnify the challenges of deterrence. The post-Cold War international environment holds out a much wider variety of opponents and contexts in which US deterrence policies must operate. And, far less is known about several potential challengers. . . [so] the scope is much greater for potential challengers' unfamiliar. . . factors to shape responses to US deterrence policies in surprising directions. "[106] Remember the point made earlier in this paper about the impact of context on deterrence theory. The NIPP report clarifies that deterrence will be more difficult in the new environment, not because these challengers are *irrational*, but because their "decision-making. . . nevertheless, may be very difficult to anticipate" and that the US "lack of familiarity [with the new challengers' factors of decision-making] will greatly challenge Washington's capacity to. . . devise deterrent policies likely to succeed. "[107] *Knowing the enemy is* critical. All US attempts to decipher what it takes to deter different adversaries will enhance the success of deterrence.

As discussion on what it takes to deter ensues, it is helpful to remember some salient points. First, deterrence functions on the basis of the cost-benefit framework. This framework applies regardless of the rational or irrational tendencies of the deterred entity (the entity who is doing the *deterring* subjectively determines rationality or irrationality). This framework establishes thresholds for aggressor actions. Second, nuclear proliferation has mostly occurred in nations that are not, nor are likely to become, our allies. As a result, we may not *know* who we may be deterring (in the context of their cost-benefit framework). This adds to the complexities of deciphering what it takes to deter. Finally, the Cold War strategies and policies for deterrence are

no longer adequate because they were based on the Soviet responses that were known and assumed to be rational.

A brief review follows of the primary elements of deterrence as the basis for determining what it takes to deter. The central idea of deterrence is discussed in USSTRATCOM's DO JOC as "decisively influenc[ing] the adversary's decision-making calculus in order to prevent hostile actions against US vital interests [the 'end' of deterrence]. An adversary's deterrence decision calculus focuses on their perception of three primary elements. . . the benefits of a course of action. . . the costs of a course of action. . . the consequences of restraint (i. e. , the costs and benefits of not taking the course of action we seek to deter). "[108] It also discusses the three "ways" joint military operations achieve the "end" of deterrence: "deny benefits. . . impose costs. . . encourage adversary restraint" using "direct means" that include "force projection. . . active and passive defenses. . . global strike (nuclear, conventional, and nonkinetic), and strategic communication. "[109]

To be successful at this methodology, it helps to *know* the enemy. For deterrence to work, Keith Payne calls for consideration of the following.

> . . . [a] set of often-ignored but necessary political and psychological conditions [that] must dominate the decision-making process on both (or all) sides. . . [which] include the following, *inter alia:*
>
> - Leaders who value avoidance of the US deterrence threat more highly than whatever might be the value at stake in a contest of wills with the United States;
> - Leaders capable of relatively unbiased assessments of information and, based on that information, linking decisions to preferred outcomes, while recognizing value tradeoffs in relatively dispassionate decision-making;
> - Leaders who are attentive to and comprehend the intentions, interests, commitments, and values of the opponent(s);
> - Leaders who focus their cost-benefit calculations on external factors (i. e., deterrence threats) as the final determinant of their decision-making;
> - Leaders who understand the military capabilities and consequences involved in their decisions, at least at a general level;
> - Political systems that permit individually rational decision-makers to establish similarly rational state politics that do, in turn, control state behavior. [110]

These considerations are difficult to assess for several reasons. Besides the numbers of new challengers in the new world environment, the context of the environment is constantly changing. Senator John Kyl, in his DOE Nuclear Initiatives Republican Policy Committee Report, indicated "the tools necessary to present what adversaries view as a credible threat [based on the above-listed considerations] can differ in various situations. In addition, the actions one

seeks to prevent, are not constant. "[111] Additionally, opposing actors must believe in a number of beliefs. Krieger posits another spin on the importance of belief in deterrence.

> In the world of nuclear deterrence theory, beliefs are everything. What the leaders of a country perceive and believe is far more important than reality. Nuclear deterrence is a seemingly simple proposition: Country A tells Country B that if it does X, Country A will attack it with nuclear weapons. The theory is that Country B will be deterred from doing X by fear of nuclear attack by Country A. For deterrence to work, the leaders of Country B must believe that Country A has nuclear weapons and will use them. Nuclear deterrence theory holds that even if Country A might not have nuclear weapons, so long as the leaders of Country B believed that it did, they would be deterred. [112]

Several studies have been completed on *knowing the enemy.* Caroline Ziemke, Phillipe Loustaunau, and Amy Alrich, analysts for the Institute for Defense Analysis, performed a study on strategic personality typing of states in order to aid policy makers and strategists develop deterrence strategies for the new world environment and its players. They concluded that understanding the strategic personalities of states can enhance the effectiveness of deterrence. [113] Their methodology provides a "tool that enables. . . [anticipation of] the actions and reactions of potential challengers (or strategic partners) through a basic understanding of how they see the world. "[114] The typology is founded on "historical habits and predispositions that shaped states' strategic conduct in the past and can reasonably be expected to do so in the future [it is not deterministic or precisely predictive, but gives an idea of how states would most likely react]."[115]

Appendix D contains the personality types and their corresponding characteristics. Within this model, effective deterrence is based on two factors: "1) how well each side communicates its Ultimate Concerns, interests, and will in a way the other can understand, and 2) the balance of Ultimate Concerns at stake between the defender and the would be challenger. "[116] Appendix E contains the strategic personality types and their corresponding and ultimate concerns. Appendix F includes a listing of world states by personality type. The study defines ultimate concerns of a challenger as "material, moral, spiritual, or ideological factors that it has come to see as key to its long-term survival, coherence, and sense of well-being. "[117] An example given in the study is as follows.

Extroverted US versus Introverted Challenger

> Most future challengers the United States will face are likely to be introverted states. Introverted states are not naturally more aggressive than Extroverted ones, but for the past half-century and for the foreseeable future, the Extroverted states (after two World Wars and the decades-long shadow of a third) have decided that there are better ways to resolve their differences than the resort to force. Introverted states are likely to continue to be defensive of their internal prerogatives and their ability to pursue their Ultimate Concerns free from interference and international restrictions imposed by Extroverted states. This is

> likely to be especially true whenever the United States is directly involved. International or US pressure may lead Introverted states to shore up their barriers rather than relax them, and nuclear weapons may in some cases appear to be particularly effective in building more robust boundaries. Introverted and Extroverted states analyze events in fundamentally different contexts: Extroverted states naturally think in terms of universal laws, international norms, and global solutions; Introverted states, at most, look for regional and bilateral solutions on a limited, case-by-case basis. [118]

Payne suggests a system that can be used in *knowing the enemy* that helps in gaining a useful understanding of an opponent's beliefs, will, values, and likely cost-benefit calculations under certain conditions. [119] Table 5 details his system as a framework.

Table 5. A Deterrence Framework

Step 1: Identify antagonists, issues, objectives, actions
Step 2: Identify factors affecting adversary's decision making - Degree of rationality and predictability - Leadership characteristics - Values and cost/risk structure - Adversary's options - Beliefs about costs to the US - Communications - Credibility of US threats
Step 3: Construct strategic profile of adversary with respect to the crisis in question
Step 4: Assess susceptibility to deterrent policies
Step 5: Identify available US deterrent policy options
Step 6: Identify gaps between deterrent requirements and available options

Source: Compiled from information by Keith B. Payne, "The Fallacies of Cold War Deterrence," *Comparative Strategy* 22, no. 5 (2003), 424–425.

Dr. Willie Curtis, United States Naval Academy analyst, suggests a slightly different approach based on similar concepts. He premises that the bipolar model for deterrence strategy is no longer applicable in this new multipolar environment. [120] Curtis uses the analogy of scorpions in a bottle as the basis for his model, "two large scorpions in a bottle surrounded by numerous but just as deadly scorpions."[121] His solution consists of "Adaptive Strategic Options," which allow flexibility in planning deterrence response activities as applicable for each scorpion(s). [122]

Deterrence is affected by and affects other defense activities. The impact of deterrence on assurance, dissuasion, and defeat and vice versa, the effects of assurance, dissuasion, and defeat on deterrence must be understood. Figures 4.1 and 4.2 highlight these relationships as explained in USSTRATCOM's DO JOC.

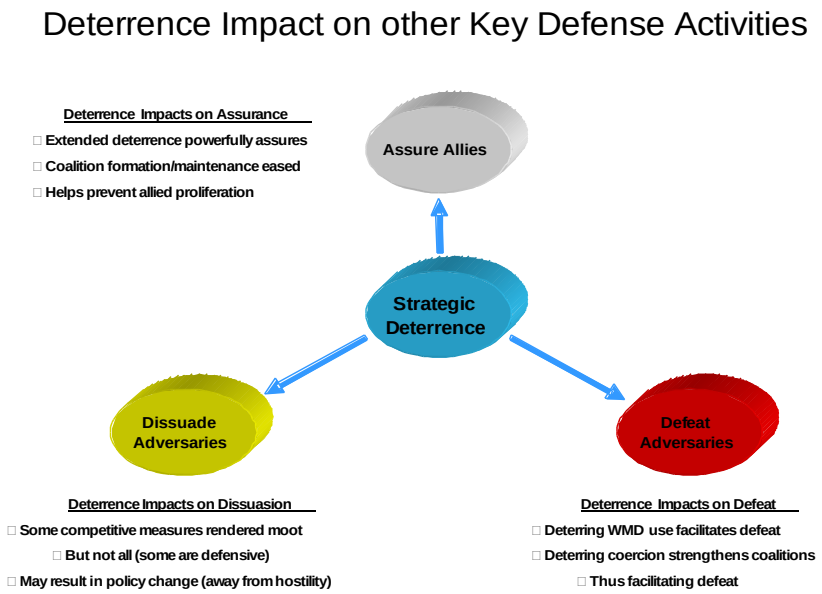

Figure 4. 1 Deterrence Impact on Other Key Defense Activities

Source: Copied from *Deterrence Operations Joint Operating Concept*, USSTRATCOM, December 2006 (version 2. 0), 70.

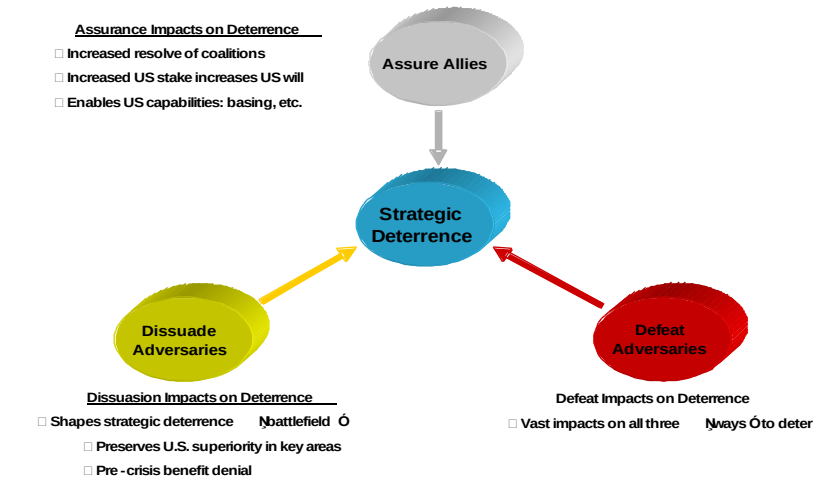

Figure 4. 2 Key Defense Activities Impact on Deterrence

Source: Copied from *Deterrence Operations Joint Operating Concept*, USSTRATCOM, December 2006 (version 2. 0), 72.

21st Century Roles for Nuclear Weapons

> *What role, if any, can nuclear weapons play in meeting new threats ("old roles" need to be re-examined and new ones considered, including role nuclear weapons cannot play)? What role will nuclear weapons play in extended deterrence for Europe?*
>
> —Michele A. Flournoy

Based on the new threat and policy environments, it should be evident that all the previously discussed general roles for nuclear weapons are all relevant and applicable for the 21st century. Appropriate roles for nuclear weapons include the following: deterrence, dissuasion, assurance, defeat, world stability, war prevention, war termination, targeting effects, diplomatic/political influence, and last resort. In keeping with Flournoy's recommendation of examining what roles nuclear weapons cannot play, it is appropriate to note some exceptions for nuclear weapons. Regarding targeting effects, there are still some hardened and very deeply-buried targets that not even current nuclear weapons can affect. The needed target effect may be achieved by modifying current nuclear weapons capabilities or by using another weapon type. Additionally, regarding what it takes to deter, nuclear weapons are not always the appropriate weapon of choice to achieve the needed deterrence. The same applies for dissuasion. The capabilities and/or their associated weapons and roles will need to be tailored to the adversary.

Regarding extended deterrence and the role for nuclear weapons, Jan Lodal, former President of the Atlantic Council of the United States and former Principal Deputy Under Secretary of Defense for Policy, notes "The end of the Cold War does not end the need to maintain credible nuclear deterrent forces. . . Nevertheless. . . [it] does remove the threat against which the doctrine of extended deterrence was largely designed [a surprise Soviet invasion of Western Europe]. "[123] That specific Soviet threat may be removed, however opportunities abound in both world politics and the new international security environment for continuing extended deterrence with a role for nuclear weapons even under the concept of tailored deterrence; it is called assurance.

A NEW NUCLEAR DETERRANCE

> *With the number of different actors that we're now addressing, rather than having just a single counterpart, no one strategy, a one size-fits-all strategy is probably. . . going to be appropriate in the future or. . . (today's) environment.*
>
> —General Cartwright, Commander, USSTRATCOM

A New Nuclear Deterrence for a New Environment

Before discussing the appropriate doctrine for the new environment, a few facts are clear and worth mentioning:

1. Nuclear weapons remained after the end of the Cold War;
2. Proliferation continued after the end of the Cold War.

These facts indicate the continued existence (acquisition/development/maintenance) of operational nuclear weapons and mandate that nuclear deterrence theory, doctrine, strategy, and policy continue. Serge Sur underscored this fact when he purported "the existence of nuclear weapons offers more dangers without a doctrine of deterrence than with one. . . [and] general renunciation of deterrence as a political or declaratory solution would be meaningless, or. . . highly likely have a negative impact. . . [T]his would lead neither to the disappearance of existing weapons nor to the disappearance of nuclear technology for military purposes: nuclear weapons cannot be uninvented, and international security will for a long time remain faced to live with them. "[124]

The new policies have explicitly and implicitly conferred new roles for nuclear weapons. These new roles require new doctrine and declaratory policies to guide the appropriate use of nuclear weapons and to determine the appropriate nuclear force structure. It has been established that nuclear deterrence is still needed, and that today's threats are significantly different in nature and context than during the Cold War. The changing geostrategic and geopolitical environment mandates that the US rethink its nuclear deterrence and associated declaratory policy. As Keith Payne suggested in his book *Deterrence in the Second Nuclear Age,* ". . . the focus [now] is on how to deter in the post-Cold War era,"[125] and that focus requires an understanding that Cold War doctrine is not sufficient for today. [126] Several unique factors present in the new world environment require a nuclear doctrine.

The increased threats from proliferation present a strong reason for a new nuclear doctrine. Payne reiterates ". . . proliferation may enable rogue challengers to deter US force projection options that have, in the past, been taken for granted. And that effectively countering a rogue's threat of WMD escalation, 'deterring their deterrent,' may on occasion constitute a much more stressful mission than we confronted during the Cold War. "[127] The vulnerability of not *knowing* the new adversaries is another significant reason for a new nuclear doctrine. During the Cold War, we *knew* our opponent, thus, the reason for the success of nuclear deterrence. These factors indicate a deterrence doctrine applicable to all situations and all opponents may no longer work. Table 6 shows that shifts that have taken place from the Cold War to now support the need for a

new nuclear doctrine. The new deterrence must be applicable to multiple-threat scenarios and adversaries.

Table 6. Major Shifts in 21st Century Warfare and Deterrence: What's New?

From. . .	To. . .
A time of reasonable predictability	An era of surprise and uncertainty
Single-focused threats	Multiple, complex challenges
Nation-state threats	Decentralized networked threats from non-state enemies
Responding after a crisis (reactive)	Preventive actions so problems do not become crises (proactive)
20th century processes	21st century integrated approaches
Focusing on inputs	Tracking outputs (results)
Cold War deterrence - Relatively well-understood opponent - Single opponent (i. e. , Soviet empire) - Deterrence is the cornerstone of national strategy - Targets to hold at risk were easily identifiable - Deterrence policy relied primarily on retaliation and less so on denial - Primarily nuclear - Reliable channels of communication	21st century deterrence - Poorly understood opponents (nascent strategic relationship) - Multiple-state and nonstate opponents - Deterrence is only one component of national strategy - Targets to hold at risk are difficult to identify - Deterrence policy emphasizes denial as well as retaliation - Nuclear and nonnuclear - Uncertain channels of communication

Source: Compiled from briefing slides from Ryan Henry, "Deterrence and Dissuasion for the 21st Century," presented at the IFPA-Fletcher Conference, 14 December 2005, and Colonel Chuck L y t e s , "Tailored Deterrence: New Challenges for the Analytical Agenda," presented at the Unrestricted Warfare Symposium, 14–15 March 2006.

Tailored Deterrence

The new deterrence doctrine applicable to multiple threat scenarios and adversaries is tailored deterrence. Tailoring deterrence means "tailoring it for the cultural characteristics of each adversary."[128] It is an appropriate doctrine for today's environment (and the future environment) because it is based on *knowing the enemy*.

The first official reference to tailored deterrence occurred in the 2001 NPR. Spring and Gudgel assessed the tailored deterrence doctrine for nuclear weapons in accordance with the latest NPR.

> . . . [a prescription for] a flexible nuclear weapons policy. This is necessary in today's environment of multiple players with different strengths, which has replaced the two-player model of the Cold War. . . [N]ew military requirements should be developed to address this changed environment and to ensure a modern strategic force that is capable of dealing with different missions:
>
> - Leadership and command and control targets, which operate from heavily fortified underground locations;
> - Hostile nuclear coalitions, which may include rogue states, failed or failing states, and powerful terrorist groups based in sanctuary states;
> - New nuclear-armed allies, which may or may not have confidence in the United States' deterrent ability; and
> - Electromagnetic pulse (EMP) weapons, an effective deterrent that adversaries may not be able to wield. [129]

The use of the term *tailored deterrence* was clarified in the 2006 QDR with its description as a "shift from a 'one-size fits all' notion of deterrence toward more tailorable approaches for advanced military competitors, regional WMD states, as well as non-state terrorist networks. . . [with] tailored capability to deter both state and non-state threats-including WMD employment, terrorist attacks in the physical and information domains, and opportunistic aggression - while assuring allies and dissuading potential competitors. "[130] In essence, it can be summarized as follows: "Tailored deterrence is working smarter, not harder. It's finding what defines the rogue states and convincing them they can't prevail. It's understanding the non-state actor's motivations, who is funding them, and what their weaknesses are. It's showing terrorists that bullying doesn't work. "[131]

Several strategists and analysts posit tailored deterrence is a step in the right direction and identify certain requirements for it to be effective. Amy Woolf, specialist in National Defense in the Foreign Affairs, Defense, and Trade Division of the Congressional Research Service at the Library of Congress, asserts there is a difference between strategic deterrence and tailored deterrence in that the latter is applicable across a larger range of threats. [132] She describes tailored deterrence as requiring three capabilities: "the means to determine what assets an adversary holds dear and wants to protect; an ability to identify which military tools can be used to threaten those assets, and an effective means of communicating to adversaries that the military can target their most important assets and destroy them."[133] She summarizes these capabilities as "the United States. . . not seeking to 'tailor deterrence' but, rather, to tailor its weapons capabilities, operational plans, and targeting strategies to enhance the credibility of its deterrent posture. . . in essence, [enhancing] deterrence at the operational level rather than the strategic level. "[134] Elaine Bunn, Senior Research Fellow in the National Institute for National Strategic Studies at National Defense University, asserts three facets critical to assessing the viability of tailored deterrence "to comprehend the. . . concept fully and the challenges of implementing it effectively. . . [are]

tailoring to specific actors and specific situations [i.e. , tailored deterrence is 'context-specific and culturally sensitive']. . . tailoring capabilities [i.e. , assess need for new or modified weapons and platforms or a mix of both]. . . [and] tailoring communications [the kinds of messages the United States would send in its words or actions contribute to (or detract from) its efforts]. "[135] Finally, Chun supposes "Instead of a single deterrence policy, Washington must have several. Unlike the Cold War, the Nation has to create a series of deterrent policies crafted for specific conditions and countries. This approach to deterrence will force Washington to rely on a wider number of options. "[136]

The Role of Nuclear Weapons in Tailored Deterrence

Nuclear weapons can meet the new threats within the context of new policies and constraints of what it takes to deter. A clear role for nuclear weapons exists within the tailored deterrence doctrine. It is identified in the 2006 QDR. "The future [deterrence] force will provide a fully balanced, tailored capability to deter both state and non-state threats. . . while assuring allies and dissuading potential competitors. Consistent with the New Triad priorities developed during the 2001 Nuclear Posture Review, the force will include a wider range of nonkinetic and conventional strike capabilities, while maintaining a robust nuclear deterrent, which remains a keystone of US national power."[137] Nuclear weapons provide only one set of capabilities needed for tailored deterrence. Nuclear weapons may provide deterrence for some actors and not others. The role fits well within the paradigm of capabilities-based planning as it applies to tailored deterrence. "In the future, both strategic nuclear weapons and strategic conventional weapons can offer us a tailored deterrence mission. Strategic nuclear weapons may now fulfill a broader, or nonspecific, deterrence mission, poised not against another state but against the threat of nuclear attack upon the United States and its allies by a major nuclear power. "[138] All the roles previously discussed earlier are still relevant and applicable for nuclear weapons to meet current and future threats within the construct of tailored deterrence.

The Role of Nuclear Weapons in Prompt Global Strike

One additional role that is highlighted next because of its applicability within a new military mission set is the role of nuclear weapons in global strike and prompt global strike. USSTRATCOM's DO JOC describes global strike as "the ability to rapidly plan and deliver limited-duration and extended range attacks to achieve precision effects against highly valued adversary targets. . . These targets may include WMD production, storage, and delivery systems, adversary decision-makers' critical command/control facilities, and adversary leadership power bases. "[139] The 2001 NPR discusses the role of nuclear weapons within this mission area. "No single weapons system can provide a global strike capability. Global strike options must be

integrated with nuclear and other capabilities in military planning. "[140] Nuclear weapons definitely play a role. Specifically, according to USSTRATCOM, within the global strike mission, nuclear weapons have the following capabilities.

> . . . contribute uniquely and fundamentally to deterrence - through their ability to threaten to impose costs and deny benefits to an adversary in an exceedingly rapid and devastating manner. . . [they] provide the President with the ultimate means to terminate conflict promptly on terms favorable to the US They cast a lengthy shadow over rational adversaries' decision calculus when considering coercion, aggression, WMD employment, and escalatory courses of action. . . [and] threaten destruction of an adversary's most highly valued assets, including adversary WMD capabilities, critical industries, key resources, and means of political organization and control (including the adversary leadership itself). . . [N]uclear weapons can constrain an adversary's WMD employment through US counterforce strikes aimed at destroying adversary escalatory options. . . [and they] provide the US with proportionate and disproportionate response options that an adversary cannot encounter. They can also help deter intervention by adversary allies in an ongoing conflict. "[141]

Within the more specific mission of prompt global strike (time-sensitive targets), a subset of the US nuclear weapons force can also play a role because of the quick response time (e.g., ICBMs).

Example Application of Tailored Deterrence

George Quester, in his book *Nuclear First Strike: Consequences of a Broken Taboo*, suggested the three most likely uses of nuclear weapons "for the moment. . . [include] an escalation of warfare between Pakistan and India, a capricious action by North Korea, and a terrorist attack on the United States. "[142] In attempt to provide insight on how to react to such situations, he explored the "political, psychological, and social aftermath" of the use of nuclear weapons in different scenarios. [143] These scenarios will be presented in this paper to highlight examples of items US policy makers and decision makers would need to consider as they apply tailored deterrence to various situations and adversaries. Quester "group[ed] the many ways that nuclear weapons could be used into an array of categories that might lead to very different likely reactions. . . that might then suggest very different *appropriate* policy responses. "[144] In what follows, MLWR equals the most likely world response, and MLAR equals the most likely American response.

A. Cases of ambiguity because definitions are uncertain or doubts about the facts on whether the nuclear taboo had indeed been violated [e. g. , attempt to crash a hijacked airliner into a nuclear power plant, nuclear detonation within its possessor's own territory]. Was the nuclear taboo violated or not? MLWR: If it remains an ambiguity, shrug it off after the shock wears off. MLAR: Same.
B. Cases with minimal or no collateral damage to civilians in which weapons were used mostly or entirely against military targets: definitely violated the nuclear taboo but with low collateral damage. MLWR: It's just another weapon. . . business as usual. MLAR: Same.

C. Cases with uncertainty about the responsibility for the decision to strike, for example, simple accident, insubordination, outright madness, or nuclear terrorism. Is a state responsible and why did it happen? MLWR: Varied responses to include confusion, some eager to respond in the affirmative because the fear that failure to do so would cause more nuclear attacks, some impose retaliation, some torn and uncertain what to do. MLAR: Same.
D. Clear and highly destructive nuclear escalation with definite government responsibility and the world being inclined to retreat thereafter. A perpetrator would be in a position of advantage. MLWR: Varied to include some governments desiring to get off the target list, pacifism, retreat, preemptive surrender, or patience. MLAR: Shock, retreat/defeat posture to protect American cities, and emphasis on unilateralism.
E. Clear and highly destructive nuclear escalation with definite government responsibility and launched by a rogue state, but with a braver outside world response. Perpetrator must be punished. MLWR: Assertiveness and retaliation. MLAR: Same.
F. Clear and highly destructive nuclear escalation, but in an ongoing contest where two opposing sides are hitting each other with nuclear weapons. Will the risk of escalation be greater (leading to extreme destruction) or reduced (by the logic of mutual deterrence)? MLWR: Pray for war termination or exhaustion/destruction of one of the players. MLAR: Look away or intervene based on victim and conflict initiator.
G. Clear and highly destructive nuclear escalation, but where the perpetrator retains a residual nuclear force, with the aftermath perhaps having to take the form of 'limited strategic nuclear war. ' Perpetrator can inflict more damage. MLWR: Punish the perpetrator, but steer their incentives to avoid a subsequent round of attack. MLAR: Same but emphasis on war termination. [145]

These scenarios force thought on what to do with cases of ambiguity and lead to examination of attitudes on intervention, arms control, and constraints on civil liberties. According to Quester, it behooves America to think about these issues because "The risk of America being the target of the first new use of nuclear weapons, or in the *next* use after that, are increased because of its visibility and preeminence, because what would drive the targeting of nuclear escalation is likely to be not the world's interest, but the deep resentments of some national or terrorist leader."[146] He further details what he deems the appropriate US policy responses to the abovementioned scenarios, respectively.

A. US needs to try to anticipate various ambiguous scenarios and have a plan for each based on if the scenario is to be treated as a case of nuclear escalation or not. Prepared strategic communications messages for explaining interpretation to the world must accompany each scenario.
B. US needs to try to anticipate' various first-use scenarios and establish categories and arguments as to what kinds of instances require an approval or punishment response.
C. Enhanced national command authority of nuclear weapon states (confidence-building arrangements, including timely warning notifications, more secure second-strike delivery systems, enhanced command and control systems, etc.) done diplomatically (with low visibility so as to not to appear to reward

proliferators), and enhanced abilities to identify source of nuclear weapons detonations after attack ("nuclear fingerprinting").

D. Address how to bolster and engage in any activities that can bolster American resolve.
E. Policies differ depending on if victim is an ally, who the perpetrator was (friend or foe), and if there is risk for repetition of the attack. Restrain excessive retaliation by the victim, unconditional surrender and disarmament for the perpetrator, tailored and measured punishments, and maintenance/restoration of alliances.
F. Potentially employ conventional and/or nuclear weapons to intervene so that the nuclear exchange is terminated.
G. Potentially employ conventional and/or nuclear weapons to intervene so that the nuclear exchange is terminated (but more tailored to control escalation and still maintain reserve capability; may require acquisition of new weapons to provide tailored retaliation at any level). May require enlisting other partners possessing nuclear weapons (e.g., cooperative efforts). [147]

New Nuclear Declaratory Policy

Changes to the nuclear doctrine drive examination of its accompanying declaratory policy. According to Randy Krauss, USSTRATCOM/J5 analyst, the traditional impact of ambiguity depends on a specific adversary and whether or not that adversary is risk-averse or risk-acceptant. [148] The risk-averse adversary will tend to see the ambiguity as a risk because it makes calculation of potential consequences more difficult and may increase the expectation of severe responses. In contrast, the risk-acceptant adversary will tend to see the ambiguity as a sign of weakness and as an opportunity for exploit. [149] Krauss concludes, "Ambiguity in declaratory policy preserves options for US political leaders in responding to specific crises and circumstances. . . Its effect is situation dependent. "[150] In essence, it is a perfect declaratory policy to match the tailored deterrence doctrine. Additionally, in order to support the new charge to deter, dissuade, and defeat the enemy if necessary and simultaneously assure allies and friends, the appropriate new declaratory policy cannot include a no-first-use clause. Quester advocates ". . . a no-first-use pledge by the United States would be a setback for American foreign policy, since a significant part of the security reassurances the United States offers its allies will still depend on keeping open and credible the possibility that American nuclear weapons would be used before any other power had done so. "[151]

Risks for Nuclear Roles under the New Nuclear Doctrine/Policy

"By emphasizing the possible uses of nuclear weapons, the NPR weakens the taboo against using nuclear weapons. If the taboo is weakened, potential proliferators may find nuclear weapons more attractive because they can be used more easily for coercion and for deterrence of conventional attacks. By this logic, US nuclear doctrine, the nuclear taboo, and the

nonproliferation regime are all linked, and to achieve its nonproliferation goals, the United States should downplay all uses of nuclear weapons instead of highlighting new missions. "[152] The nuclear taboo is an interesting paradigm that has developed. "The nuclear taboo reflects the widespread recognition of the destructive potential of nuclear weapons, the difficulty of establishing hard lines between different types of nuclear use, and the weight of decades of non-use. . . [D]octrinal shifts are unlikely to strengthen or weaken the taboo significantly. "[153] Understanding the impact of the nuclear taboo in influencing behavior of nations is essential. "Another concern is that adopting new roles and missions for US nuclear forces might make adversaries more willing to use nuclear weapons. The basic argument is as follows: the NPR increases the probability that the United States will use nuclear weapons by promoting new roles and missions for them; if the United States uses nuclear weapons, the taboo would be shattered, and as a result other states would become more willing to use nuclear weapons, either against the United states or regional adversaries. "[154] Policy analysts Fetter and Glaser support part of this argument but not its entirety. By agreeing, the NPR increases the probability of American nuclear use, and that American nuclear use would shatter the taboo, but only agreement with other states' willingness to use nuclear weapons will result if the NPR buys into the taboo (which they feel is minimal). [155]

The same risk of deterrence failure that existed under traditional nuclear deterrence is applicable under tailored deterrence. As Payne reminds us, ". . . in the absence of 'knowing the opponent' and tailoring deterrence policies to fit the specific case, regional deterrence in the second nuclear age will be too unpredictable for us to assume its effectiveness. Even when information about the challenger is available and efforts are made to tailor deterrence to the occasion, its effectiveness will not be 'ensured' or 'conclusive'. . . [so] US leaders, in sharp contrast to past practice, will need to take seriously the potential for deterrence failure. "[156] Arbatov and Dvorkin underscore this risk as a preeminent one in the 21st century.

> As nuclear deterrence and its means becomes more multilateral. . . [it becomes] more precarious as the basis for the security and foreign policy of the great powers. As a strategy for avoiding nuclear war while possessing many nuclear arms, nuclear deterrence bears the seeds of its own eventual failure through the eruption of nuclear warfare. . . The end of the Cold War, in a sense, played a bad joke on the antinuclear aspirations of humankind. No longer terrified by the prospect of the escalation of certain conflicts to nuclear holocaust, the leading nuclear powers now emphasize actual nuclear warfare instead of deterrence. They plan for preemptive nuclear strikes and combined operations of nuclear and conventional systems in both offensive and defensive missions. In response. . . some third nuclear weapon states and threshold regimes treat nuclear weapons as the only means of deterring the great powers. [157]

Role of Nonnuclear Weapons and Conventional Deterrence

Much controversy exists regarding substitution of nonnuclear weapons for nuclear weapons due to advanced conventional weapons capabilities and technologies. This leads to a belief that conventional deterrence can take the place of nuclear deterrence or that conventional weapons can replace nuclear weapons. But, caution is advised. "Some analysts believe that conventional deterrence may allow the United States to forego nuclear deterrence, at least in some contingencies. Such beliefs are based on speculation about the likely behavior of so-called rogue states when they are confronted with overwhelming conventional power. In this type of crisis, however, a regional aggressor might decide that the best means to negate the conventional advantages. . . is to threaten the use of WMD [this lesson. . . drawn by the first Gulf War]. "[158] Additionally, the NIPP concluded "even when nuclear weapons are more effective and efficient than conventional weapons in a narrow technical sense, broader political, military, and moral considerations may well favor conventional weapon in decisions about the use of forces for air and missile strikes. Nuclear weapons are likely to be reserved for those occasions when the certain and prompt destruction of high priority targets is essential and beyond the promise of conventional weapons. "[159] This brings the argument back to the continued need for nuclear deterrence. "[T]oo great a reliance on conventional capabilities for deterrence may be imprudent in the long term. Doubts exist about the effectiveness of conventional deterrence, and the causes of its failure are well understood theoretically [e.g., Japan in World War II]. "[160]

Advanced conventional weapons need to continue to be pursued, but they cannot deter or counter nuclear and some categories of other WMD threats. Using only conventional weapons against strategic targets carries significant risk to US national security. The challenges of hard and deeply buried targets have already been discussed, and are further exaggerated with the use of nonnuclear weapons. Additionally, the risk of attacking certain types of targets without their assured destruction invites the risk of counterattack and using nonnuclear weapons in these instances may not send a strong enough message for effective deterrence. "For preemption, prevention, and counterforce missions, the United States is exploring the possibility of developing conventional precision-guided munitions, earth-penetrating munitions, and munitions designed to counter biological and chemical weapons. . . [all of which] will have to be assessed in terms of their ability to fulfill specific missions and to minimize casualties and collateral damage during strikes on various facilities and sites related to weapons of mass destruction production and storage. "[161] Because this will take time, it is useful to have nuclear options as alternatives to these options in the interim.

NUCLEAR WEAPONS FORCE STRUCTURE IN THE 21ST CENTURY

> *We can and we will change the size, the composition, and the character of our nuclear forces in a way that reflects the reality that the Cold War is over.*
>
> —President George W. Bush

Historically, nuclear weapons force structure has been and will continue to be dictated by doctrine. "In theory, of all military forces, the required level of strategic nuclear deterrent forces should be the most amenable to an orderly and rational process of: defining objectives and the threat to those objectives; formulating a strategy; and identifying the military tasks, capabilities and forces required to underwrite the strategy. In practice, however, that has, since the 1950s, been one of the most difficult and contentious tasks facing the US political leaders and defense planners. "[162]

Currently, the US nuclear weapons stockpile is based on a Cold War deterrence strategy and is, therefore, inappropriate to meet all of today's threats within the context of the new world environment. Linton Brooks, former Under Secretary of Energy and Administrator, National Nuclear Security Administration, testified before the Senate Armed Services Committee in 2006 "…today's complex is…not the right size or configuration. "[163] Today's nuclear arsenal is ill suited to meet current and future threats within the current political tolerances and limits. Pilat supports this by saying, "The US stockpile of today was largely designed during the Cold War to deter a single, large, technologically advanced enemy with a great number of readily deliverable nuclear weapons. Consequently, the current stockpile consists of weapons that were not designed for deterrence in the new, primarily regional contingencies the United States is likely to face in the future. "[164] The existing warheads in the stockpile may serve to dissuade near-peer competitors from acquiring or developing WMD, including nuclear weapons, but redesign or reconfiguration of some warheads is necessary for credible deterrence of conflict. Pilat confirmed this fact when he stated "The current stockpile consists of weapon systems critical to our continuing deterrent, but may not be optimized for emerging requirements. "[165]

The need to transform US nuclear forces for the future is at hand. Admiral Mies (retired) offered sound advice for determining transformational nuclear force structure size. ". . . [O]fficials and planners. . . must consider what kind of unique nuclear capabilities (both in warheads and delivery platforms) must be preserved or developed to credibly respond to future challenges, provide a cushion against imperfect intelligence and surprises, and enable a reconstitution capability as a hedge against unwelcome political or strategic developments. To do otherwise runs the risk of being 'self-deterred' - of sustaining capabilities irrelevant to the threat at hand or allowing our legacy capabilities to atrophy and lose credibility. "[166] Flournoy offers essential nuclear force questions for the new world environment: "How many and what type of

strategic offensive forces should the United States field in the early 21st century? In answering this question, one must recall the fundamental objective of our nuclear force posture: to minimize the risk of war, particularly nuclear war, both deliberate and inadvertent. To prevent deliberate war, we seek a posture that maximizes deterrence. To avoid inadvertent war, we seek to minimize the risk of miscommunication, miscalculation, accidents, or a breakdown in the political or physical control over nuclear weapons. "[167] Determining which nuclear weapons capabilities are to be preserved indicates the types that need to be in the stockpile. This determination is based upon the new world environment and its associated nuclear deterrence doctrine—tailored deterrence. ". . . [T]o remain consistent with stability, US strategic forces must. . . be robust against cheating, breakout, political reversals, technological breakthroughs, and the emergence of new nuclear adversaries. "[168]

21st Century Nuclear Weapon Types

Decisions regarding which nuclear weapons capabilities to preserve stem from the types of adversarial targets the US wants to hold at risk. The NPR lists three ways in which the United States might use nuclear weapons in future conflicts:

1. "To destroy underground facilities that house weapons of mass destruction, leadership, and command control assets;
2. To defeat chemical and biological agents; and
3. To attack mobile and relocatable targets."[169]

Weapons configured for special targets can meet the capabilities requirements for effective tailored deterrence. Developing a wider range of nuclear weapons capabilities for these special targets can help tailor the US nuclear deterrent to different adversaries. Essential nuclear weapons properties that must be examined for tradeoff include weapons with lower yields, higher accuracies, and enhanced earth-penetrating capabilities. The types of nuclear weapons capabilities that are included in this group are robust nuclear earth-penetrating weapons, reduced collateral damage weapons (RCD), and land-based strategic nuclear deterrent weapons capabilities.

To maintain credibility, some portion of the nuclear force must be on ready-alert status. In their discussion on the US maintenance of a ready-alert arsenal, Russian nuclear policy analysts Arbatov and Dvorkin state ". . . it is a core principle of security policy that reliable protection must be based on capacity rather than declared intent since the latter is more readily misinterpreted or at any rate more rapidly changed. "[170] Credibility is but one critical requirement for the nuclear weapons arsenal. The nuclear weapons in the stockpile must be also safe, secure, and reliable.

21st Century Nuclear Weapon Numbers

Determining the right number of nuclear weapons for the 21st century is called tailored deterrence. Tailored deterrence does not include a methodology or a formula for calculating numbers that translate into a successful deterrence. An examination of the appropriate nuclear weapons force structure numbers by Michael Bernardin, Director of Los Alamos National Laboratory, Nuclear Weapons Design Division, concludes the size must be tied to the potential future threats and the associated nuclear capabilities. Bernardin proposes using the threat categories of near-peer powers, rogue states, and nonstate/terrorists, with near-peer powers as the "principal driver for sizing the future arsenal". [171] The argument is nuclear forces may dissuade nonstate adversaries or terrorists from acquiring WMD, but their deterrent role is unclear, and "scenarios related to terrorists or non-state actors will not be a driver for determining and appropriate size of the future nuclear arsenal."[172] Additionally, Bernardin advocates a "US arsenal consisting of one hundred to a few hundred nuclear weapons should be sufficient to dissuade potential rogue adversaries from attempting to match our capabilities, to deter any of these threats that do emerge, and if necessary, to defeat these threats. Finally, dissuasion, deterrence, and possibly defeat. . . [of a competitor with capabilities such as that of China] might require a US arsenal numbering several hundred nuclear weapons. "[173] Despite the new relationship between the US and Russia, Bernardin advises the "US should maintain a robust nuclear hedge force [in the thousands, consistent with the agreed upon numbers to reduce force levels by 2012 stipulated in the US-Russian Strategic Offensive Reductions Treaty]."[174]

Numbers and types of adversary targets (targeting strategy) are a necessary consideration when determining adequate numbers. Our current stockpile numbers are in excess of what we need based on the Cold War targeting doctrine. Flournoy and Stafford argue, we need a new targeting doctrine.

> Since the 1960s, US targeting plans have focused on four basic targets categories: nuclear forces, other military forces, leadership targets, and economic/industrial targets. Underlying this approach is the premise that targeting cities is morally objectionable. Over the years, particular emphasis has been given to targeting Soviet nuclear forces, with two aims in mind: to hold at risk what the Soviets are perceived to value most (and thereby strengthen deterrence) and to limit the damage the Soviet Union could inflict on the United States in the event of war. . . [but the] US should reduce its emphasis on targets in the. . . [Soviet nuclear forces and Soviet political leadership categories]. [175]

The new targeting doctrine should be based on knowing what the enemy holds dear. It is helpful here to highlight two basic targeting strategies that are key in determining force size.

> Countervalue attacks are conducted against targets of a hostile state - for example, its major industries, population centers, and elements of the

> governmental apparatus. A countervalue strategy aims at deterring or coercing an opponent through punishment. . . [C]ounterforce attacks. . . are intended to neutralize enemy military capabilities, especially nuclear and other WMD forces. The purpose of a counterforce strategy is to deter aggression, coerce compliance, and limit the damage that enemy forces can inflict. . . A countervalue deterrent. . . might require a relatively small number of enemy cities. In general, a counterforce strategy will entail more targets, including many that are harder to find and better protected than those implied by a countervalue strategy. As a consequence, a larger number of weapons, weapons with varied characteristics, and greater accuracy will be needed for a counterforce strategy. [176]

Regarding the question of *how much is enough*, detailed analyses and assessments that go beyond the scope of this paper are necessary, but much has to be considered, including "US objectives, enemy targets, US vulnerabilities, and enemy defenses."[177]

Finally, nuclear force numbers for the sake of numbers play a deterrent role in dealing with adversaries with older technologies who think of weapons superiority in terms of numbers versus technologies. [178] C. Paul Robinson, Chairman of the Policy Subcommittee of the Strategic Advisory Group to USSTRATCOM, provided this response during an interview with the Nuclear Watch Group, New Mexico when asked about *delegitimizing* nuclear weapons and nuclear force reductions:

> The NPT Treaty, the argument surrounding the Comprehensive Test Ban Treaty, and a lot of rhetoric we heard from the Clinton White House all suggested that sooner or later, nuclear weapons are going to go away. I simply don't believe that is true. I think it's important that people. . . realize that nuclear weapons have meant a lot to our security, and we'd better make sure that our arsenal doesn't erode if our future depends on it. . . I support deep reductions, but at some points [those cuts] would call our [nuclear] umbrella into question. I worked on a report on that subject for the Commander in Chief, US Strategic Command. . . and [e]ssentially our blueprint concluded that at some point between 2,000 and 1,000 nuclear weapons, we will run into speed bumps and probably a stop sign on reductions. [179]

Shue's comments regarding nuclear weapon procurement policy and nuclear weapon employment policy were rather pragmatic. "[B]uy [nuclear weapons] like a MADman, use [nuclear weapons] like NUTs [Nuclear Utilization Target Selection]. "[180] NUTS was a Cold War strategy of superiority whereby nuclear victory required destroying the target country's nuclear arsenal in a massive first strike. [181] In other words, the US should develop/produce/maintain/sustain the highest number of weapons politically acceptable and the best technologically feasible that it can within financial constraints, and plan to use them aggressively.

Survivability

With reduced numbers of nuclear weapons, the issue of their survivability must be considered. Plans must be made to ensure both nuclear and conventional forces are not susceptible to an adversary's nuclear weapons effects (such as hardening against electromagnetic pulses and radiation). The plans must include efforts to "hedge against the possibility of a nuclear first strike against the United States. . . [and] attrition of nuclear-capable delivery vehicles in conventional operations prior to nuclear conflict. "[182]

Survivability can be enhanced by redundancy. The old nuclear triad (ICBMs, submarine-launched ballistic missiles [SLBM], and bombers) is still a force structure that needs to be maintained. "Redundancy is one way to reduce vulnerabilities. . . a lack of redundancy might emerge as an American Achilles heel in the 21st century. "[183] Put another way, the "multiplicity of platforms contributes to the overall survivability of US deterrent forces and serves as a hedge against unanticipated threat developments."[184]

Missile Defenses

Other weapon systems play an important role in enhancing the nuclear deterrent. "Active and passive defenses reduce vulnerabilities. Defenses will never be perfect. . . [but defenses]. . . can help achieve the goals of dissuasion and assurance. "[185] Within the new world and US national policy environments, defensive tools provide key capabilities. Payne underscores the importance of using missile defenses in the new deterrence doctrine by adding "Missile defenses may be key to preparation for deterrence failure and to the credibility of US threats to project force against challengers armed with WMD. "[186]

NUCLEAR WEAPONS INFRASTRUCTURE TRANSFORMATION

> The primary job of the. . . Laboratory [and other nuclear weapons complex facilities]. . . is to provide a technological foundation for a credible nuclear deterrent. . . Experience shows. . . that maintaining such a deterrent requires frequent technical revisions and adaptations of the nuclear stockpile. These changes meet shifting challenges. . . [so, the nuclear weapons complex and] the Laboratory must provide. . . nuclear competence. Competence implies a readiness to meet new challenges, a flexibility to respond in new technical directions, and a far-reaching technological vision that assures the nation won't be caught unprepared by technological surprise.
>
> —Sig Hecker, Former Director, Los Alamos National Laboratory

Nuclear weapons force structure requirements drive infrastructure support requirements. Infrastructure support requirements are defined as what is needed to maintain the nuclear weapons arsenal without resorting to nuclear weapons testing. Safe, secure, and reliable nuclear forces are required to meet the continued need for a nuclear deterrence. The importance of the nuclear deterrent's credibility has been previously discussed. Therefore, it is vital that the US nuclear weapons infrastructure be capable of maintaining a credible nuclear deterrent. To support

the doctrine of tailored deterrence, nuclear force capabilities must be flexible. Thus, the nuclear weapons infrastructure has to be responsive. The nuclear weapons complex provides the nuclear weapons infrastructure. The DOE's Nuclear Weapons Complex includes the industrial facilities and laboratories that are involved in nuclear weapons research and development, production, and maintenance. The 2001 NPR set forth goals for a responsive infrastructure provided by the nuclear weapons complex that "requires an appropriate balance between research and development and production capabilities to meet a range of plausible contingencies."[187]

The US has reached a critical decision point on an overall strategy to preserve its nuclear capabilities. Since the end of the Cold War, the US has been in the business of sustaining its nuclear warheads under the DOE Stockpile Stewardship Program, which "emphasizes development and application of improved technical capabilities to assess and maintain existing nuclear warheads without the use of nuclear testing."[188] The nuclear stockpile remains safe and reliable under this program; however, the warheads are aging beyond their original design life. The US can continue to modify the existing nuclear warhead stockpile through the life-extension program strategy. Continuing on this path will force the US to maintain tight design margins and *pre-9/11* surety controls while sustaining a large industrial complex. Alternatively, the US can replace the existing warheads with RRW that allows for less-stringent design margins, incorporate enhanced surety controls, are easier to maintain/sustain, can be certified without nuclear testing, and allow transformation of the Nuclear Weapons Complex. [189] Within the new US national security policy, changing world threat environment, and an appropriate new nuclear deterrence doctrine previously discussed, logic would lead to the RRW option. Regarding the LEP strategy, joint NNSA-DoD studies have concluded that a large Cold War nuclear weapons stockpile: 1) requires augmentation to meet the requirement to hedge against technological or geopolitical surprise (a 2001 NPR strategy under the New Triad), and 2) cannot be sustained indefinitely without significant investments above and beyond the current program of record, further reductions in the size of the stockpile to make the LEP strategy sustainable, and an increased likelihood of resuming nuclear testing to resolve a safety or performance issue. [190] The process required to produce the RRW meets the requirement to provide a responsive capability to hedge against technological or geopolitical surprise, and RRW is certifiable without resuming nuclear testing. Additionally, the RRW can be developed, maintained, and sustained at a significant cost savings.

Complex 2030

Transforming the complex is essential. The Complex 2030 initiative seeks to transform the nuclear weapons complex in order to meet the changes directed in the 2001 NPR:

1. Change the size, composition, and character of the nuclear weapons arsenal from its Cold War posture to one that reflects the reality of the new world environment;
2. Achieve a credible deterrent with the lowest possible number of nuclear weapons as necessary to meet national security needs; and,
3. Evolve into a responsive infrastructure. [191]

In order to accomplish this task, the NNSA "has developed a planning scenario. . . consist[ing] of four over-arching, long-term strategies:

1. In partnership with the Department of Defense, transform the nuclear stockpile through development of Reliable Replacement Warheads, refurbishment of limited numbers of legacy designs, and accelerated dismantlement of the Cold War stockpile;
2. Transform to a modernized, cost-effective nuclear weapons complex;
3. Create a fully integrated and interdependent nuclear weapons complex;
4. Drive the science and technology base essential for long-term national security. "[192]

The Complex 2030 is envisioned to have fewer work sites due to consolidation, incorporate modern manufacturing and production processes, reduce numbers of personnel directly supported by weapons account funding, and transform to an integrated/interdependent enterprise, ultimately resulting in a reduced footprint operating on a streamlined budget. [193] A key enabler of this vision is the transformation to RRW. RRW will provide an overall reduction in the number of warhead types that are required, thereby reducing costs to sustain the stockpile. RRW will be easier to manufacture, resulting in reduced safety risks and cost.

The 2001 NIPP executive report on the rationale and requirements for nuclear forces underscored the importance of maintaining the ability to adjust the nuclear force posture to the dynamic world environment and quoted adaptability as a key enabler. [194] "Adaptability requires the capacity to both augment and reduce US offensive and defensive forces to fit a changing strategic environment and rapid possible shifts in technical, operational, and political variables. . . . [and] a capacity to design and build new weapons. "[195] Reversibility, in terms of the capability to restart nuclear weapons production or to reconstitute retired warheads, is another enabler this report supported. [196] A Defense Science Board Task Force on nuclear capabilities also recommended reversibility. [197]

In summary, a responsive weapons infrastructure enables national defense activities, as noted by Pilat. "For both conventional and nuclear forces, a robust, modernized, flexible, and responsive infrastructure is critical to overall national security. . . [and perhaps, the] greatest contribution [of such an infrastructure] will be to deterrence and dissuasion, especially if it can be demonstrated that the infrastructure can out-produce potential adversaries. "[198]

CONCLUSIONS

> *Be careful above all things not to let go of the atomic weapon until you are sure, and more than sure, that other means of preserving the peace are in your hands.*
>
> —Winston Churchill

The US is at a major transition point in its deterrent strategies and policies because of the new world environment. "In the current climate, there are important questions about the credibility of future deterrence. . . made more acute by significant constraints on US nuclear forces and associated capabilities. "[199] The failure to articulate a compelling role and purpose for nuclear weapons has played into the hands of those who believe they should be abolished. At this transition point, it is critical that US policy and decision makers come to consensus regarding nuclear policy. Consensus on the future role and need for nuclear weapons in the 21st century will aid in determining the best nuclear policy and in ensuring nuclear policy is consistent. The summary of points for which national consensus is needed follows.

There is a continued need for nuclear weapons in the 21st century, and it is summarized in the concept of world stability.

> . . . [N]uclear abolitionists may undervalue the contribution of nuclear weapons to international peace. Put simply, the unnerving risk that nuclear weapons could be used is an uncertainty that induces cautious behavior. In a conventional world, one that lacks the possibility of swift catastrophe that the existence of nuclear weapons creates, states can resort to military force in the belief that it will help them achieve their goals and be confident that the worst case scenario is only the manageable one of defeat or a negotiated peace. With nuclear weapons in the background, the worst case scenario is quite different. This inescapable fact makes the use of force a less appealing option and encourages nuclear states to search for safer ways to realize national goals, to avoid crises, and to carefully manage those crises that prove unavoidable. [200]

The role of nuclear weapons in providing this stability still includes that of deterrence, but also includes assurance, dissuasion, and defeat. The secondary or inherent roles stemming from these primary roles span the spectrum of conflict (including pre-war and post-war activities) and include war prevention, escalation, retaliation, coercive diplomacy, and war termination. All these roles influence the behavior of adversaries or potential competitors. What it takes to influence the behavior of adversaries or potential competitors is different in today's environment, thus *a new deterrence doctrine* is appropriate. Bunn accurately concludes, ". . . a more refined understanding of *each of the actors* that the United States is trying to deter is essential to tailored deterrence, and how to gather the pertinent information (from both governmental and non-governmental sources) and make it relevant for deterrence planning will be a challenge."[201]

Despite the challenge, this is a critical task that must be done. After all, the goal of tailored deterrence is to "reduce the margin of ignorance"[202] regarding the adversary.

Deterrence of aggression remains a key US strategy to preserve the peace, but it has to be tailored in a different way for each adversary. Tailored deterrence qualifies as a new deterrence doctrine that is appropriate for today's environment. Regarding nuclear weapons, tailored deterrence suggests an appropriate force structure and corresponding infrastructure. Robinson asserts "After a decade of trying to sort out what we learned from the Cold War and how we might tailor our nuclear deterrence and deterrent message to fit the future, I now argue that we need lower-yield nuclear weapons that could hold at risk only a rogue state's leadership and tools of aggression with some level of confidence. . . We could develop these lower-yield weapons without forcing the nuclear testing issue back on the table [due to past testing data and procedures that we can use], with a richer database of past tests, and at a relatively low cost."[203] Additionally, tailored deterrence strategy will dictate when it is feasible to substitute nonnuclear weapons for nuclear weapons because doing so will not be ideal in all situations. Planners and decision makers need to preplan scenarios as much as possible.

The basic criteria for successful tailored deterrence involving nuclear weapons are the same as for successful traditional deterrence–a credible capability that the US is willing to use. A credible nuclear capability appropriate for today's environment includes a multiple range of nuclear weapons yields (mixture of existing nuclear warhead yields and RCD nuclear weapons), a variety of platforms to reduce vulnerability (i. e. , traditional triad of SLBMs, ICBMs, and bombers), and warhead designs that are easy to manufacture/modify (similar to RRW). The strategic communication regarding our intent to use nuclear weapons when appropriate needs to convey a unified, single, clear message to the public and the world.

The ideas set forth in the NPR and the New Triad make sense. The US national deterrence strategy should be flexible. Nuclear weapons are a part of this flexible deterrence strategy. Defense analyst Erwin Hackel, quotes John Foster Dulles, "the avowed herald of 'massive retaliation', who argued: we cannot…assume that the deterrent of nuclear power will resolve all our problems. One certain thing history proves is that it is impossible to forecast certainly the character of future war. We dare not put all our eggs in one basket. There must be diversity of capability and must be flexibility. "[204] An RRW-like capability is key. RRW is the path forward to both transforming the Nuclear Weapons Complex infrastructure and providing for a flexible, responsive nuclear deterrent.

In the end, it would be nice to conclude that all will be well with the world and that conflict among nations would end, power struggles would disappear, and that all nuclear weapon states

would denuclearize their weapon systems. But such is not the case. Much work is needed and international dynamics drive this work. US national consensus on issues and solutions is needed. William Fox's quote from the *Absolute Weapon* restated by Paul, Harknett, and Wirtz captures this best: "Absolute freedom from the fear of the absolute weapon may not be for our time; but let us, with intelligence, determination, persistence and good will, get on with the task of meeting this new threat. "[205]

Appendix A

Minimum and Maximum Deterrence

	Minimum Deterrence	**Maximum Deterrence**
I. Force structure		
Number of nuclear warheads	Very low levels (tens, invulnerable delivery vehicle). Max. 100, limited NMD.	High levels (depending on the number of the opponent)
Substrategic nuclear weapons	No	Yes
Strategic parity	No	Yes, if possible superiority
Triad	No	Yes
Prompt launch capability	No	Yes
Nuclear weapons based in other states	No	Yes
II. Declaratory policy		
Nuclear deterrence versus conventional, CBW, nuclear attacks	Nuclear attacks (*)	Conventional, CBW, and nuclear attacks
No first use	Yes (*)	No
Legally binding negative security guarantees for nonnuclear weapon states (NNWS); NWFZ	Yes (*)	No
Ride out policy	Yes	No
III. Operational policy		
A. Safety policy		
Alert-levels	Low (at least for warheads; not for delivery vehicles in case of very low number of delivery vehicles)	High
Permissive Action Links (PAL) and other safety devices installed	Yes	No (or very limited)
B. Targeting policy		
Predetermined target; war plan like SIOP	No	Yes
Massive attack options	No	Yes

Counterforce targets	No	Yes

(*): This applies especially to states that cannot easily be overrun by nonnuclear means (like the US or Russia for instance)

Source: Copied from Tom Sauer, *Nuclear Inertia: US Weapons Policy after the Cold War* (New York: I.B. Taurius and Company Limited, 2005), 13. Appendix B

Classical Deterrence Theory and Its Critics

Political leaders have employed deterrent strategies for many centuries but have seldom, if ever, attempted to explicate them in systematic theoretical terms. What may be called "classical deterrence theory" was developed deductively and in abstract form in the 1950s and 1960s and rested upon a set of behavioral assumptions, the most important of which was that states could be treated as unitary rational actors (e. g. , Brodie, 1959; Kahn, 1964; Schelling, 1960, 1966; Snyder, 1961). Although this abstract deterrence theory was accompanied by detailed and often sophisticated analyses of national strategy, its essence is captured by the following central propositions.

1. Wars are often caused by states that actively seek to expand their influence, either out of imperialistic motives or out of what their leaders see as legitimate dissatisfactions with the status quo (expansion).
2. These states act as a function of opportunity, that is, when the expected net benefits of mounting a challenge to the status quo exceed the expected cost of overcoming other state; defense (opportunity). Defenders of a status quo situation must therefore raise the cost of challenging it to an unacceptable level. The following three propositions indicate ways of doing this.
   - 2a. Deterrence is stronger when a state has the capability to impose great costs on a potential attacker (capability).
   - 2b. Deterrence is stronger when a state is committed to respond to an attack by imposing such costs (commitment).
   - 2c. Deterrence is more effective when a state's commitments are clearly communicated (communication).
3. Potential attackers are reasonable adept at assessing the defender's capabilities, understanding its commitments, and correctly interpreting its communicated intentions (perceptiveness). [206]

Appendix C

Law of Armed Conflict and International Law and Nuclear Weapons Use
Two Normative Standards

A decision to use military force is perhaps the most important decision that a government may take. Therefore, it is important to reflect on the norms that ought to guide political decision makers.

International law is a result of a harmonizing process leading to formal consensus between states. The result is an explicit agreement (international convention). However, international law is also reflected in the longstanding practice of states, so-called

customary international law. Contemporary international law is a detailed and comprehensive system of rules regulating states behavior. Norms regarding the use of military force are only one part of this complex system.

Now a few words on the just war tradition. The origin of this tradition is generally traced back to St. Augustine (354–430 AD) in the early Middle Ages. The question of whether it is morally right to go to war has been a perennial concern for thinkers in theology, philosophy, history, law, and political science. The result of the centuries-long reflection is not a single, elaborated theory, but a collection of different normative theories regarding the use of military force.

The just war tradition consist of two pillars: *ius ad bellum and ius in bello*.

- *Ius ad bellum* are principles for the decision to go to war; that is, circumstances that legitimize resort to military force.
- *Ius in bello* are principles for just warfare, a moral evaluation of the means employed in fighting a war.

Both pillars are reflected in contemporary international law: the *ius ad bellum* is the chief concern of the UN Charter, while the *ius in bello* is the main concern of the Hague and Geneva Conventions stipulating the protection of civilians, for example. [207]

International Law and the Resort to Military Force

Article 2 (4) states the charter's main rule concerning the resort to force: no member state is permitted to use or threaten to use force against other states. There are, however, two exceptions to the main rule.

- According to Article 51, all member states have the right to protect themselves individually or collectively in case of an act of aggression directed from another state.
- According to Article 42, the Security Council may undertake coercive measures when international peace and security is threatened. The procedural rules in the Security Council say that all the five permanent members, in addition to ten of the fifteen rotation members, must agree. [208]

The Just War Tradition and the Resort to Military Force

According to the just war tradition, several criteria must be fulfilled for a decision to go to war to be just.

1. **Just cause**. According to Augustine's and Aquinas' frameworks, there are three just causes for going to war: to restore order, to punish evil, and to take back something that has been illegally taken.
2. **Right intention**. A just cause is not enough. The decision makers must also have the right intention for waging war; their wish or motive must be that the war is fought for good purposes or causes. For example, a war must not be fought for revenge.

3. **Legitimate authority**. The decision maker must have competence to make the decision to go to war. Private individuals do not have the competence. One would probably regard the UN and sovereign states as legitimate authorities. As for subnational groups, the case is unclear.
4. **Proportionality**. The war's cost in terms of victims and material destruction must not exceed its benefits.
5. **Last resort**. One must have undertaken all possible means before actually carrying out acts of war. [209]

Appendix D

The Strategic Personality Types

The Strategic *Personality* methodology breaks down [into] three parts: a state's orientation to the outside world (Introverted or Extroverted); what kinds of information it pays the most attention to and invests with the most credibility (Sensing or Intuitive); and how it typically analyzes that information, defines its interests, and decides how to act (Thinking or Feeling). These three aspects combine to make up a state's Strategic *Personality*.

The Strategic *Personality* typology groups the states' unique personalities according to general, shared characteristics to facilitate analysis and comparison. Not every state of each type will display every characteristic in these descriptions of the pure types. The manifestations of Strategic *Personality* type vary from state to state.

A. Introverted States (I)

Introverted (I) states look inward to identify their national interests, see the international system as a loose conglomerate of autonomous actors, see their history as self-contained, are boundary sensitive, and seek primarily to defend their **Ultimate Concerns** against external stresses.

B. Extroverted States (E)

Extroverted (E) states look outward to identify and consolidate their national interests, see the international system as an integrated body that must cooperate and compete for the good of the whole, see their histories as correspondingly integrated, are relatively less boundary sensitive than are Introverted states, and have **Ultimate Concerns** rooted in their ability to share, export, and expand their universalist world views.

C. Sensing States (S)

Sensing (S) states pay the most attention to concrete, observable things and events, put their greatest trust in what is directly verifiable and measurable through the senses, are acutely aware of their environments, and are disinclined to engage in counter-factual speculations or to look around the next corner until they reach it. The Sensing states have historical plots driven by **concerns** with geography and material culture, and their **Ultimate Concerns** are usually tied to territorial or cultural cohesion.

D. Intuitive States (N)

Intuitive (N) states pay the most attention to the patterns that emerge as events unfold, focus on the interconnections between current events and the insights they provide into how things might develop in the future, and are constantly looking for the possibilities revealed by unfolding events. The **Ultimate Concerns** of Intuitive states are tied to the shared national vision, and implementation of that vision drives their historical plot.

E. Thinking States (T)

Thinking (T) states prefer to apply logical, scientific, or legalistic rationality to their analysis of events. Values are important to the Thinking states and can provide the basis for their rational orientation (for instance, when those laws are rooted in a strict moral code), but the hierarchy of laws and values is clearly defined, and when values conflict with logic, the Thinking states err on the side of logic. The *Ultimate Concerns* of Thinking states are usually tied to maintaining the proper order of things, either internally or externally. The Thinking states often have historical plots driven by some great challenge that could only be overcome by the imposition of strict order on the chaos of reality.

F. Feeling States (F)

Feeling (F) states arrive at conclusions by evaluating situations and alternatives according to their own unique hierarchy of values. In any particular event, only certain of their constituent values apply and one or more values may come into conflict. The specific elements of the Feeling state's value structure may change somewhat with time and circumstances. The Feeling states do not deny the utility of logical principles as a way of analyzing problems, but they are suspicious of logic as a final arbiter of conduct; thus, if the dictates of logic are in direct conflict with their value structure, the Feeling states will err on the side of values. The *Ultimate Concerns* of Feeling states are tied to defending the value system that they see as key to stability, harmony, and cohesion in their societies. Challenges that were best overcome by relying on shared, cooperative values to force a sense of common purpose for the collective among large, often diverse communities often drove the historical plots of Feeling states. [210]

Appendix E

Strategic Personality and Ultimate Concerns

The Introverted Types

Strategic Personality Type	**Nature of Ultimate Concerns**
IST: Introverted, Sensing, Thinking	• Defend territorial cohesion against external encroachment • Maintain social, political, economic order, and stability • Defend cultural identity • Enforce the system of rules or laws that undergird stability • Maintain cultural and political boundaries • Prevent external stresses from undermining internal order and stability • Prevent hostile encirclement
ISF: Introverted, Sensing, Feeling	• Maintain territorial integrity to ensure the link between the land and the culture • Defend cultural identity and uniqueness against external influences • Maintain social and political stability through consensus on values • Defend the hierarchy of values that underlies social harmony • Prevent external stresses and influences from undermining social and political stability
INT: Introverted, Intuitive, Thinking	• Implement and defend the national vision • Uphold and defend the system of law and principle that undergirds the national vision • Prevent external stresses from undermining the internal authority of the national vision • Do not compromise underlying principles in the face of external pressures • Create a "zone of safety" for the national vision

INF: Introverted, Intuitive, Feeling	• Implement and defend the national vision • Promote and defend the hierarchy of values through which the vision is realized • Prevent external stresses and influences from undermining the power of the vision and values • Do not compromise values in the face of external pressures • Create a "zone of safety" for the vision

The Extroverted Types

Strategic Personality Type	Nature of Ultimate Concerns
EST: Extroverted, Sensing, Thinking	• Establish and maintain territorial security • Maintain social and political order and stability • Enforce the system of rules or laws that undergird stability and political legitimacy • Expand the scope of rules and laws to govern international interactions • Seek economic power as a source of social order and stability and external influence • Maintain international order and stability by manipulating/managing the balance-of-power
ESF: Extroverted, Sensing, Feeling	• Establish and maintain territorial security • Maintain shared values as a source of social stability and political legitimacy • Seek economic growth as a guarantor of social stability and external influence • Maintain international order through balance-of-power and agreement on shared values
ENT: Extroverted, Intuitive, Thinking	• Implement and expand the national vision • Stand as example to the world of light of reason • Execute the legal and rational "blueprint" for the nation (usually through the state) • Apply the principles underlying state "blueprint" to the international arena to impose order on chaos • Apply rational "reasons of state" as a basis for international affairs
ENF: Extroverted, Intuitive, Feeling	• Implement and expand the national vision • Stand as example to the world of righteousness • Conduct domestic and international affairs consistent with the values that underlie the national vision • Apply the values underlying national vision to the international arena to make the world a better place • Conduct international affairs in manner that promotes and spreads shared values

Source: Copied from Caroline F. Ziemke, Philippe Loustaunau, and Amy Alrich, *Strategic Personality and the Effectiveness of Nuclear Deterrence* (Alexandria, VA: Institute for Defense Analyses, November 2000), B-1 – B-2.

Appendix F

The Strategic Personality Types and Exemplar States

The Introverted Types	The Extroverted Types
IST: **Introverted, Sensing, Thinking** China Saudi Arabia	***EST:*** **Extroverted, Sensing, Thinking** Germany Sweden
ISF: **Introverted, Sensing, Feeling** Japan Egypt Spain	***ESF:*** **Extroverted, Sensing, Feeling** Great Britain/United Kingdom Italy
INT: **Introverted, Intuitive, Thinking** Israel India Pakistan	***ENT:*** **Extroverted, Intuitive, Thinking** France Turkey
INF: **Introverted, Intuitive, Feeling** Iran Russia/Soviet Union Yugoslavia/Serbia	***ENF:*** **Extroverted, Intuitive, Feeling** Portugal The Netherlands The United States

Source: Modified from Caroline F. Ziemke, Philippe Loustaunau, and Amy Alrich, *Strategic Personality and the Effectiveness of Nuclear Deterrence* (Alexandria, VA: Institute for Defense Analyses, November 2000), C-1.

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