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BEYOND STALEMATE:

DETERRENCE AND NONPROLIFERATION IN THE NEW WORLD ORDER

A RESEARCH PAPER SUBMITTED TO

DR. WILLIAM C. MARTEL

IN FULFILLMENT OF THE CURRICULM REQUIRMENT

BY

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MAXWELL AIR FORCE BASE, ALABAMA

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ABSTRACT

TITLE: Beyond Stalemate: Deterrence and Nonproliferation in the New World Order

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U.S. deterrence and nonproliferation policies need to be updated to meet the challenges of the new world order. To be effective, these new policies must be based on an understanding of potential proliferators motives for pursuing nuclear weapons, must be realistic, and must be implemented as early in the nuclear program as possible.

BIOGRAPHICAL SKETCH

Jo Vonnie D. Cole (B.S. University of Wisconsin-Stevens Point) has been interested in proliferation issues for a number of years. She is a civilian analyst with the Defense Intelligence Agency, where she has worked a number of regional issues. Ms. Cole is a graduate of the Air War College, class of 1994.

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BEYOND STALEMATE: DETERRENCE AND NONPROLIFERATION IN THE NEW WORLD ORDER

The fall of the Soviet Union and the concomitant changes in the international environment generate the need to reexamine nuclear deterrence and a plethora of new ideas on the future of nuclear deterrence and nonproliferation. New hypotheses range from declaring that nuclear deterrence is obsolete to positing that nothing has changed -- except that instead of one major opponent there are now several. The truth undoubtedly lies somewhere in the middle. Some evolution in nuclear deterrence theory was inevitable, and occurred during the Cold War. This paper does not focus on classic nuclear balance of terror. Instead, it will consider some aspects of nuclear deterrence against the newer and developing nuclear powers.

For two decades, the U.S.'s proliferation policy has been based on zero tolerance. The formal policy held that all nuclear proliferation was destabilizing, and that all nuclear use was catastrophic. Given these goals, American policy used a uniform approach to all nuclear proliferation issues; using political engagement and dialogue first, then coercion, and, finally economic sanctions, if necessary. This led to mixed results using this method during the Cold War. In the new world order, deterrence and nonproliferation goals must be updated, and the means to achieve those goals must be tailored to current geopolitical realities.

WHAT IS DETERRENCE?

In The Future of Deterrence in U.S. Strategy[1], Daniel Weiler stated "The essential objective of all deterrence strategies is that of preventing aggression by threat of punishment." As such, deterrence has political and military components. In political terms, deterrence exists when an opposing state's risk-gain calculation shows that the risks from a course of action outweigh the potential gains. Implicit in these definitions, however, is understanding what elements are being weighed and how those elements are valued. Consequently, deterrence is predicated on the capability to hold at risk something the opponent values. As long as the foe believes this risk

exceeds realistic gain, deterrence is effective and stable. Conversely, if the value of the target(s) held at risk is insufficient (or erodes) deterrence will be inadequate (or eroding) and unstable.

In military terms, deterrence means that an opponent's strategic correlation of forces calculation shifts from favorable, where success is likely, to unfavorable, or where military success is questionable or unlikely. While precise formulations vary, most strategic correlations of forces include a combination of hard (manpower, equipment, munitions, etc.) and soft (will to fight, doctrine, training, morale, etc.) factors. Militarily, deterrence is effective when the opponent believes that the risks of failure (or the costs of success) exceed acceptable levels. As noted above, political and military deterrence are neither synonymous nor mutually exclusive. Although stable deterrence can result from either, deterrence will be more stable in a political and military deterrence form..

If deterrence is predicated on the capability to hold at risk something the opponent values, the underpinning of deterrence is the credibility of that threat. If the opponent does not believe that the threat is real, or begins to question the will to carry out the threat, then regardless of one's capability to inflict damage, deterrence will fail.

Finally, for effective deterrence to occur, capability and credibility must be communicated clearly. Communications failures far outnumber any other cause of deterrence failures[2]. While communicating that a specific action will result in a specified reaction may not be necessary, a general classification of responses must be communicated and understood by both parties. Nuclear deterrence includes deterring the use of nuclear weapons current nuclear states, and deterring weapons development or acquisition by non-weapon states.

NUCLEAR PROLIFERATION

While the nuclear arms race began in World War II (WWII), with the initiation of programs by the U.S., Soviet Union, Germany, and Japan, the rate of nuclear proliferation has been surprisingly slow.[3] There are a number of reasons for this. First, nuclear weapons programs

are astronomically expensive. For example, our Manhattan Project consumed about 10% of the electric power generated in the entire country in 1944[4]. The Hanford Reactor alone cost about $347 million dollars in 1943.[5] These costs represent a primitive program, with rudimentary technology, but generally reflects the expense of nuclear weapons development.

Despite the huge costs of nuclear weapons programs, the political ramifications dwarf the economic costs for most states. The early nuclear states were world powers, and as a consequece, the two terms became synonymous during the height of the Cold War. As proliferation continued, this perception persisted. Nuclear states treat others differently and are themselves treated differently than other states, irrespective of their relative conventional military or regional power. This "nuclear club" is exclusive; its members do not welcome new members with open arms. They use a variety of political, economic, and military hurdles to discourage potential proliferators. When these efforts fail, they finally accept proliferation only when presented with a *fait accompli*.

Proliferation has internal political effects on the gaining state. Resource allocation, economic and political sanctions, and the decision itself to proliferate can affect profoundly a state's internal cohesion. These effects are relative to the openness and affluence of the state, and are most powerful in Western-style democracies.

Forty years after the detonations at Hiroshima and Nagasaki, nuclear weapons are still enigmatic. The popular Western interpretation holds that those two detonations ended WWII by forcing Japan's surrender, and, by inference, the use of nuclear weapons could end any war. The facts, however, suggest a different outcome. Japan's resource lifelines were severed; she had been virtually strangled by the naval blockade. Additionally, the Soviet Union was preparing to enter the war in Asia.[6] Her surrender was a matter of time, with or without nuclear detonations or amphibious invasion.[7] Although fear of additional nuclear attacks may have accelerated the process, it did not, in and of itself, force the surrender.

The weapons effects also belie popular perceptions. The 13-kiloton bomb dropped on Hiroshima created a radius of total destruction of 2300 meters, of which roughly 1000 meters primarily was due to fire. Most of this area was habitable within 75 days, albeit with some risk from radiation[8].

Further, the legacy of the Cold War clouded current perceptions of nuclear weapons effects. The Cold War amalgamated two factors, the myth that nuclear weapons forced the Japanese surrender and the geometric increases in the size and numbers of weapons, and transformed nuclear warfare into global Armageddon. During the Cold War, the dogma was that nuclear warfare was not survivable -- and nuclear warfare between the U.S. and Soviet Union probably was not. This became the American paradigm for nuclear warfare, regardless of the size of the exchange. Unfortunately, this was an emotional, not factual, construct.

Over the past two decades, these two tenets of nuclear warfare have influenced other states. The conviction that nuclear weapons would win a war made nuclear weapons more appealing to a number of states. States facing, or believing they faced, a nuclear-capable opponent felt they needed a viable deterrent, with either their own nuclear weapons or a "nuclear umbrella" from one of the major powers. The belief in exaggerated weapons effects gave nuclear weapons a reverential aura. The expectation was not that a 10-kiloton nuclear weapon would destroy about a square mile, but that it would destroy an entire city, and with it the will to resist. While these two judgments had some positive results, such as increasing political restraint in some cases, they generated hopelessness in others.[9]

DEVELOPMENT RATIONALES

Nuclear weapons programs require a massive investment of national treasure, that no state takes lightly. The number of states willing to make this commitment has increased dramatically over the past decade. The perceptions nuclear weapons are the *sine qua non* of modern warfare, and that nuclear arsenals are the distinguishing feature of great powers, have made nuclear

weapons more appealing to many states. Given the costs of nuclear weapons development, however, this attraction alone is insufficient. States need another impetus to embark on nuclear weapons programs.

One of the major differences between states is the motivation for nuclear weapons acquisition. Generally, such rationales can be described in three conceptual frameworks:

1) states acquire nuclear weapons to substantiate or balance international and regional power;

2) states procure nuclear weapons in response to specific security considerations; or

3) nuclear weapons are secured as the ultimate guarantor of national, or regime, survival.

These three reasons are not mutually exclusive for, in fact, the last two form a continuum, and the variances in weightings of these motivations, however, have major implications for deterrent policy. While relating motivations to policy can become problematic, unless the relative weights of a state's incentives for nuclear weapons development are understood, deterrent programs may be ineffective because they lack focus and perspective.

If the primary impetus for a state pursuing nuclear weapons is legitimation of its regional or international power, and security or survival considerations are a secondary cause, then the efficacy of deterrent programs will hinge on whether a state is an aspiring power or a *status quo* state.[10] In these terms, most states that develop nuclear weapons primarily to legitimate their power are likely to be aspiring powers. As such, any attempts to deter nuclear weapons development directly conflict with their national interests. The success of nonproliferation programs against these states may rest on whether the expansionist aspirations are a core value of the society, or whether they are an elite value. For example, more than a hundred years ago it was unlikely that the U.S., as a nation, could have been disabused of its "manifest destiny[11]." If the genesis of nuclear weapons development is a consequence of a core value drive for regional hegemony, it is unlikely that international pressure can force an cancellation of nuclear aspirations. In this case, even if the government would prefer to compromise with regard to the nuclear program, it may not be a viable, or survivable, option. Should a state in these circumstances be

forced to compromise its nuclear programs, it may regard the compromise as a temporary setback, develop deep-rooted enmity and distrust for the major power(s) it holds responsible, and may attempt to continue at least the research effort, if not major aspects of the program. Conversely, if the state's aspirations result from the power elite's perception, it may be possible to coerce the cessation of the program with economic "carrots and sticks". For this to successfully negate a nuclear program, both the program and the carrots and sticks have to be debated within the domestic political forum. This debate, however, risks solidifying the society behind the program, or bringing down the existing government.

The second major rationale for nuclear weapons procurement is to respond directly to a specific security situation. While in some cases, this results from the presence of an overwhelming conventional threat, in most cases, it results from the development of nuclear weapons by a state perceived as hostile, or by the presence of a third party "nuclear umbrella" over a neighboring state. These states, whether aspiring powers or status-quo states, will be attracted to nuclear weapons by the fiscal, social, or economic advantages over conventional forces. In short, they perceive that their security concerns can be most effectively addressed with nuclear weapons, although such weapons are not the only viable means available. Consequently, if this represents the primary motivation for a state to acquire a nuclear capability, and then if the underlying security concerns can be adequately addressed, the state unilaterally may halt its weapons program. If the crucial security concern, however, is not, or cannot be, addressed adequately, these states will maintain their nuclear programs until the costs far outweigh the perceived advantages. States that fall into this category, and face increasing international pressure to cancel their weapons programs, may believe that their national survival relies on their possession of nuclear weapons, which is the third category of motivation.

States with the third motivation for nuclear proliferation are probably the most difficult to dissuade. These states generally are isolated internationally, and may function with a fortress state mentality. They perceive any attempt to dissuade them from nuclear proliferation as a direct threat to their national security, regardless of whether the dissuasion is a carrot or a stick. These

states will usually be omnibalancing, meaning that they will attempt to achieve stability by balancing internal and external forces and interests. Like Iran and North Korea, these states are totalitarian, and tend to be xenophobic. Consequently, the potential for public debate on policies is low, and the public perception that external parties are operating with hostile intentions is high. As such, external pressure tends to coalesce, rather than fracture, the population, by providing a common enemy. As a result, states operating in this framework are extremely difficult to influence in the short term.

PROLIFERATION TIERS

Considering the development of nuclear weapons in time sequence[12], or tiers, clarifies this analytic construct. The first tier consists of states that developed or deployed nuclear weapons between 1945 and 1965,[13] states that developed or deployed nuclear weapons between 1965 and 1985 as second tier, states that are currently developing nuclear weapons (1985 through 2005) as third tier, and states that have the potential, but have not yet resolved to develop nuclear weapons as fourth tier.[14]

Table 1. Proliferation Tiers

First Tier	Second Tier	Third Tier	Fourth Tier
United States	Israel	Pakistan	South Korea
Soviet Union	India	North Korea	Japan
United Kingdom	South Africa[15]	Iraq	Taiwan
France		Iran	Brazil
China		Libya	Argentina
		Algeria	

First Tier Proliferators

The nuclear arms race had its genesis in the drive for more effective weapons in WWII. Most of the first tier of proliferators were the victors. In the political aftermath of WWII, Europe essentially became bipolar -- an infrequent, and generally unstable, condition in European history. The U.S. and Soviet Union were based on two political ideologies, democracy and communism, which competed for the hearts and minds of liberated Europe. The urgency of the Soviet drive in the mid-to-late 1940's for nuclear weapons was a reactive development to the U.S. possession (and use) of nuclear weapons. Viewing the world as a bipolar arena, and their rightful place in it as one of the two major powers, the Soviet Union chose between developing and deploying nuclear weapons, or ceding their role as a major power.

Although the same factors undoubtedly influenced Great Britain and France, another element that influenced their pursuit of nuclear weapons was their perception of America's reliability as an ally[16]. Although more a factor for France than for Britain from a historical perspective, their concern was warranted. The U.S. had come into WWII late, after France had fallen and Britain was in desperate straits. They viewed American military policies from 1945 through the early 1960's as chaotic, and were seriously concerned about America's ability to fight and win a war.[17] Consequently, facing Soviet nuclear weapons development and deployment, and questioning American reliability, Britain and France saw the development and deployment of their own nuclear weapons as paramount to their national security and crucial to maintaining their international position. China's pursuit of nuclear weapons was based on similar motivations. Ravaged by the Japanese in WWII, drawn into a confrontation with the U.S. in Korea, and on poor terms with the Soviet Union, China saw nuclear weapons as an answer to valid security concerns and as a legitimation of regional (and global) power.

The first tier proliferators have some features in common. All see themselves as world powers, and all see the maintenance of their power as dependent, to some degree, on maintaining a nuclear capability. All have comparatively large programs, with sizable stockpiles of nuclear weapons (somewhere in the 300 to over 25,000 range.[18]) All have at least two viable delivery

means (aircraft and missiles), and most have triads (aircraft, ground-based missile systems, and submarine-based missile systems.[19]) Finally, all are operating primarily on the first motivation, that is, substantiating or balancing international or regional power, and secondarily, in response to specific security concerns.

When the primary motivation for nuclear weapons development and deployment is the balance of power, the primary function of nuclear weapons is deterrence. This does not mean that they can not nor will not be used. It does not mean that targeting theories will not be developed, debated, modified, and misconstrued. Quite the contrary, it means that there can be no doubt that nuclear weapons can be delivered and detonated with calamitous effects. Otherwise deterrence would not be credible. Nuclear weapons generate uncertainty, alter balance of power calculations and transform risk-gains analyses. If used, however, nuclear weapons will have failed in their primary function as deterrents.

Second Tier Proliferators

While deterrence with first tier proliferators essentially is a bilateral function, a direct face-off between the U.S. (and its allies) and the Soviet Union, or the Soviet Union and China, the emergence of the second tier of proliferators modified the concept. These second tier nuclear programs illustrate some of the major consistencies in the second and third tier proliferators. Both the Indian and Israeli programs are aimed at regional, not international, power balances. These programs, modest in comparison to the earlier programs, are as large as can be sustained reasonably. India, for example, has a maximum weapons production rate probably of less than ten per year, given the size of the facilities. The stockpile of either state is not likely to exceed 300 weapons,[20] although Israel probably will have the largest stockpile outside the first tier proliferators. Unlike the other second and third tier proliferators, Israel appears to have considered targeting in the early stages of its program. For most of the other proliferators, the internal nuclear debate has centered on whether to become a nuclear power or when to become a nuclear power, and on the political effects of becoming a nuclear power. Significantly, these debates have not focused on how, why, or where to use nuclear weapons, or even how many to

build. India was so focused on breaking the nuclear threshold that viable delivery systems are only now being produced, some 20 years later.[21]

While India made a major show of crossing the nuclear threshold, Israel did not. Given its international situation, Israel probably believed that the international repercussions would have been too severe to risk open testing or declaration of its nuclear capability. As long as the capability was undetected, however, it did not improve Israel's deterrence posture. Consequently, as Israel's nuclear capability became inferred through a series of leaks, it altered the balance of power in the region and improved Israel's ability to deter the Arab states. These extreme behaviors are more common among later proliferators, although few are likely to be as subtle as Israel. Generally, the later proliferators fall into two extremes. They will either, like India, test a device as soon as possible, before they have a deliverable weapon, or they will declare nuclear capability at some point in their program. This choice may relate to the underlying rationale for procuring nuclear weapons. If the predominant cause is regional power balance, and a drive for regional hegemony, then the state may test early. On the other hand, if the root rationale is survival, then the state simply may declare the capability, preferring to retain all its weapons in its battle for survival.

Israel and India initially focused on air-deliverable fission weapons, and only later began work on missile deliverable warheads.[22] These munitions were generally under 25 kilotons, with the bulk probably around 10-15 kilotons.[23] The size of the weapons and the delivery means available are both indicative of programs targeted at the regional balance of power.

These programs have had a marked effect on regional balance of power. For example, Israel, after being attacked by the Arab states four times in 25 years, has not been attacked by another state in more than 20 years.[24] Although border problems and crises still arise, India has not gone to war with China (or Pakistan) during that time frame.[25] These developments have given rise to a body of thought, generally outside the U.S., that nuclear proliferation may be a stabilizing factor in some cases. This theory holds that just as nuclear weapons made it impossible for the U.S. and the Soviet Union to go to war, even conventionally, nuclear weapons may make

regional conflicts untenable by radically altering the cost-gain analysis. India and Pakistan frequently are used as a case in point, although some analysts point to the Mid-East peace accords as a logical consequence of Israeli possession of nuclear weapons (regardless of their relative level of assembly.)

The second tier proliferators modified the U.S. deterrence paradigm. These states were not hostile toward the U.S, or lacked the ability or intent to deliver nuclear weapons to U.S. targets. In either case, direct and immediate threats were absent. With the second tier proliferators, the U.S. took active steps to improve relations and increase influence with them. These reactions to the development of nuclear weapons reinforced the precedent for treating nuclear states differently than non-nuclear powers, and may have exaggerated the influence of the second tier nuclear states within regional balance of power. Deterrence remained essentially bilateral in a regional setting, as exemplified by the case of China and the India.

Third Tier Proliferators

One of the hallmarks of the first and second tier proliferators is that they were stable states when they embarked on nuclear weapons. Although the leadership and the societies changed, the change was evolutionary not revolutionary. The third tier of proliferators, however, differs markedly in political content. Most of these states are openly hostile toward at least one of the earlier proliferators, usually the U.S. They generally are oligarchies or dictatorships. Most are omnibalancing, and serious questions exist about their long-term stability. Generally, these states will cross the nuclear threshold within the next decade. Some, like Pakistan, already have the components for nuclear weapons, while others, like Algeria, have nascent programs. Like many earlier proliferators, some point to regional enemies that either are nuclear powers or fall under an extraregional power's nuclear umbrella to legitimize their programs. These programs generally are regime driven, however, and are fostered by a combination of the first and third development rationale, regional power and survival.

Third tier nuclear programs are smaller than the earlier programs, and are unlikely to expand given the costs involved. In fact, most of these states would not be able to sustain the capital outlay for their current nuclear programs if their budgets were open to internal public debate. In almost all cases, these are long-term developmental programs, although the availability of technical expertise and proven design can reduce the time required for development.[26] The sunk costs of nuclear weapons development[27] are generally greater in the early years of a nuclear program, when facilities are being constructed and staffs are being educated, than in the later years when the prototypes are being produced. Since the bulk of the economic cost is incurred early in the program, the primary economic benefits of halting a program diminish as the program matures, and may become negligible as weapons production begins. Consequently, the ability to influence third tier programs generally decreases as the program matures.

Another commonality for most third tier proliferators is their focus on breaking the nuclear threshold, versus on acquiring the ability to destroy an enemy state. The goal is to acquire a small stockpile, or the ability to produce a small stockpile of relatively low-yield munitions. The constraint on the size of the stockpile and the sizes of the munitions is very real for most of these states. For example, although exact production varies depending on reactor design, a 70-kilowatt reactor generally produces enough plutonium for three 10-15 kiloton weapons a year, and costs over $100 million to build.[28] Consequently, the third tier proliferator's resources are stressed to cover programs large enough to produce a few weapons a year; they also lack the resources to expand the programs much beyond their current level. Most will produce less that 10 weapons per year; all will produce less than 20.[29] This will result in small stockpiles for the near term, since to build a 300 weapon stockpile will take over 15 years.

If used, these states are more likely to use nuclear weapons as terror weapons to target civilian populations rather than military or counterforce targets. This results from a number of factors including range and (in)accuracy of delivery systems, limited numbers and yields of warheads, and limitations on accurate, timely targeting information.

The primary objective of almost all the third tier proliferators is a missile deliverable warhead, in contrast to the air deliverable weapons initially sought by first and second tier proliferators. Delivery platforms survivability factored in these decisions. All of these states face a foe with at least a rudimentary air defense structure, and few have the assets to degrade that structure to the point where air delivery is viable. Since missile technology was available and a missile was more likely to reach its target, missile deliverables are the preferred option.

The missile technology available to these proliferators is rudimentary and quite restrictive, however. For the near term, most of the missile systems will be capable of only delivering a 500-1000 kilogram warhead,[30] which roughly equates to a 10-25 kiloton warhead. Further, the current missile guidance systems available to these states are inaccurate.[31] Consequently, these systems are designed be used on area targets. Many of the area targets a military presents in the course of a war -- for example second echelon troops -- are transitory, lasting from minutes to hours. To strike this kind of targets requires identification, location, decision, and engagement before the target moves. This is difficult for first tier proliferators, and given the resources available to the third tier proliferators becomes even more problematic. Furthermore, even though fixed military targets, like airfields and production facilities, abound the WWII experience comes into play: the belief that American use of nuclear weapons on Japanese cities ended the war by destroying the Japanese will to fight. Such a belief is pervasive and persuasive. This results in a Douhetian campaign to destroy the will of the foe, by the most viable method, targeting the cities.

Even with total use on civilian populations, this employment will fall far short of the devastation envisioned in the Cold War. As earlier mentioned, the 13-kiloton weapon used on Hiroshima totally destroyed an area of roughly four nautical miles square. If this model is applied directly to potential target cities, for example Seoul or Tel Aviv, to destroy those urban areas would take at least 60 or 15 weapons respectively.[32] However, Tel Aviv and Seoul are fundamentally different from Hiroshima. Hiroshima was a low, wooden city, while Tel Aviv and Seoul -- in fact most potential target cities -- are larger with buildings that are taller and

constructed of concrete and steel. Such construction is less vulnerable to fire, which accounted for almost half the destruction in Hiroshima.[33] Further, large concrete and steel buildings dampen and duct blast effects,[34] as will some terrain features. Consequently, a 10-15 kiloton weapon detonated on a modern city will have less destructive effect than the weapon used on Hiroshima. In short, it will not destroy the city, may not destroy the will to fight.

As a result, the political implications far outweigh the military significance of nuclear weapons for these states. The overall objective of these programs is to change the power calculus in the region, to alter any potential adversaries cost-risk-gain equation, and that those equations are altered short of assured destruction. This perception lends an interesting twist to the nuclear deterrence paradigm. If the objective for these states is to change the regional power calculus, not to annihilate the enemy, and international implications of nuclear weapons use, a mutually deterred status becomes a win-win situation, and the use of nuclear weapons becomes a major political failure.

Fourth Tier Proliferators

The fourth tier consists of states that have decided not to produce nuclear weapons or nuclear weapon components, or have deferred their programs in response to an amelioration of their security concerns. In short, they primarily were operating in the second rationale. That is, the underlying security concerns that were or would have caused them to develop nuclear weapons were addressed adequately, and consequently, the nuclear weapons program was suspended. This suspension of weapons development is contingent on the maintenance of the status quo. Should a major shift in the regional balance of power occur, or should the security assurances they have received become suspect, any of these countries could resume or initiate weapons programs. With the fourth tier proliferators, especially states like Japan, who have well developed nuclear power infrastructures, the overall capital investment required could be smaller, and the overall length of time required to develop nuclear weapons would be shorter. Should these states resume weapons programs, several of them could become nuclear powers within twenty-four months.

What Are American Interests?

The U.S.'s national policy on non-proliferation was articulated in the National Security Strategy of the United States[35]. This document states, in part:

> In the post-Cold War era, one of our most threatening national security challenges is the spread of weapons of mass destruction and the means to deliver them....
>
> U.S. nonproliferation policy is guided by four principles:
> -Build on existing global norms against proliferation and, where possible, strengthen and broaden them.
> -Focus special efforts on those areas where the dangers of proliferation remain acute, notably the Middle East, Southwest Asia, South Asia and the Korean peninsula.
> -Seek the broadest possible multilateral support, while reserving the capability for unilateral action.
> -Address the underlying security concerns that motivate the acquisition of weapons of mass destruction, relying on the entire range of political, diplomatic, economic, intelligence, military, security assistance, and other available tools.

Although these statements date from the Bush administration, the emphasis has been reiterated by the Clinton administration, including Secretary of Defense Perry and former Secretary Aspin.

While there is no doubt that the proliferation of weapons of mass destruction and nuclear weapons in particular is a valid and enduring security concern for the U.S., it is not a matter of national survival yet. As previously mentioned, the new nuclear states' aspirations do not rest on securing nuclear stockpiles large enough to annihilate an opponent or the U.S., and in many cases, they do not even include the ability to target the continental U.S. In those cases where targeting the U.S. is an objective, most of these states are decades away from having the ability to deliver warheads against the U.S. mainland.[36] Despite these very real limitations for most of the emerging nuclear states, however, the U.S.'s nuclear paradigm tends to be an emotional construct, leaning toward visions of holocaust, rather than Hiroshima. This is a perilous perception, and can cause extremism and disunity in nonproliferation and deterrence policy.

Consequently, the need to modify the deterrence paradigm to accommodate changing proliferation issues is critical. Several areas are pivotal in this modification. First, U.S. perceptions of the threat must become more realistic. If emerging nuclear powers do use their weapons in the near term, they will use them against neighboring countries, although some indeed may target U.S. economic interests or forward presence in those states. Many of these states so targeted are U.S. allies, and some have U.S. security assurances. While any use of nuclear weapons would be regrettable, and, given global economic linkages, targeting of the population or economic base of any country could have cascade effects in the world economy, these strikes would not threaten U.S. national survival per se. Furthermore, a nuclear strike, even against an ally, will not inevitably escalate into full scale nuclear exchanges between first tier proliferators. This is a major change from the Cold War mindset..

NONPROLIFERATION – IMPLEMENTATION

Tools that can be used to delay a nuclear program are international export controls, persuasion, incentives, and international economic sanctions. International export controls on technology -- including controls on dual use technology -- with weapons applications need to be broadened and better enforced in the international community to be effective. For some states depending on the level of access to their peaceful nuclear programs, these controls should not pose significant problems. For states with suspect programs, these controls need to be expanded. Additionally, mandatory public announcement of transfer of specific classes of equipment, regardless of destination, should be considered. Admittedly, there is legitimate cause for pessimism concerning the effects of economic sanctions as a non-proliferation tool. Nonetheless, sanctions have been effective in delaying, although not discontinuing, nuclear programs.

While broad-based economic sanctions are viable against some states, they are not effective against all states. Therefore, economic sanctions should be considered as a last resort. In strict legal intrepretations, they are an act of war, and empirically, they affect the civilian

population significantly more than they do the military or power elite. Further, many of these countries may be able to survive in the face of broad-based economic sanctions unless those sanctions deny "humanitarian" goods (food, medicine, heating fuel, etc.). Current international sanctions on humanitarian goods are untenable politically in the international and U.S. domestic environment.[37]

Some circumstances may warrant U.S. or other third party assurances to ameliorate the underlying security concerns generating the nuclear program. Since these assurances carry with them the potential to draw the U.S. into a confrontation not of its own making, as a rule security assurances should not be provided to aspiring powers. Security assurances frequently have a secondary effect. In some cases, the provision of U.S. security assurances may have a cascading effect on regional nuclear proliferation; that is, by providing security assurances to a state, the regional power balance is altered sufficiently to foster nuclear weapons development by other states in the region.

An alternative to the U.S. or third party providing a direct "nuclear umbrella," may be denial programs, including missile defenses. Missile defenses, even global missile defenses under international control, should not be regarded as a panacea. Current treaty obligations should not be the sole rationale for dismissing missile defenses, despite reservations about the impact on deterrence, particularly secure second strike capability. These issues, including the treaty, could be overcome. The more critical issue is that the static deployment and employment of missile defense systems simply would force a change in the preferred delivery systems by the hostile state. Although for the near term, crisis deployment of ballistic missile defenses probably will continue to be effective, deploying of static missile defenses will contribute to the development of delivery systems that are harder to detect and destroy.

The record clearly shows that the U.S. has used its influence effectively to secure nonproliferation agreements from its allies and friends. The combination of incentives and persuasion should continue to be effective with friendly states, provided they are operating in the second category. If they are actively pursuing regional hegemony, or their security concerns have

reached a point where they believe that without nuclear weapons they will cease to exist as a state, then restraining the program will be problematic. If they are in the third category, however, and they believe their security situation to be so precarious that their survival is in jeopardy, it is unlikely that pressure to stop the program would be successful in the near term. On the other hand, attempting to slow the program, while simultaneously beginning to address the security situation may result in success in over the long term. As the state becomes more confident of its survival, and the original rationale begins to erode, cessation of the nuclear program should become viable.

One of the critical factors that the U.S. must consider regarding the third category of proliferators is the level of uncertainty. For example, some proliferators may be willing to cancel their programs after they produce one or two (or ten) nuclear weapons, and are confident of their survival with this small stockpile. In these cases, the U.S. must decide whether it can accept this level of uncertainty and risk.

Non-proliferation must be played out in the international forum to be successful. In addition to the U.S., major regional powers will exercise pivotal influence on proliferation activities in their area. In some cases, the influence of the major regional power may outweigh U.S. influence. While the U.S. presence and interest may fluctuate, major regional powers are enduring local factors in the balance of power. Consequently, the U.S. must work cohesively and constructively with regional powers on nonproliferation issues. Although not intended as a checklist, table 2 contains a matrix of objectives, tools and risks for nonproliferation policies. The earlier in the nuclear program these actions are taken, the more effective they are likely to be. In fact, nonproliferation actions initiated before major capital investment occurs will be significantly more effective than like actions taken when weapons fabrication is imminent.

TABLE 2. NONPROLIFERATION POLICY ALTERNATIVES

Rationale	Classification	Realistic Objective	Tools	Potential Success	Risks
Legitimate Power/ Regional Hegemony	Aspiring (core value)	Delay	Economic Sanctions; Military Action	Low	Enmity; Bring down government
	Aspiring (elite value)	Stop	Economic Sanctions; Incentives	Mod	Coalesce population; Bring down Government
Security Concerns	Aspiring (hostile)	Delay	Sanctions; Incentives;	Low	Isolate; Move to third Rationale
	Aspiring (friendly)	Stop	Persuasion; Incentives; Sanctions	Mod	Alienate: Move to third rationale
	Status-quo (hostile)	Delay	Third party Security Assurances? Incentives	Mod	Move to third Rationale
	Status-quo (friendly)	Stop	Security Assurances	High	Drawn into conflict
Survival Concerns	Aspiring (hostile)	Delay	Sanctions; Incentives;	Low	Isolate; Radicalize
	Aspiring (friendly)	Delay/Stop	Persuasion; Incentives; Sanctions	Mod	Ability to influence may decline over time
	Status-quo (hostile)	Delay	Third party Security Assurances? Incentives	Mod	Isolate: Radicalize
	Status-quo (friendly)	Delay/Stop	Security assurances	High	Ability to influence may decline over time

Is the Third Tier Deterrable?

As noted earlier, deterrence is predicated on the capability to hold at risk something the foe values, thereby creating an unacceptable consequence for the opponent. By extrapolation, then, if the opponent has nothing of value, or if what he values is not at risk, deterrence cannot be effective. For Western societies and the former Soviet Union, deterrence was strongest when population and infrastructure were held at risk. For third tier proliferators, however, it is not clear that this will be the case.

With third tier proliferators, understanding each state's values and cost-gains analysis is crucial for effective deterrence. Because values vary, what deters Iran may not deter Libya or North Korea. In short, a uniform approach to deterrence, cookie-cutter style, probably will not work with the third tier proliferators because their values vary. In some cases, even when the values and factors in the cost-gains analysis can be discerned, the result may not be targetable in the classic military sense. This may be true of emotional values; for example, a state involved in a jihad, especially one that places high value on sacrifice, may not be deterrable. Finally, deterring with these states will be effective only as long as they believe that they have something valuable to lose. A state that believes it has nothing left to lose cannot be coerced.

While deterrence may erode in the future, most of these states are deterrable now. They are deterrable from using weapons, however, not from acquiring them for three reasons. First, their nuclear programs are linked too closely to their perceptions of survival to be negotiable. Second, almost all of them deem the U.S. to be one of their principal opponents, if not the principal opponent. Consequently, American actions to force cessation of these programs are counterproductive. Finally, since the bulk of the capital investments for these programs already have been made, the net economic effects realized by canceling the programs are insufficient relative to political costs.

On the positive side, the levels of these programs and their small size, translates into time to engage these states. While these states are operating on the basis of survival motivations, they are not yet hopeless. American constructive engagement, working on improving relations with

these states, over time, may minimize the threat that they pose. While dogmatic policies may make these states intractable, appeasement may make them overconfident. To be effective, American policy will have to walk a very fine line between the two.

CONCLUSION

Effective deterrence, of course, is based on the triad of capabilities, credibility, and communication. While there is no question about U.S. capability, its credibility and communications are more fragile. Accurate communications can be complex, especially with the more hostile proliferators,. Further, any perception of a lack of resolve by the U.S. will amplify security concerns of states on the margins or of states relying on U.S. security assurances, and could possibly reach a point where security assurances would not be effective.

The U.S. (and international) ability to influence third tier proliferators to halt their weapons programs have been ineffective so far. No reason exists to expect an improved ability to influence these states. This does not mean, however, that the prospect of failure negates U.S. policy. On the contrary, nonproliferation is clearly in U.S. national interests, and despite low potential for success in some cases, the U.S. must continue to try to deter both nuclear proliferation and the use of existing nuclear weapons.

Deterrence and nonproliferation policies must be tailored to individual proliferators. The policies, and policy implementation, should vary, depending on the core values of the state, and the underlying rationale for nuclear weapons development.

Notes

[1] Security Studies Project, University of California, Los Angeles, 1968, Bernard Brodie, Editor, page 91.

[2] For a detailed dicussion of deterrence failures, see Barry Wolf, *When the Weak Attack the Strong*, Rand, Santa Monica, 1991.

[3] For more information on the status of the WWII programs, see Steven J. Meyer, *The Dynamics of Nuclear Proliferation*, University of Chicago Press, Chicago, 1984, page 167.

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[5] Joseph Nathan Kane, *Famous First Facts*, H.W. Wilson Company, New York, 1981, page 47. Bernard Brodie, *The Atomic Bomb and American Security*, Yale Institute of International Studies, 1945, gives the overall costs of the nuclear weapons program at two billion dollars, but points out that the costs were higher because the program was accelerated due to wartime requirements (page 20).

[6] This point was articulated in Michael J. Lyons, *World War II: A Short History*, Prentice Hall, Englewood Cliffs, 1989 , pages 300-317.

[7] *Unites States Strategic Bombing Survey Summary Report (Pacific War)*; Washington, D.C.; 1946; page 26.

[8] These figures were extracted from Averril A. Leibow; *Encounter with Disaster: A Medical Diary of Hiroshima*, 1945; Norton; New York; 1970; page 23.

[9] For more details, see Michael Mandelbaum; The Bomb, Dread, and Eternity; *International Security*; Vol. 5, No.2 (Fall 1980); pages 3-23.

[10] As used in this paper, an aspiring power is a state that is willing to incur costs or risks for nonsecurity expansion, while status quo state refers to a state that is unwilling to run risks for nonsecurity expansion.

[11] Manifest destiny was the name given to the American belief that it was America's right to control the territory between Canada and Mexico from the Atlantic seaboard to the Pacific Ocean (and perhaps beyond.)

[12] For a more detailed discussion of the decisions and timeframes for nuclear development, see Steven M. Meyer, *The Dynamics of Nuclear Proliferation*, Steven M. Meyer, University of Chicago Press, Chicago, 1984, Appendix A, pages 167-172.

[13] Since the intent here is to show the changes in the types of states involved in nuclear proliferation, I have used the Soviet Union as a developing state. For the terms of this construct, the later increase in states, and corresponding increase in nuclear powers, caused by the dissolution of the Soviet Union was not a factor in the decision to develop and deploy nuclear weapons. The motives for these new states to or return their nuclear weapons, however, are similar to the other potential proliferators. retain

[14] The designation of these tiers of nuclear development is arbitrary. These states are roughly grouped by time of development. Some of the states listed in the second tier have completed development, but may not have assembled or deployed nuclear weapons. Several of the states listed in the fourth tier have extensive nuclear research programs ongoing. Some of these efforts may have weapons applications, but so far none of these states decided to fabricate nuclear weapons.

[15] South Africa initiated a nuclear program in the early 1970's. This program, initiated as a result of security concerns, was canceled when those concerns were negated.

[16] For more detailed discussions of the early French and British programs, see Bertrand Goldschmidt, *Atomic Rivals*, Rutgers University Press, New Brunswick, 1990, and Ronald W. Clark, *The Birth of the Bomb*, Horizon Press, New York, 1961, respectively.

[17] For a more detailed discussion of U.S. capabilities and French and British concerns see Henry Kissinger, *Nuclear Weapons and Foreign Policy*, Harper, New York, 1957.

[18] Rodman D. Griffin; Nuclear Proliferation; *The CQ Researcher*; Vol. 2; No 21 (June 5,1992); pages 483-500.

[19] For a more detailed discussion of available delivery systems and future developments see Robbin F. Laird; *The Soviet Union, The West, and the Nuclear Arms Race*; New York University Press; especially pages 85-165.

[20] Rodman D. Griffin; Nuclear Proliferation; *The CQ Researcher;* Vol. 2; No 21 (June 5, 1992); pages 483-500.

[21] Leonard S. Spector; Going Nuclear; Ballinger; Cambridge, Mass; 1987, page 99.

[22] Ibid., pages 99 and 144.

[23] In *Guide to Nuclear Weapons*; Berg, Oxford; 1988; Paul Rogers reports the Jericho II, with a warhead weight of 1000 kilograms, can deliver a 20 kiloton warhead. Additionally, Leonard Spector, in Going Nuclear (Ballinger; Cambridge, Mass; 1987) lists a variety of potential delivery systems for both countries, assuming a bomb weight of 1300 pounds (under 700 kilograms). The Agni, the Indian missile system is assessed (Jane's Strategic Weapons) to have a comparagle warhead weight. Given these constraints, potential fission bomb and warhead sizes will remain in the 10-25 kiloton range for some time.

[24] Of note, in the most recent external conflicts involving Israel, Israel has attacked (Lebanon in 1978 and 1982. For more details see The Middle East; Seventh Edition; Congressional Quarterly; 1991.

[25] Although tensions along the Indian-Pakistani border have been high for an extended period, and almost erupted into full scale war in early 1990, both sides consistently have stopped short of war. War has not broken out between the PRC and India since 1962.

[26] For a detailed discussion, see Steven M. Meyer, *The Dynamics of Nuclear Proliferation*, The University of Chicago Press, Chicago, 1984, pages 173-203.

[27] Ibid.

[28] Ibid.

[29] These figures are synthesized from multiple sources, including David Albright, A Proliferation Primer, *The Bulletin of the Atomic Scientists* (June 1993), pages 15-23; Lt Colonel Fredrrick R. Strain, *Confronting Nuclear Addiction: The Challenge of Proliferation*; HQ United States Air Force, Directorate of Plans (DCS/P&O) Number 1, 1992; as well as the previously cited Spector, Griffin, and Meyer references. The basic underlying assumptions include that the goal will be a deliverable warhead (under 25 kilotons), and that the rate of fissile material production will be the limiting factor.

[30] Details on specific missile systems can be found in *Jane's Strategic Weapons Systems, 1992*, Edited by Duncan Lennox, Jane's Information Group Limited, Surrey. Of the missile systems under development or deployed with the third tier proliferators, none have warhead weights over 1000kg, North Korea, and Iran have or are developing missiles with warhead weights of 1000kg, and the remaining missile programs are in the 500kg range. For comparison, Israel's Jericho 2 has a warhead weight of 1000kg, reportedly correlating to a 20 kiloton weapon.

[31] Ibid. The prevalent guidance system for these missiles is inertial. Unless inertial guidance is augmented by some type of terminal guidance, these missiles will remain inaccurate.

[32] John T. Marlin, Immanuel Ness, and Steven T. Colling, *Book of World City Rankings*, Free Press, New York, 1986, give the areas for Seoul and Tel Aviv as 234 square miles, and 66 square miles respectively. Although the direct template use here is Hirshima, due to the size of the detonation, it is significant to note that at Nagasaki, a more powerful detonation did less damage, due to the city's configuration (for more information on these detonations *see* the *United States Strategic Bombing* Survey Summary Report (Pacific War), No. 1, Washington D. C., 1946.) Of equal import, the same document refers to similar damage inflicted on Tokyo in single nights of firebombing.

[33] Averill A. Leibow; *Encounter with Disaster: A medical Diary of Hiroshima*, 1945; Norton; New York, 1970; page 23.

[34] Ibid.

[35] Issued by the White House, dated January 1993.

[36] I am intentionally excluding the potential for a group or state to deliver nuclear devices or weapons by unconventional means to targets in the U.S.

[37] For more details on the effects of sanctions, and the legal basis see Kimberly Ann Elliott; Sanctions: A Look at the Record; and Drew Christianson and Gerard F. Powers; Sanctions: Unintended Consequences both in The Bulletin of the *Atomic Scientists*, (November 1993)

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