Nuclear Proliferation and Deterrence: A Policy Conundrum

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"We all got together in 1925 and banned the use of poison gas. But we all kept our gas masks."

— Ronald Reagan[1]

Discussions about nuclear proliferation have tended to center on controlling the spread of weapons using measures reminiscent of our war on drugs: cutting off supplies rather than treating the root causes of addiction.[2] Like the persistent drug problem, however, the spread of nuclear weapons appears inevitable given the failure of contemporary approaches to nonproliferation. Although we in the United States would like to believe that a belligerent would never use nuclear weapons, our judgment is perhaps tainted by our experience as a superpower. Our policymakers decided that the use of nuclear weapons became unthinkable because of the ramifications of a nuclear exchange between the United States and USSR. This form of denial led to an all-or-nothing nuclear strategy that tended to subordinate thinking about the conduct of nuclear war to the less constraining challenge of fighting a conventional war.

What is missing from current discussions of military capabilities is a recognition of the increasing probability that the United States will face a nuclear-armed foe other than the members of the Commonwealth of Independent States (CIS). Moreover, the potential for a nuclear detonation in a future crisis is high. The United States faces increased risk because:

- Those nations now seeking weapons are characterized by a high degree of instability.

• We have little confidence in the ability of these states (or, indeed, non-state actors who acquire nuclear weapons) to provide adequate nuclear safeguards, including command and control.

• New or potential nuclear-capable entities have different beliefs about the military utility of nuclear weapons, as evidenced in some cases by their lack of restraint with chemical weapons.

• There are few remaining superpower constraints on aggressive regional players.

• The use of nuclear weapons could become an attractive option to any nongovernmental organization which concludes that our apparent inability to solve many terrorist bombings would allow them to escape retribution.

• Serious asymmetries develop when one side has a well-developed nuclear capability and the associated political savvy, and the other is an inexperienced player with its first weapon.[3]

Our failure to think about and plan for such eventualities will leave us with shortfalls in important military capabilities. One can argue that it was our ability to think creatively about future defense issues vis-à-vis the Soviet Union which led to the development and deployment of today's successful military technologies. We do ourselves a great disservice by not forcing policymakers to prepare for a world in which the use of nuclear weapons is, unfortunately, "thinkable." Not only does the probable use of nuclear weapons by an antagonist affect our willingness to intervene in a crisis, but proliferation poses a direct threat to deployed forces, US-based forces, airfields, naval installations, civilian populations, the environment, and our allies. The United States must develop specific capabilities to operate in a New World Order that includes the proliferation of nuclear weapons.

The policy community uses the term "proliferation" to define a wide array of activities regarding the spread of weapon technologies. Key to the definition is the notion that proliferation destabilizes the balance of power within a region. A clear distinction is emerging between the terms "non-proliferation" and "counter-proliferation" as strategies to address the potential imbalance. According to the Arms Control and International Negotiation

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Division at Headquarters, US Air Force, nonproliferation is a term preferably associated with efforts designed to maintain a state of being where destabilizing technologies do not currently exist. Counter-proliferation strategies are characterized by a higher degree of activism against a state (or non-state actor) that possesses said technologies. For warfighters, counter-proliferation efforts have definite defense planning consequences.

It is the consequences of failed policy efforts that we must now address. Five key areas demand closer scrutiny and portend the need for new systems and strategies: deterrence, intelligence, rapid preemption, defense, and survivability. In this article, each will be discussed as it relates to the spread of nuclear weapons; the discussion proposes potential military contributions to counter-proliferation strategies as a way of stimulating internal debate. The emerging threat to US national interests and deployed forces demands no less.

Deterrence

The maintenance of a deterrent capability must remain the cornerstone of our nuclear counterforce capabilities. Three issues dominate the deterrence problem: deterring attacks against the United States, deterring nuclear attack against forward deployed (or deploying) forces, and deterring major conventional aggression that might escalate into a nuclear confrontation.

US strategic nuclear forces retain the job of deterring attacks against the United States. In the near term, the central focus of US strategic forces will remain on the weapons of the CIS and China, the only two entities currently posing an intercontinental nuclear threat to the United States. But even in the absence of any threat from those sources, the notion of US nuclear disarmament would be a mistake of historic proportions because of the danger of future proliferation. For at least the mid-term, then, US policy envisions some form of nuclear capability as part of our nuclear deterrent. The important question one must ask is whether our deterrent, designed to restrain another superpower, will work in a world of new nuclear-weapon owners and very different threats.

Deterring nuclear attack against forward-deployed forces is a case that requires a different approach from that used to deter traditional threats to the United States. Dennis Drew, in *Nuclear Winter and National Security: Implications for Future Policy,* suggests it is difficult to imagine any scenario in which a new possessor would use more than one to five large nuclear weapons.[4] Given the time and expense required to develop nuclear weapons, such a small number of weapons likely would be adequate for the purpose. This being the case, Drew wonders whether the current US MIRVed systems would be too large to use in response. He raises a basic issue that must be addressed. Would a regional antagonist believe we would use our deterrent if the environmental consequences to neighboring nations would be excessive?[5]

In other words, would the United States deter itself from using nuclear weapons because of the prospect of collateral damage to the region?[6]

If an opponent believes the United States would practice nuclear self-restraint rather than cause possible damage (primarily environmental) to allies in the region, then we no longer have an effective nuclear deterrent. If the latter condition is true, what we must now develop is a visible nuclear deterrent that is perceived by any potential nuclear-armed opponents as usable. Thomas Dowler and Joseph Howard, in the Fall 1991 issue of *Strategic Review*, proposed a system relying on what they termed "tinynukes."[7] They argue for some middle ground between our 2000-pound conventional bomb and the ten-kiloton warhead of Hiroshima. The authors envision tinynukes as approximately one-kiloton weapons—a size small enough to limit the radius of damage, yet still effective against a nuclear-armed foe's military.[8] Dowler and Howard suggest these smaller weapons might also "dissuade the despot from continuing his aggression in cases where the conventional capabilities of the newly arrived US forces might not."[9] The advantage they see in the tinynuke concept is that small-yield weapons are not "weapons of indiscriminate mass destruction," but rather a credible military capability that could serve to deter nuclear attacks against deployed forces and possibly provide the ability to immediately halt major conventional aggression when there is insufficient time to deploy US forces.

Additionally, if the establishment of a credible deterrent is based on the concept of damage limitation, then the United States should reopen its investigation into the use of the so-called "neutron bomb." Proposed and ultimately rejected during the Carter Administration, this weapon and its underlying concept were largely discredited by what we now know to have been a Soviet disinformation campaign, coupled with a public distaste for any nuclear weapon that might be viewed as usable.[10] Since the weapon would have produced little physical damage to terrain, yet was extremely lethal, many believed there would be few restraints on using neutron bombs on German territory. Yet these characteristics (absent the connection to Germany, of course!) are exactly what we seek for a credible deterrent in future nuclear scenarios—opponents must believe the United States will be willing to use the deterrent weapons if necessary.

Intelligence

Three areas of intelligence directly relate to the prevention, control, and elimination of nuclear proliferation. First are the macro intelligence issues associated with developing an awareness of the general extent of nuclear proliferation. Assessing the general environment involves the exploitation of communications intelligence, signals intelligence, especially as it relates to the encryption of tests, and imagery. These technologies can

"Small-yield 'tinynukes' might provide a credible capability to deter nuclear attacks on deployed forces or to halt major conventional aggression."

provide to US policymakers an early warning of developing adverse trends. The second concept useful in the war on proliferation addresses the micro issues—efforts to monitor and collect data against particular proliferators dealing with specific attempts to circumvent the control regime. This tool relies heavily on human intelligence (informers, industrial spies) to identify clear violations of international agreements. Finally, we have intelligence used to support the identification of hostile weapons and the targeting of US systems against those threats in times of crisis.

One of the shortcomings of the current nuclear nonproliferation regime is the reliance on intelligence, particularly micro intelligence, from its members before proceeding with investigations of violations. Until the Gulf War, the International Atomic Energy Agency (IAEA) received almost no intelligence data, especially surveillance photos, from the major players in spite of the fact that the United States (and presumably others) had ample evidence of proliferation initiatives. It would behoove the international community, and specifically those nations with advanced collection systems, to begin a new era of cooperation on the proliferation problem. The use of military assets in particular can play an important role in maintaining adequate surveillance of regions, states, and specific types of activity.

Historically the United States has refused to release imagery for fear of revealing national collection capabilities. But with the advent of commercial photo satellites and the mountains of information in the public domain about modern capabilities, one must ask what purpose is served by continuing to restrict imagery of such importance to the international community. The United States released the appropriate imagery when it was deemed in our national interest during the Cuban missile crisis; halting proliferation is no less important to our interests today. If protection of sources is a prime concern, than some form of an international proliferation clearinghouse should be established—a nuclear Interpol if you will.

But the key problem goes beyond just shared intelligence information. It is apparent from the recent Iraqi case that we have a long way to go before we possess the type of capabilities required to confront and counter proliferators. The West should establish the capability to monitor more closely so-called dual-use technologies. Human intelligence assets should be nurtured

and exploited to build credible cases against companies and governments willing to circumvent controls for the sake of profit.

Finally, an overt ballistic missile attack against the United States would provide a rather unambiguous identification of launch origin. In this regard, current systems designed to detect and identify hostile attacks during the Cold War remain adequate. But Western ability to find and identify deployed nuclear weapons, especially when mounted on mobile ballistic missiles, must be substantially improved. The tremendous number of resources expended in the ad-hoc attempt to find Iraq's mobile SCUDs is indicative of the challenge posed by hostile governments and non-governmental organizations. Had Iraq armed its missiles with nuclear warheads, the consequences of our shortfall could have been cataclysmic.

Future surveillance systems, both space and airborne, must have the capability for semi-autonomous search and identification of missiles (fixed and mobile) as well as the capability to detect sources of radiation. Such systems will likely require the development and exploitation of artificial intelligence programs. Current systems are too slow and place deployed forces at too great a risk. The first key to preventing a nuclear explosion will always be to monitor the technological progress of the nation in question. When this fails, we need the ability to find and rapidly target the threat before it can be used. Improved sensor and surveillance systems are of primary importance in this regard.

Rapid Preemption

Closely associated with the ability to identify hostile nuclear threats is the requirement to destroy the threat once targeted. Nuclear-armed foes may not hesitate to use a nuclear weapon in any number of scenarios one can envision. There will undoubtedly be circumstances where a possessor attempts nuclear blackmail or makes an effort to threaten the lives of US civilians or forces. Challenging the only remaining superpower may provide such an antagonist with a disproportionate amount of political prestige, even though we might view such an act as foolhardy. Under these circumstances, and especially where the lives of deployed forces remain at risk, time is of the utmost importance. America should develop the capability to rapidly target and destroy the offending systems when necessary or be prepared to suffer the consequences of one or two detonations. Destruction of an opponent's small nuclear arsenal does not require the use of our own nuclear assets. The Gulf War demonstrated the capability of conventional weaponry to destroy all but the most hardened targets. Since the key factor is time, two approaches currently discussed in open literature might fulfill the requirement: magnetic rail guns[11] and hypersonic glide vehicles.[12] Both concepts rely on non-explosive kinetic-energy projectiles.

The Army is already investigating the use of vehicle-mounted magnetic rail guns as the next generation antitank weapon.[13] In this concept, a small

projectile (perhaps a small steel dart) is accelerated along a rail using electromagnetism. An incredible velocity is achieved almost instantaneously, causing a devastating effect upon impact. It is not unreasonable to anticipate a larger system that could be installed on an airborne platform. When used in conjunction with a surveillance platform like JSTARS, such a system might provide a line-of-sight kill capability with a range in excess of 100 nautical miles. Once JSTARS passed the target coordinates to the rail-gun aircraft, it might take less than two minutes for target acquisition and impact of the kinetic projectiles. The effectiveness of a rail gun system in attacking mobile launchers may be dependent on the size of the projectiles, which would suffice for soft targets but which may not have sufficient energy to destroy harder targets.

A complementary approach with greater flexibility and increased range involves exploitation of a system commonly known as a hypersonic glide vehicle, referred to in the press as a "bullet plane," even though it is unmanned and does not resemble a plane.[14] These vehicles could reportedly be launched from existing ground, air, and sea platforms on the backs of existing missile bodies. After leaving the atmosphere, they achieve tremendous speeds falling back to earth, just as the space shuttle does. The vehicle can then glide, like the shuttle, at several times the speed of sound until it is over its target and can release a number of steel rods. Simple physics tells us that the heavier the rod and the faster the speed, the greater the kinetic energy (thus lethality) at impact. Traveling at several times the speed of sound, hypersonic glide vehicles should be able to travel more than 1000 nautical miles in less than 15 minutes, making them both responsive and lethal. Additionally, the stand-off range of such a weapon has the added advantage of placing no US forces at risk. The Department of Energy demonstrated three successful test flights of a similar vehicle between 1975 and 1985.[15]

Defenses

It seems incredible that the United States lacks suitable ballistic missile defenses in an area of warfare so critical to our survival. History continuously illuminates the importance of adequate defenses as the complement to the offense. Yet the United States allowed itself to abandon development of ballistic missile defenses, preferring to believe that "mutual vulnerability" would inhibit Soviet aggressiveness.[16] More recently, we have effectively terminated the Star Wars program. The lack of adequate defenses is often perceived as a sign of weakness—a characteristic to be exploited. There is no reason to believe that those who seek entry into the nuclear club by buying or building nuclear warheads view the situation any differently.

Those same aspiring nuclear powers do not necessarily share the perception that "mutually assured destruction" acts as an inhibitor to their use of nuclear weapons against the United States or its interests. It is one of the

paradoxes of life "after the Wall" that we may now have a far more compelling need for some form of ballistic missile defense than was required when we faced a visible and generally predictable adversary. It seems probable that if there were no military advantages to ballistic missiles, few nations would be willing to bear the expense of their development and procurement. Once the only effective means of delivery of a nuclear weapon—missiles and aircraft—have been removed, what is left for an aggressor—tuna boats? Interestingly enough, the "tuna boat argument" is often used by those who oppose development of ballistic missile defenses. Yet if delivering weapons by tuna boats was a usable strategy, one would expect the Soviet arsenal to have included thousands of tuna boats, just as it included thousands of aircraft and missiles.

The United States must tailor its defenses to the most likely threat. In the near term, the United States has little to fear from ballistic missile attack on its territory, since only two potential foes field the capability to reach the United States with long-range missile systems. The most serious threat is that of possible attack against fielded forces and allies. For this reason, the Global Protection Against Limited Strikes (GPALS) architecture, which emphasizes deployable assets, is the requirement of greatest need. The Gulf War demonstrated the importance of a system capable of theater protection. The Patriot system is too cumbersome in its present form to deploy in sufficient numbers quickly; doing so would require large numbers of airlift aircraft.[17] A more reasonable approach to the problem would be the basing of ground-based interceptors on a naval vessel which could be stationed off-shore in a theater. By combining this basing with a space-based component, such as the moribund (if not buried) Brilliant Pebbles concept, an adequate theater ballistic missile defense system could be in place in the time it takes to steam to the destination.

Survivability

Survivability means giving US forces the capability to continue prosecuting a conflict in the face of a nuclear challenge. A great deal of effort has been expended in thinking about operating in chemical and biological environments, yet with the exception of perhaps the now-defunct Strategic Air Command, it is unclear whether any other US force is prepared to operate in a nuclear environment. Military planners of all services should begin to consider the effect a theater nuclear explosion might have on combat operations.

Perhaps the most critical capability in any conflict is that of command and control. The United States should continue to develop procedures and design tactical communication systems with the ability to operate in a hostile nuclear environment. One can expect a tendency over the next few years for the services to ease up on requirements that sensitive electronic systems be hardened against disruption by electromagnetic pulses (EMP).[18] This requirement should continue, however, if fielded forces are to maintain

"Consider the consequences for Operation Desert Storm had a nuclear detonation occurred in or near the ports of Ad Dammam or Al Jubayl."

their effectiveness in modern faced-paced battles. Furthermore, it is imperative that we begin the development of tactical command and control systems which are unaffected by EMP. Specifically, the exploitation of fiber-optic networks whenever possible is a technically feasible solution. Even soldiers in the field could be connected by temporary fiber-optic networks by mounting a spool of fiber-optic cable on an inexpensive remotely piloted vehicle and flying the craft like a high-tech homing pigeon, allowing the spool to unwind. Because the fiber is thinner than a human hair, several miles of cable can fit on a spool not larger than an apple.

But survivability also means providing adequate safeguards for what few critical forward bases will remain. Critical facilities should be hardened against not only the effects of EMP, but against residual blast effects of small nuclear weapons (remember, current ballistic missile delivery systems are not very accurate). Furthermore, these facilities should be equipped to perform personnel and equipment decontamination and to handle large-scale medical emergencies that involve radiation effects.

The United States should also begin to think about innovative new deployment and basing strategies. With the likelihood that a foe would be able to use only a few nuclear weapons, he would choose his targets carefully. Critical combat assets must be dispersed so all of our AWACS aircraft or fast sea-lift ships, for example, are not based at the same facility. Consider the consequences for Operation Desert Storm had a nuclear detonation occurred in or near the ports of Ad Dammam or Al Jubayl. Additionally, our facilities must be protected by sophisticated deception methods. Strategies might include not only camouflage and concealment, but the incorporation of stealth technologies into building construction and the use of sophisticated electronic decoys capable of diverting weapon systems from major target areas.

The services also should make greater use of our more survivable combat assets in the future. Placing the fewest number of American combat forces in jeopardy should be our goal. This means that submarines, for example, might be better Tomahawk Land Attack Missile (TLAM) launchers than destroyers or other more-vulnerable surface ships. We should exploit the capabilities of survivable, long-range aviation using more-efficient weapons,

compared to more-vulnerable tactical aviation. Additionally, further development and employment of unmanned combat systems whenever possible will ensure our ability to minimize casualties and still provide optimum force.

Finally, we need to exploit the use of special forces in nuclear scenarios. Several nations, including the United States, maintain elite military forces designed for highly specialized missions. Good examples are the forces trained to combat terrorists or rescue hostages in unusual situations. Yet there are no publicized accounts of special forces designed to operate in unique nuclear scenarios. The services should develop a cadre of specially trained nuclear experts. These individuals should be prepared to perform a variety of missions in a future characterized by nuclear proliferation. These missions might include surveillance of nuclear facilities, bomb recognition and dearming, collection of nuclear test data, infiltration of facilities, and possibly operations against hostile suppliers. Once again, preparation may be the key to successful operations.

Conclusion

There has been a tremendous amount of discussion on whether nuclear proliferation will in fact affect the true strategic balance and international security.[19] Kenneth Waltz suggests there will be a wide gap between superpower and third world capabilities, and therefore we should minimize our concerns.[20] This article suggests the opposite view: any leverage that small nations might acquire through the possession of nuclear weapons and related delivery means poses a potential threat to US national interests.

The ironic aspect of the contemporary international situation is that just as the environment has become conducive to changes of historic proportion (vis-à-vis the former USSR), our attention must remain focused on the problems of nuclear weapons—this time in the hands of unstable emerging countries. Although the US and Soviet arsenals contributed to a certain degree of peace between the superpowers, the new challenge created by proliferation does not offer the same degree of optimism. Largely as a result of the example set by the world's first nuclear powers, small and medium-sized nations are expending large sums to emulate the "Big Five" nuclear powers. This is reflected in the continuing quest for ballistic missile delivery systems, sophisticated aircraft, and submarines—all to ensure the survivability and deliverability of their own nuclear weapons.

To date, the nuclear proliferation regime has been useful in slowing the pace of proliferation, but there is still room for dramatic improvements. Unfortunately the IAEA does not have the resources to accomplish this mission by itself. The danger all nations face from nuclear proliferation must be effectively communicated to the international community. There must be a more effective plan for sharing information, specifically intelligence in-

formation, on general trends and specific violations of the Nuclear Non-Proliferation Treaty (NPT).

Attempting to cut off nuclear supplies is only part of the equation. Our recent experiences with Iraq and North Korea make it clear that NPT safeguards are necessary but not sufficient to deter governments (or non-government entities) from acquiring a nuclear capability. Although there is a tendency emerging to paint a fairly rosy picture of the New World Order, the possibility that the United States may face nuclear blackmail or assault has never been greater. When nations are ruled by despots who have little experience in crisis resolution and have a tendency to confuse personal ambition with the national interest, the likelihood of disaster increases dramatically. For this reason, the United States must be able to discourage nuclear weapon development, deter nuclear weapon use, defend against limited nuclear attack, respond proportionally to nuclear challenges, and, when required, rapidly eliminate the threat. There may be little we can do to prevent a determined nation from obtaining nuclear weapons, but we are certainly in the position to make their use a costly proposition.

NOTES

1. Ronald Reagan, *An American Life*, p. 548, as quoted in Patrick Glynn, *Closing Pandora's Box* (New York: New Republic Books, 1992), p. 347.
2. Frederick R. Strain, *Confronting Nuclear Addiction: The Challenge of Proliferation* (Washington: Headquarters, USAF, June 1992).
3. Rodney W. Jones, *Small Nuclear Forces and U.S. Security Policy* (Toronto: Lexington Books, 1984), p. 75.
4. Dennis Drew et al., *Nuclear Winter and National Security: Implications for Future Policy* (Maxwell AFB, Ala.: Air Univ. Press, 1986), p. 42.
5. Ibid.
6. Thomas W. Dowler and Joseph S. Howard, "Countering the Threat of the Well Armed Tyrant: A Modest Proposal For Small Nuclear Weapons," *Strategic Review*, 19 (Fall 1991), 37.
7. Ibid., p. 38.
8. In a discussion with Dr. Edward Teller of the Hoover Institution in March 1993, Dr. Teller advocated the utility of nuclear weapons of even smaller yield; perhaps in the ten-ton class. Dr. Teller suggested the military utility of large-yield nuclear weapons has passed.
9. Dowler and Howard, p. 39.
10. Glynn, p. 294.
11. "U.S. Hypervelocity Weapon Tests," *International Defense Review*, 24 (January 1991), 81.
12. Peter Grier, "New Options for the Strategic Arsenal," *Air Force Magazine*, October 1990, pp. 49-50. See also *Hypersonic Weapons In The Gulf*, study by McDonnell Aircraft Company, April 1991.
13. R. M. Ogorkiewicz, "Future Tank Guns," *International Defense Review*, 24 (January 1991), 61-64.
14. "Ultra-Fast Bullet Plane Proposed By Air Force," *Atlanta Constitution*, 25 March 1992, p. 10.
15. Ibid.
16. Glynn, pp. 225-33.
17. A September 1991 discussion with Dr. Edward T. Gerry, Strategic Defense Initiative Organization systems architect, highlighted the fact that deployment of the few Patriot batteries used in the Gulf War took over 100 aircraft sorties.
18. This is especially so if the services are forced to make greater use of commercial, "off-the-shelf" components and equipment.
19. Rodney W. Jones, *Nuclear Proliferation: Islam, The Bomb, and South Asia* (Washington: CSIS, 1981), p. 54.
20. Ibid.