CHAPTER 10

Deterrence Issues in a World of Very Few Or Zero Nuclear Weapons

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After the astounding power of nuclear weapons was unveiled at Hiroshima and Nagasaki, a proposal to transfer control of atomic energy to a U.N. Atomic Energy Commission was backed by both the United States and Soviet Union in late 1945. The Truman administration then offered the Acheson-Lilienthal Plan in March 1946 that proposed all worldwide fissile material would be owned by an international agency to parcel out small amounts to states for the peaceful uses of atomic energy. This initial effort failed, and the nuclear arms race of the Cold War ensued.

However, the dangers of nuclear war kept alive the idea of putting the nuclear genie back into the bottle. In 1958 the U.N. Disarmament Committee discussed a treaty to control the nuclear arms race and move toward total elimination. By 1968 a multilateral treaty on the Non-Proliferation of Nuclear Weapons (NPT) had been negotiated and was open for signature, and the NPT came into force on March 5, 1970. Currently, 189 states are party to the treaty. Article VI of the NPT pledges all nuclear-armed state parties to pursue negotiations toward a world free of nuclear weapons.

In the 40 years since the NPT went into effect, the two nuclear superpowers have progressively reduced the size of their arsenals, thereby making some Article VI progress, but the continuing spread of nuclear technologies (witness Pakistan, India, Israel, Iran, North Korea, etc.) and repeated terrorist attacks on major world cities have led many current and former high-level national security officials to advocate a new dedication to achieving the world-wide elimination of nuclear weapons.

Such a radical departure from current policies would no doubt have profound political and military consequences and, thus, raises many questions. For example, what would be the consequences of such a development for the dynamics of deterrence and the risk of nuclear or

conventional war? Opponents of radical reductions in nuclear arsenals predict they would provide increased incentives for states to strike first in the event of crises, as well as increase the likelihood of conventional wars. Those who favor elimination predict the opposite, arguing radical reductions in nuclear arsenals would reinforce trends toward more positive political relations, and thus reduce the risk of war.

Deterrence doctrine has a strong theoretical tradition, but only limited efforts document the phenomenon empirically. As a consequence, analyses of factors influencing deterrence in a hypothetical future will be strongly colored by the individual analyst's understanding of how it operated during the Cold War and how it works in the current multi-polar international system.

It is likely agreement to reduce nuclear arsenals to very low numbers would not occur in a political vacuum, but could only result from the emergence of a consensus in a world of improving political relations among the great powers that nuclear deterrence was incapable of preventing nuclear catastrophes. Presuming such a political context, consider two scenarios, one in which no nation has more than 100 weapons, and a second scenario in which all nuclear weapons had been eliminated. Analysis of both indicates the former might pose a greater risk of strategic instability.

With small arsenals, the key deterrent factors would be the survivability of those weapons which remain and the presence or absence of effective defenses. In the scenario envisioning the total elimination of nuclear weapons, it appears that the likelihood of great power conventional wars would not increase, even if a revisionist leadership emerged in one of the great powers, so long as the other great powers responded forcefully to any early diplomatic or military forays. In a world of zero nuclear weapons, the greater risk to deterrence would stem from the potential for one nation to break-out of the treaty and reveal a clandestine cache or start to rebuild its nuclear arsenal, steps that would trigger nuclear rebuilding efforts by other great powers and the political instabilities, tensions and risk of war that would accompany a renewed arms race.

Introduction: Deterrence and the Context of Nuclear Disarmament

Humanity has lived with the possibility of millions of deaths and massive destruction resulting from nuclear war for more than 65 years. For many, this prospect is terrifying and unacceptable. They advocate the progressive reduction and eventual elimination of these weapons of mass destruction. Indeed, on Sept. 24, 2009, the leaders of the 15 members of the United Nations Security Council, including the permanent members, the first five states to possess nuclear weapons, unanimously approved a resolution committing each of their governments to "create the conditions for a world without nuclear weapons, in accordance with the goals of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), in a way that promotes international stability, and based on the principle of undiminished security for all."[1]

Many others, however, while recognizing the risks implicit in their continuing existence, believe nuclear weapons have served the world well during these 65 years and should be preserved. There have been no wars among the great powers since 1945, they point out, asserting that fear of unleashing nuclear conflict induced U.S. and Soviet leaders to behave cautiously during the crises of the Cold War, and to find ways to resolve conflicts without bloodshed. From this perspective, the maintenance of nuclear arsenals has *deterred* major wars, both nuclear and conventional. For those holding this view, the possibility of nuclear disarmament raises the concern the elimination of nuclear threats could lead to more adventurous policies by states with aggressive agendas or historical grievances, thereby renewing the risk of major world wars.[2]

Whether or not nuclear weapons kept the peace over the past 65 years may not be knowable. While it is certainly true there have not been shooting wars among the great powers (omitting brief border skirmishes between China and the U.S.S.R.), one cannot prove war would have occurred had nuclear weapons been absent. One can only say with certainty nuclear deterrence did not fail.

A war between the Soviet Union and the United States and its West European allies may have been possible after 1945 and seemed dangerously close during the 1948, 1955, and 1961 Berlin Crises and 1962 Cuban Missile Crisis. In all cases, both sides found ways to retreat from the precipice. Was this the result of their fear of escalation to nuclear war? Perhaps. However, it is not evident Soviet leaders ever had an appetite for a new war in Europe after 1945, given they had suffered enormous losses in manpower and industry during both world wars and had already achieved their long-sought security zone on the Soviet Union's western border through the occupation of Eastern Europe. In short, there might not have been a new great power conflict after 1945 whether or not nuclear weapons had ever been invented.

In addition, nuclear weapons clearly have not been able to deter all wars, even wars involving nuclear-armed states. North Korea and China fought the nuclear-armed United States in the 1950s, as did North Vietnam in the 1960/70s. Israeli nuclear weapons did not deter Egypt and Syria from attacking in 1973 nor prevent Iraq from firing missiles at Israeli cities during the 1991 Gulf War. Nor did British nuclear weapons deter Argentina from attacking the United Kingdom's Falkland Islands in 1982. Russian nuclear weapons were no help against the Mujahedin in Afghanistan in the 1980s, and China's nuclear weapons did not deter Vietnam from attacking China's ally, Cambodia, in 1979 and then tangling successfully with China's own armies.

Finally, and perhaps of greatest importance today, nuclear weapons have proven irrelevant in preventing deadly terrorist attacks against the capital cities of nuclear-armed Russia (1996 and later years), United States (2001), United Kingdom (2005), India (2008), and Pakistan (2008 and continuing).

Thus, it appears nuclear deterrence is an uncertain phenomenon, both historically and in today's world, one in which nine countries possess a total of more than 20,000 nuclear weapons.[3] The subject of this chapter must therefore be approached with humility and can only be discussed in general terms. Appropriately, the task is therefore to describe the broad factors that will influence the effectiveness of deterrence in a future world in which nuclear arsenals had been reduced to very low levels and, subsequently, eliminated. As different questions are raised in the two stages of this disarmament process, this analysis focuses on: (a) a world in

which no nation has more than 100 weapons; and (b) a world in which all nuclear weapons have been eliminated.

Before turning to these scenarios, it is important to keep in mind the political context that likely would have emerged prior to, and as a consequence of, such deep cuts in nuclear arsenals. Arms limitation agreements historically have reflected underlying political relationships, as well as judgments about the military utility of certain types or numbers of weapons.

The first U.S.-Soviet arms control agreements -- the 1972 ABM Treaty banning strategic missile defenses and the Interim Agreement on Strategic Offensive Arms Limitations -- were negotiated following the achievement of an understanding between President Richard Nixon and Soviet leader Leonid Brezhnev of the desirability of reducing tensions between the two superpowers (détente), as well as the two sides' military leaders understanding that existing missile defense technologies could be easily overcome by increases to the other side's offensive capabilities.

In such circumstances, it made sense to agree to place extremely tight mutual limits on missile defenses and also to limit offensive weapons, thereby saving both nations expenditures on weapons that would have served no purpose and reinforcing their political détente.[4]

Similarly, the 1972 multinational agreement banning biological weapons and the 1993 multinational agreement banning lethal chemical weapons were reflections of judgments that these types of weapons were ineffective militarily.[5]

The successful 2010 completion of U.S.-Russian negotiations for a follow-on strategic arms treaty (New START), allows each to have 1,550 operational strategic nuclear warheads and additional thousands of shorter range and reserve warheads.[6] France, China and the UK are estimated to have 300, 240 and 225 total warheads, respectively; no other country is believed to have more than 200 nuclear warheads.[7]

For the United States and Russia to have agreed to reduce their arsenals to the low levels assumed in this chapter, a significant improvement in relations must have occurred. Most importantly, the two great nuclear powers would have had to have reached an understanding concerning the security architecture governing Europe.

Simply put, the two nations would never agree to eliminate virtually all nuclear weapons if either Russia still feared NATO expansion

or if the United States and its allies were still concerned Russia sought to reassert influence over former Soviet Union or Warsaw Pact countries, or both. Similarly, a U.S.-Russian agreement to reduce their arsenals to levels close to those maintained by China would require a significant improvement in Sino-Russian and Sino-U.S. relations, such that residual suspicions China might harbor long-term, aggressive aims had become irrelevant. Similar observations could be made about other nuclear weapon states.

Of course, international relationships could always deteriorate following the achievement of nuclear disarmament, hence our need to examine questions of deterrence under such circumstances. But, entering the discussion, one should presume that at least for a time, the nuclear powers had been able to reach mutual accommodations and achieve a level of political comity not yet apparent on the world stage.

For the purposes of this discussion, it should also be assumed the move toward small nuclear arsenals had been accomplished in the context of the establishment of a disarmament regime which provided effective governance, verification and enforcement of the agreed-upon steps. If countries were uncertain about whether or not other signatories cheated on the disarmament treaty, it would introduce an additional set of deterrence issues arising from this uncertainty.

To simplify the discussion, it is assumed for the purposes of this analysis, the regime provides comprehensive and intrusive governance, verification and enforcement provisions, and the disarmament process had proceeded over a sufficiently long period of time (decades), that the signatories had gained confidence that each of them, and all other states, were abiding by the stated rules.[8]

Deterrence of Great Power Conflicts at Low Levels of Nuclear Weapons

The primary deterrence issue to be addressed in a scenario envisioning the deep reduction of all states' nuclear arsenals is whether the small size of a country's offensive arsenal might tempt an adversary to strike first in the event of imminent war, believing it could either completely disarm the adversary or it could destroy enough of the

adversary's offensive nuclear weapons as to minimize the damage from a retaliatory strike.

If one or more of the nuclear weapon states possessed such a disarming capability vis-à-vis a potential adversary, and if political relations deteriorated such that two or more nations slid into crisis, the deterrence of war could be weakened. A world of small nuclear arsenals, in this case, might be more dangerous than the world we live in today.

The ability of states to avoid this problem would depend on several factors including: (1) the survivability of countries' remaining offensive weapons; (2) whether defenses existed and, if so, how capable they might be; and (3) the alert status of nations' nuclear forces. Now let us examine each of these factors in turn.

Survivability: In this scenario, each nuclear weapon state could distribute its 100 nuclear weapons among launch platforms in any manner it chose. Each nation would be guided by history, technological prowess relative to potential rivals and geographical circumstances, but also would be compelled to consider the fact that more survivable forces are likely to be more costly than less survivable forces.

Take Russia, for example, which tends to favor land-based missiles over submarine-launched missiles or bomber weapons. Russia has mastered advanced missile and missile warhead technologies, has large expanses upon which to deploy mobile land-based missiles, and fears U.S. anti-submarine warfare capabilities may threaten its sea-based missiles. As a result, if only permitted 100 warheads, Russia likely would place them all on land-based, mobile missiles and would have to decide how many warheads to place on each missile.

The most survivable force would be composed of 100 missiles, each carrying one warhead. Such a force could not be attacked successfully by any other nation; no other nation would have more than 100 missiles, and no missile could be assumed to be 100 percent effective, particularly against mobile platforms.

The question then would be whether the attacking state's defenses would be capable of destroying whatever number of Russia's 100 missiles survived any preemptive attack. Given we are discussing a situation many years in the future, it is impossible to know how capable offensive missiles might be at that time when targeted against mobile land-based missiles, nor how effective missile defenses might have become.

The current Russian ICBM force tends to favor missiles with multiple warheads and Russian arms control negotiators have insisted on warhead and launcher limits in the New START Treaty that went into effect in 2011 that would favor continuing to build this type of weapon system. Russia has limited resources and wide-ranging needs for military modernization and thus favors a posture permitting it to acquire and operate fewer missiles, each of which can deliver multiple warheads. Even in a situation in which it were permitted to deploy only 100 warheads, given that such an agreement would presume a world of greatly reduced political pressures and thus the perception of a reduced possibility of a first-strike, Russia might be tempted to save money by deploying more than one warhead on fewer than 100 missiles. At an extreme, for example, Russian leaders could put 10 warheads on 10 missiles, making their force far less expensive – if more vulnerable to attack. Fifty missiles with two warheads each might be a more likely posture.

The United States, on the other hand, while retaining land-based missiles, has tended to put greater emphasis on bombers and submarine-launched missiles. This reflects the United States' geographic situation and seagoing tradition, as well as the unique advantages attributed to each leg of the so-called "triad" of land-based missiles, sea-based missiles and bombers. With only 100 weapons, you would expect the United States to probably reduce its forces to only two components, or even to only one type of basing mode.

Deploying one missile with one warhead on each of 100 submarines is highly unlikely, given the cost of submarines, but you could imagine a U.S. force of 50 silo-based (fixed) land-based missiles with one warhead each and three submarines with the remaining warheads distributed among them.

Again, given we are speculating about capabilities some decades in the future, it is impossible to know whether potential rivals would have developed potent anti-submarine capabilities, but even if there were breakthroughs in anti-submarine technologies, such a U. S. force would likely be relatively survivable, as the 50 U.S. land-based missiles would require most of an opponent's 100 weapons to be destroyed with high confidence. Again, much would depend on the capabilities of each nation's offensive and defensive capabilities.

Defenses

As should be evident from the preceding discussion, the effectiveness of deterrence in a world of very small nuclear arsenals would depend in part on each nuclear power's defensive capabilities--not only its capabilities to defend against missiles, but also anti-submarine defenses, anti-aircraft defenses, and even homeland defenses against unconventional weapon deliveries (e.g., in shipping containers) would be a factor in determining deterrent potential.

In a world of small nuclear arsenals, deterrence would be strengthened if all defenses, or even certain kinds of defenses, could be prohibited. If such prohibitions were feasible, all nuclear weapon states would have the potential to deploy their 100 warheads in a manner such that they could not all be destroyed in a first-strike and thus would retain the ability to launch a retaliatory strike and exact considerable damage. To the degree there is merit to deterrence theory, this guaranteed retaliatory capability should thus deter any foe from attacking first

The problem is systems intended to defend against military platforms armed with nuclear weapons likely could not be distinguished from systems intended to defend against tactical, conventionally-armed weapons. Thus, navies will develop and deploy anti-submarine technologies in order to defend warships from opposing submarines, as air forces will develop and deploy means of protecting tactical aircraft from surface-to-air missiles. Even tactical missile defenses – for naval forces or ground forces - increasingly will integrate with satellite-based detection and tracking systems, and thus gain the potential for defense against strategic nuclear attacks.

Indeed, looking several decades into the future, many types of defensive systems might be entirely space-based, or utilize laser technology on various platforms, that would make distinguishing between tactical and strategic defenses virtually impossible. Assuming the reduction in nuclear arsenals had not taken place in the context of a broader disarmament agreement, it is very difficult to imagine nations limiting tactical defenses and, therefore, difficult to conceive of limitations on strategic defenses as effective and verifiable.[9]

Thus, in all likelihood, in a world of small nuclear arsenals, to maintain an effective deterrent, nations would have to depend on the capability of the vast preponderance of their small force to survive a preemptive attack, thus making it more likely the survivors would penetrate the attacker's defenses. This suggests nuclear weapon states must be willing to spend more per warhead than they do currently; avoiding placing several of their small number of warheads in single targets (e.g., multiple warheads on a single missile or multiple missiles on a single submarine).

It also suggests that to strengthen deterrence, nuclear weapon states should be willing to diversify their force to two or more launch modes, thus forcing potential adversaries to develop multiple forms of defenses if they seek a first-strike capability. Finally, it suggests nuclear weapon states should invest in continuing advances in offensive weaponry, enabling them to stay ahead of developments in defenses.

While this picture of a continuing offense/defense competition suggests an unstable deterrent picture at a time of small nuclear arsenals, several ameliorating circumstances should be kept in mind. First, as has been mentioned, the agreement to move to small arsenals could only take place within a political context in which the possibility of acute crises and, therefore, first-strike temptations, would be very low; in all likelihood, these dangers would never arise. Second, given that offensive forces would be small, the cost of maintaining survivable offenses capable of penetrating an opponent's defenses would likely not be great.

Historically, it has always been easier for offenses to stay ahead of defenses. And, finally, the existence of defenses would have positive political effects, providing reassurances to citizens concerned about cheating on the agreement, or accidental launches, or irrational leaders. Indeed, the development and deployment of defenses would almost certainly be a political requirement for the United States, at least, to agree to move to very small nuclear arsenals.

Alert status: Many analysts have suggested one way to reduce the risk of nuclear war and stabilize deterrence would be to reduce the alert status of nuclear forces.[10] Currently, Russian and U.S. missiles can be launched within minutes of a command to do so; other nuclear weapon states maintain their forces in a more relaxed day-to-day posture.

Given the potential, if remote, possibility of deterrence instability when states deploy only small nuclear forces, the argument for reducing the forces' alert level becomes more compelling. Presuming measures could be devised to ensure the steps to reduce nuclear forces' alert status could not be reversed quickly and would be readily apparent to other nations' intelligence systems, such means would add time before a crisis could deteriorate into an attempted first-strike, permitting negotiations to head off the conflict. More importantly, assuming they had confidence in the alert-status verification methods put in place, it would add to the nations' confidence that their retaliatory forces were secure, thus strengthening mutual deterrence.

The downside, of course, is if a crisis occurred and a nation acted to increase its forces' alert level – perhaps to signal seriousness to the adversary or because of fear the adversary was about to do the same – a race to increase readiness could ensue, worsening the crisis and, perhaps, leading nations to conclude that war was inevitable and, therefore, they had better strike first. This type of dilemma recurs as well in the zero weapons scenario to be analyzed next. In short, measures designed to increase the stability of deterrence could have the potential, if reversed, to aggravate an already bad situation. In implementing de-alerting measures, nations would have to judge that the immediate, positive effect on deterrence would be well worth the remote risk that a decision to re-alert could worsen some future, unknown and unexpected crisis.

Deterrence of Aggressive, Smaller Nations at Low Levels of Nuclear Weapons

Rogue states with smaller nuclear arsenals should not be an issue, even if such states had acquired a very small number of nuclear weapons (e.g., 10 or so). Presumably, the nuclear disarmament regime would not prevent the great powers from maintaining very capable conventionally armed forces. If the smaller state was not nuclear armed, such conventional forces should be adequate to either deter or, if necessary, defeat the aggression, especially if several of the larger states acted in concert.

If the smaller state had acquired a very small number of nuclear weapons, the 100 weapons retained by the larger states should be sufficient to deter any aggression or, if necessary, deter nuclear attacks while conventional forces defeated the aggressor. Again, collective military action would be even more effective in meeting this threat.

If the smaller power was to continue to build its nuclear arsenal and was unwilling to join the nuclear limitation regime, then larger powers could act either singly or collectively to compel either disarmament or acceptance of the same limitations each had already accepted. In the latter case, the great powers' superior conventional forces would ensure the deterrence of aggressive actions with conventional forces, while small, but more maneuverable, nuclear forces deterred against nuclear threats, albeit with the same uncertainties concerning survivability and defenses previously described.

If it were not possible for the great powers to either prevent the smaller power from obtaining nuclear weapons militarily or to agree to adhere to the same limitation on the size of its forces as they had accepted, then they presumably would rethink their previous agreement to restrict forces and begin to build larger arsenals (see the section on "break-out" below).

Deterrence in a World of Zero Nuclear Weapons

Presuming the total disarmament treaty had effective verification provisions and the signatories had gained confidence over the decades required to implement the treaty that all nations adhered to its provisions, the major deterrent issue would be whether or not such circumstances would make conventional wars more likely. The question is not really relevant for either internal conflicts (like the ongoing struggles in Somalia), or cross-border wars involving smaller powers (such as Saddam Hussein's occupation of Kuwait in 1991).

During the 65 years of the nuclear era, there have been at least 200 such military conflicts.[11] Clearly, nuclear weapons have not deterred such wars. As such, the absence of nuclear weapons should have no effect on frequency or lethality although, some would argue, the great powers' decision to eliminate nuclear weapons would both reflect and reinforce an

era of greater international cooperation in which it might be easier for all nations to cooperate to help resolve the civil and international disputes that currently lead to such military conflicts.

The more difficult question is the effect of eliminating nuclear weapons, if any, on the deterrence of wars among the great powers. The introduction to this chapter noted that it was uncertain whether nuclear weapons had prevented great power conflicts during the Cold War. In addition, it should be assumed the great powers would not have agreed to eliminate nuclear weapons unless they had reached accommodations on central issues among themselves and had projected an era of lasting peace going forward.

Still, history is full of surprises. As former Secretary of Defense Donald Rumsfeld said, "The only surprise is that we are surprised when we are surprised."[12] Let's examine one illustrative, possible, if unlikely, scenario and how deterrence might or might not work in the absence of nuclear weapons.

The scenario envisions the emergence of a highly nationalistic regime in Beijing, determined to reassert China's hegemony in Asia and to "right" perceptions of having been mistreated during the 18th, 19th and 20th centuries by the United States and European powers. An expansionist China, seeking to gain control of resources in the region and to dominate regional political relations, could come into conflict with Russia, India and Japan. The United States also would be concerned about such developments and could have formal security commitments to any or all three of these countries. While the situation could deteriorate into a new Cold War, marked by political tensions and even military skirmishes, it need not lead to a new great power conflict, even in the absence of nuclear weapons. As China would be making claims on other states, it would be natural for them to cooperate to contain Beijing's aspirations.

Looking decades into the future, it seems likely at least Russia and India would have large and technologically advanced conventional military forces. Japan, although likely to have only small forces, would likely retain the backing of the United States. Facing such a formidable alliance, it is not clear China would pursue its aims by direct, military means, but likely would prefer instead a long-term political and economic strategy. In short, so long as China's potential enemies maintained strong, modern, conventional forces and the means of cooperating against its

common foe, it seems likely China would be deterred from military aggression.

Of course, if Chinese leaders were irrational or reckless, they might gamble on a surprise attack being successful, just as Japan did in 1941. But this could be the case even if the nations in question were armed with nuclear weapons. In such circumstances, reckless Chinese leaders might believe they could win a conventional conflict while deterring nuclear responses with their own nuclear forces.

Again, the conventional balance of power would be the key factor in the deterrence equation. Given this scenario takes place decades in the future, the United States and other advanced nations may well have developed and deployed highly accurate, prompt, non-nuclear global strike capabilities. Such weapon systems could be based at sea, on land or even in space, and pose the threat, that in the event of aggression, the transgressor's key leadership and military targets could be destroyed almost immediately in retaliation.[13]

The strength of international responses to China's initial sallies would also be a key determining factor. It should be recalled that Hitler was encouraged in his aggressions not by the absence of nuclear weapons, of which the world was ignorant in the 1930s, but by the other powers' unwillingness to respond militarily to his early grabs for the Rhineland, Czechoslovakia, etc. – and by their very weak diplomatic responses.

A more difficult situation could arise if an expansionist China sought to split its potential opposition by reaching an alliance with one of the Asian great powers prior to revealing its intentions, just as Hitler did with Stalin prior to invading Poland. China's most likely ally would be Russia, particularly if Russia had not regained its economic footing during the decades necessary to eliminate nuclear weapons. One could envision a mutually beneficial relationship in which Russia provided natural resources in exchange for Chinese technological and economic support. While Russia would seem an unlikely military partner for China, even in this circumstance, such a Sino-Russian entente would remove Russian forces from the alliance seeking to contain Chinese expansion to the south and east and greatly simplify China's strategic calculations.

In these circumstances, would war be more likely if no nation was armed with nuclear weapons? Again, the question of war and peace would seem to hinge more on the calculations and personalities of China's

leaders, on the balance of conventional military capabilities, and on the responses of the states China challenged, than on the presence or absence of nuclear forces. Quite apart from the potential damage caused by the war, conventional aggression would be at great cost to China – breaking the economic relationships and financial interdependencies which enabled it to advance so far during the past 30 years.

No sane Chinese leader would wish to jeopardize the peaceful relations which facilitated China's rapid economic development. The risk of nuclear war implied by the presence of nuclear weapons would raise the stakes even higher, but the likelihood would be, in this writer's judgment, that so long as threatened nations reacted strongly, both the potential cost of conventional war and the lingering consequences for China's economy and social well-being would be deterrence enough

Break-Out

One additional deterrence issue should be considered in a world without nuclear weapons - the risk of one nation breaking out of the disarmament regime and rebuilding its weapons arsenal. Assuming the verification regime accompanying the treaty effectively precluded rebuilding a weapons arsenal surreptitiously; one nation's decision to "break-out" would no doubt trigger similar responses by others. How quickly nations acted would depend on the strength of multinational controls in place on key civilian nuclear facilities, such as uranium enrichment facilities. Access to such facilities and the creation of weapons-grade materials are probably the most time-consuming aspects of a break-out strategy. Even without access to civilian facilities, however, it would not take very long for advanced nations to rebuild nuclear weapons. Starting with only knowledge of the basic physics, after all, the United States developed and built atomic weapons in less than four years in the Manhattan Project. Presuming the parties to the disarmament treaty would maintain a cadre of knowledgeable scientists and engineers, weapon designs, and perhaps even a stock of non-nuclear components, it should not take more than a year or two to turn out weapons at a rapid pace.[14]

Thus, if one nation decided to break-out of a disarmament regime, a race to rebuild nuclear manufacturing facilities, fissile materials, and

ultimately weapons could ensue. Given the initial break-out would likely have been triggered by some new conflict or re-emergence of an old grievance, or by a new leader with nationalistic ambitions, or by the kindling of a greater sense of insecurity in one nation or another, this new arms race would likely lead to an unstable political situation, an air of crisis in international affairs, and a heightened risk of war. Deterrence would likely be highly unstable in such a situation. The risk such a situation might develop needs to be weighed when considering policies that could lead to the elimination of nuclear weapons.

Conclusions

The controversial conclusion of this analysis is the elimination of nuclear weapons, in the context as described, would not necessarily make great power conventional conflicts more likely. This, of course, is a subjective conclusion; others may reach different judgments. No one can tell what might happen in the hypothetical worlds we discuss. The future nature of political and economic relations among nations is impossible to predict. So, too, it is impossible to predict the degree to which various nations will have invested the resources necessary to develop and deploy advanced conventional military technologies, including defensive technologies and prompt global strike systems.

Even more to the point, with or without nuclear weapons, the effectiveness of deterrence depends strikingly on individuals – on perceptions of personal and national interests, on priorities, on willingness to run risks, on knowledge of the objective military situation, on judgments about other nations' leaders and the credibility of the threats or promises they may be making. Few of these factors are knowable in advance of a specific situation and many can rarely be discerned even after a crisis has passed.

The relationship between specific types of weapons and the stability of deterrence, or of the balances of specific types of military power and the stability of deterrence, is intrinsically a matter of conjecture. During the Cold War, experts and officials wove elaborate theories of deterrence. They may have been accurate depictions of real

international relationships and decisions about war and peace, or they may not have been accurate.

In the much more complicated, multi-polar world that has emerged since 1989, uncertainties about the linkages between deterrence theory and reality have become even greater. Discussions about deterrence in future worlds in which drastic changes have been made to nations' military capabilities can only be speculative. But this uncertainty does not mean the issues raised in this chapter should not be debated and planned for in all possibility.

Notes

[1] United Nations Security Council Resolution 1887, http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N09/523/74/PDF/N0952374.pdf?OpenElement.

[2] Fred Ikle, "Nuclear Abolition, A Reverie," *The National Interest* (September/October 2009), http://www.nationalinterest.org/Article.aspx?id=22014.

[3] The vagaries of deterrence are discussed at length in an excellent book by Keith Payne, *The Great American Gamble: Deterrence Theory and Practice from the Cold War to the Twenty-first Century* (Fairfax, Va.: National Institute Press, 2008).

[4] Gerard Smith, *Disarming Diplomat: The Memoirs of Ambassador Gerard C. Smith, Arms Control Negotiator* (Lanham, Md.: Madison Books, 1996), and Henry Kissinger, *The White House Years* (New York: Little, Brown and Company, 1979).

[5] For more information on the BWC, see Marie Isabell Chevrier, "From Verification to Strengthening Compliance: Prospects and Challenges of the Biological Weapons Convention," *Politics and the Life Sciences*, 14, 2 (August 1995), 209-219. For more information on the CWC, see J.P. Perry Robinson, "Implementing the Chemical Weapons Convention," *International Affairs*, 72, 1 (January 1996), 73-89.

[6] An authoritative, if unofficial, source estimates that at the end of 2009 Russia had a total nuclear arsenal of 13,000 intact nuclear warheads and the U.S. had a total of 9,400. See Robert Norris and Hans Kristensen, "Nuclear Notebook: Worldwide Deployments of Nuclear Weapons, 2009," *Bulletin of the Atomic Scientists*, 6 (Nov/Dec 2009), 65. In May 2010, the USG announced that the United States maintained 5,113 operational and reserve nuclear warheads. The larger estimate given above includes warheads awaiting dismantlement.

[7] Ibid. The UK stockpile of 225 was announced officially by the British government in May 2010.

[8] For detailed discussions of how a disarmament regime might be governed, verified, and enforced, see: Barry M. Blechman and Alexander K. Bollfrass, editors, *Elements of a Nuclear Disarmament Treaty*, (Washington, D.C.: Stimson Center, 2010).

[9]This reasoning suggests if the U.S. is serious about moving to very low numbers of nuclear weapons, or even eliminating them all together, it should make the development of effective, comprehensive defenses a very high priority in defense planning. It also suggests at low numbers, states may be better off to target remaining offensive forces on population centers, rather than to deter an opponent by posing a threat to its offensive capabilities.

[10] For example, see Bruce G. Blair, *Global Zero Alert for Nuclear* Forces (Brookings Institution, Occasional Paper, 1995); Hans M. Kristensen, Robert S. Norris and Ivan Oelrich, *From Counterforce to Minimal Deterrence: A New Nuclear Policy on the Path Toward Eliminating Nuclear Weapons* (Federation of American Scientists and National Resources Defense Council, Occasional Paper No.7, April 2009).

[11] Based on information from the "Correlates of War" project and a database of military conflicts compiled by the University of Maryland. See: Meredith Reid Sarkes, "The Correlates of War Data on War: An Update to 1997," *Conflict Management and Peace* Science, 18/1 (2000), 123-44; Joseph Hewitt, et. al, *Peace and Conflict 2010*, Center for International Development and Conflict Management (College Park, Md.: University of Maryland, 2010), http://www.correlatesofwar.org/cow2%20data/WarData/InterState/Inter-State%20War%20Format%20%28V%203-0%29.htm.

[12] Bradley Graham, *By His Own Rules: The Ambitions, Successes, and Ultimate Failures of Donald Rumsfeld* (New York: Public Affairs, 2009).

[13] Of course, the credibility of this conventional, retaliatory threat would depend on the capabilities of defensive systems. There would also be the possibility that such advanced conventional systems might be limited in number as part of a nuclear disarmament treaty.

[14] These issues are discussed at length in the chapters by Alex Glaser and Harold Feiveson in Blechman and Bollfrass, Editors, *Elements of a Nuclear Disarmament Treaty* (Washington, D.C.: Stimson Center, 2010). The Stimson Center also has developed an on-line game in which players take the guise of rogue states and seek to break out of a disarmament treaty surreptitiously. It proves to be remarkably difficult. Go to www.cheatersrisk.com to play the game.