THE HENRY L. STIMSON CENTER

International Safeguards for Eliminating Weapons of Mass Destruction

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Pragmatic steps toward ideal objectives

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CBW	Chemical and biological weapons
CWC	Chemical Weapons Convention
IAEA	International Atomic Energy Agency
NATO	North Atlantic Treaty Organization
NPT	Nuclear Non-Proliferation Treaty

Preface

When the Stimson Center's project on "Eliminating Weapons of Mass Destruction" began in January 1994, there was little serious discussion of the elimination option. Today, in contrast, a growing number of respected institutions and knowledgeable individuals both in the United States and abroad have begun or completed projects focusing on the achievement of a nuclear-weapon-free world, including, most recently, the Canberra Commission on the Elimination of Nuclear Weapons.

Almost all of these studies point to effective safeguards and verification provisions as essential preconditions for elimination. As events in recent years have demonstrated, however, formidable political and technical obstacles must be overcome in order to craft an effective collective response to violations of an international agreement. Two notable cases of non-compliance with the Nuclear Non-Proliferation Treaty (NPT) highlight the difficulties associated with creating more effective mechanisms to ensure treaty adherence and to respond to attempts to cheat. Although a member of the NPT, Iraq launched a clandestine nuclear weapon development program that was not revealed until after the end of the Persian Gulf War in 1991. The Iraqi violations underscored the need to develop better tools for verification, and to extend the mandate of the International Atomic Energy Agency (IAEA) so as to allow it to detect undeclared nuclear facilities. North Korea—also a party to the NPT—has been suspected of producing plutonium in excess of the amount declared on its initial declaration of nuclear materials and facilities as submitted to the IAEA in May 1992, raising concerns that Pyongyang was trying to divert plutonium to a nuclear weapon program. In early 1993, North Korea failed to comply fully with its obligation under the NPT to allow the IAEA to conduct additional inspections to verify the declaration, and instead threatened to withdraw from the treaty. Pyongyang's behavior—including its prolonged delay in signing a safeguards agreement with the IAEA after joining the NPT in 1985—demonstrated the degree to which the NPT and its safeguards regime are hostage to the political will of member states to fulfil treaty requirements.

In both these cases, effective international tools for responding to violations of the treaty were lacking. The NPT does not include enforcement provisions, only mechanisms to report violations to the UN Security Council, leaving open the possibility that a violation will go unpunished. In the Iraqi case, the legal basis for highly intrusive inspections and the destruction of its nuclear weapon program was the UN cease-fire resolution, rather than the NPT. In the North Korean case, despite the global outcry at the possibility that Pyongyang would choose to break the non-proliferation norm rather than comply with the NPT, the United States was unable to rally enough international support for economic sanctions or military action. In the end, the US negotiated a bilateral settlement in which it agreed to make economic concessions in exchange for the freezing of the North Korean nuclear program and successive steps to bring Pyongyang in line with its treaty obligations. Both cases illustrate the need for more effective instruments to punish, and thus hopefully deter, cheaters.

In his study, *International Safeguards for Eliminating Weapons of Mass Destruction*, Dr. George Quester examines some of the mechanisms that might be used to respond to attempted violations of a total ban on weapons of mass destruction, or to deter potential violators from even attempting to cheat. To prevent states from cheating, Quester notes, one must address the reasons states might be tempted to acquire nuclear weapons. For states that see a nuclear program as an answer to their security concerns, alternative security arrangements, possibly in the form of collective security, could be an essential safeguard. More effective verification mechanisms could also help to stop potential cheaters, since states might be less inclined to cheat if they feared detection. The powers and resources of the IAEA would have to be increased and perhaps supplemented with additional transparency measures or "societal verification." Yet all of these measures, Quester notes, are unlikely to eliminate completely the risks of cheating.

Additional safeguards could be necessary to provide states greater insurance against these residual risks. For example, Quester argues, "it might be desirable to retain some kind of international nuclear force as a hedge against one or more nations cheating on a disarmament agreement." Initially, a small force could be seconded to UN command, and over time all national forces could be eliminated, with the international nuclear force retaining access to reserve weapons. Alternatively, "para-disarmament" by the sovereign nuclear powers could reduce the nuclear threat and provide a "more meaningful step in the transition toward total nuclear disarmament." Quester describes several possible variations for para-disarmament. Nuclear warheads could be maintained but separated from launchers. Delivery vehicles could be banned or restrictions imposed on the storage and deployment of warheads. Para-disarmament also could entail destroying the warheads but maintaining bomb production facilities to deter other states from assembling nuclear weapons. The critical question, he points out, "might be at which stage of readiness mutual deterrence would be most robust."

If the goal is the elimination of nuclear weapons, however, the key question then becomes "how might the world move from para-disarmament to a more total nuclear disarmament in which the logic of mutual deterrence would no longer hang over the world?" Quester observes that friendly relations between and among nuclear weapon states could lead to a situation in which deterrence at any level was no longer considered necessary. Changing perceptions both of the legitimacy and value of nuclear weapons also could help to move the process of disarmament forward. In the final analysis, as Quester notes, the elimination of all weapons of mass destruction may have to "be grounded in changes in the underlying feelings of peoples all around the world about what are legitimate forms of state behavior." The spread of democracy, for example, has helped change perceptions of the utility and legitimacy of military force against other democracies. And the development of a perceived "taboo" against chemical weapons could serve as a useful model for a ban on nuclear weapons.

This study was conducted under the auspices of the Henry L. Stimson Center's project on "Eliminating Weapons of Mass Destruction," which seeks to encourage a national and international debate on the long-term nuclear future. The project is based on the premise that the end of the Cold

War, the dissolution of the Soviet Union, and the grave dangers of proliferation provide both reason and opportunity to reexamine fundamental assumptions regarding the relative benefits and risks associated with weapons of mass destruction.

The study is the fourth in a series that examines key challenges for the elimination of weapons of mass destruction. Other studies in this series examine the implications of further reductions of nuclear weapons for US and Russian defense policy; the problems of verifying nuclear disarmament; the linkages among efforts to eliminate biological, chemical, and nuclear weapons; and the relationship between deeper cuts in offensive weapons and the development of defensive systems. In undertaking this analysis, these studies seek to identify the main obstacles to the progressive elimination of mass destruction weapons from all nations and to propose solutions—both intermediate measures and longer-term approaches—to overcome these obstacles.

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International Safeguards for Eliminating Weapons of Mass Destruction

The great majority of people around the world now favor the elimination of nuclear and other types of weapons of mass destruction. The end of the Cold War is seen widely as making possible the elimination of the weapons that have threatened the very survival of humanity ever since the United States and the Soviet Union accumulated their enormous arsenals of thermonuclear weapons.

Yet proposals for the total elimination of nuclear weapons often are confronted by a basic pessimism about whether such an agreement could be verified and sustained. If *any* government were to see advantages in retaining some nuclear weapons secretly, or in producing them anew after having destroyed its arsenal, would the rest of the world be able to detect and respond to such deviant behavior in a timely manner? If not, would such cheating then have dire consequences?

Not only might the states that currently possess nuclear weapons try to cheat, but also the states now suspected of wanting to acquire such weapons might build them after an elimination regime had been put into place. It would be much more difficult, of course, for a country like North Korea to amass secretly dozens of new nuclear warheads than for a country like Russia to retain them secretly, but any country with a substantial quantity of fissile material would have a latent nuclear weapon capability much greater than North Korea's.

Could total nuclear disarmament, and a total ban on weapons of mass destruction, thus be unattainable simply because of the temptations of violating such agreements, or because of fears (perhaps self-confirming)that another state might be contemplating or already violating them? What political, social, and military pre-arrangements might safeguard an elimination agreement effectively, lending confidence to all participating nations that it was not being violated?

Even if none of us take comfort from the existence of nuclear weapons, we have to consider what the world would be like if we ever came *close* to getting rid of all of them. Would this be a world where the *use* of such weapons remained as much a taboo as it has been since 1945?[1] Or would it instead be a world in which the risks of nuclear use had risen and in which more, rather than fewer, nations were encouraged to seek nuclear capabilities?[2]

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[1] For a collection of optimistic views, see Joseph Rotblat and Vitali Goldanskii, "The Elimination of Nuclear Arsenals: Is It Desirable? Is it Feasible?" in *Verification: Monitoring Disarmament*, ed. Francesco Calogero, Marvin Goldberger, and Sergei Kapitza (Boulder, Colo.: Westview Press, 1991), 205–223.

[2] The risks that a move toward general nuclear disarmament could increase the chances of such weapons actually being used is noted in Michael Mandelbaum, "Lessons of the Next Nuclear War," *Foreign Affairs* 72, no. 2 (March/April 1995): 22–37.

This paper addresses the arrangements that might be required to hold down the likelihood that more nations would seek to acquire nuclear weapons, or even to *use* them, as the world moved to eliminate all such weapons from existing arsenals. It begins with some of the more pessimistic assessments of such possibilities, and then turns to developments that may yet overcome such pessimism.

Merely noting the risks that would attend progress toward the elimination of nuclear weapons is not grounds, per se, for accepting the indefinite maintenance of nuclear arsenals. If it is shown that there would be dangers of nuclear proliferation or even the use of nuclear weapons during the final phases of an agreement to eliminate national nuclear forces, there are obviously dangers, as well, in a continuation of the current situation. As long as weapons of mass destruction exist, a risk remains of their accidental use, or of their unauthorized use by subordinates.[3] As long as nuclear weapons are in the possession of unstable states, there are possibilities of internal conflicts and factions utilizing such weapons against each other in coups or civil wars, or at least threatening mass destruction in confrontations of will.

Had any scholars and commentators on political/military issues foreseen the breakup of the USSR, they might well have been more concerned to reduce the superpowers' arsenals before such a breakup occurred. Reductions could have helped to avoid the very real problems created by the disintegration of the Soviet Union, such as the strategic nuclear weapons left on the soil of Ukraine, Belarus, and Kazakstan, as well as the tactical nuclear weapons, and nuclear materials and nuclear weapon production expertise, that may yet slip out of control. Nor are these problems all resolved: among the more powerful arguments for totally eliminating nuclear weapons are the risks of future political instability in Russia, China, Pakistan, and other actual or potential nuclear states.

Many analysts therefore will continue to see the total elimination of national nuclear forces as a very appropriate and necessary goal.[4] Thus, after introducing some difficulties associated with nuclear disarmament, this paper describes the kinds of political, military, and technological arrangements that might make it possible to surpass the difficulties.[5]

Evil, or Fear of Evil?

The political science community has debated often enough what the premises of a pessimistic (so-called "realist") interpretation of international relations would have to be.

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[3] See Scott Sagan, *The Limits of Safety* (Princeton, N.J.: Princeton University Press, 1993).

[4] For a good collection of such arguments, see Joseph Rotblat, Jack Steinberger, and Bhalchandra Udgaonkar, eds., *A Nuclear-Weapon-Free World: Desirable? Feasible?* (Boulder, Colo.: Westview Press, 1993).

[5] A moderately optimistic analysis can be found in Theodore Taylor and Lev Feoktistov, "Verified Elimination of Nuclear Warheads and Disposition of Contained Nuclear Materials," in *Verification: Monitoring Disarmament*, 45–66.

One view, now often discarded, is that all nations crave power, enjoy dominating others, and are greedy and selfish.[6] Some observers still welcome this interpretation as an insurance against naivete, but it is easy enough to find international behavior, ranging from the Marshall Plan to many of the Soviet ventures abroad, that can not be explained by such a view. Much of the ideologically motivated behavior of the Cold War involved something more than the pursuit of power.

A more restrained, "neo-realistic" view discards the presumption that power is the goal being pursued, and instead only posits that nations, whatever their goals, must in an anarchic international system be uncertain and suspicious of the goals of others. Rather than seeking power themselves, this "neo-realist" viewpoint maintains, nations must, at a minimum, be wary of excessive power in the hands of other states, since *some* such states might indeed abuse such power.[7]

It is a quite straight-forward exercise then to translate these alternative versions of a "realist" position into scenarios describing the risks that would attend a world getting rid of nuclear weapons. Some governments, if they believed that they could produce nuclear weapons without being detected, might be tempted to do so for the power such an accomplishment might convey. A monopoly of nuclear weapons, such as that possessed by the United States from 1945 to 1949, could be the result. Other states simply might fear such behavior by someone else, and thus would contemplate cheating for fear that another state would cheat.

Cycles of reflective reasoning along these lines can become quite complicated. One state might fear another's cheating, or one state might fear a second state's unfounded fear of its cheating. A government that is out to achieve global power may thus be no more dangerous than a government that mistakenly assumes that another is out for global power, and then takes action to preempt it.

Such interactions can be made to look ridiculous, of course, as an excessively abstract iteration of "we fear that they fear that we fear . . ." But similar interactions have seemed real enough in the past, and are put forward sometimes as the explanations for arms races, and as explanations for unstable situations leading to "wars nobody wanted." Historians then must work in retrospect, for example, proving that Germany wanted World War I, or that it was instead France or Britain that wanted the war. The result is sometimes a hopelessly circular jumble, in which each power's actions are more the result of distrust than of ambition, but with the same result.[8] One would not want to have historians arguing about who was to blame for a breakdown of total nuclear disarmament, especially if the breakdown involved not only the illegal retention or new manufacture of such weapons, but also their use.

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[6] A most prominent example can be found in the writings of Hans Morgenthau, *Politics Among Nations* (New York: Alfred A. Knopf, 1948).

[7] A much discussed recent contribution here is Kenneth Waltz, *Theory of International Politics* (Reading, Mass.: Addison-Wesley, 1979).

[8] For an example on the outbreak of World War I, see Ludwig Reiners, *The Lamps Went Out in Europe* (New York: Pantheon, 1955).

Of course, the United States made little use of its nuclear monopoly from 1945 to 1949, so it is not certain that a clandestinely obtained nuclear weapon stockpile would yield major benefits. But not every country is like the United States. What would Joseph Stalin, for example, have done if the USSR had possessed a few nuclear weapons in 1945 and the rest of the world had none? What would Hitler have done if Nazi Germany had acquired a few nuclear weapons, and no one else had them?

It was, indeed, fear of such a German nuclear monopoly that drove the Manhattan Project forward, for US and allied leaders assumed that Hitler would have used such weapons to aggrandize German power and, perhaps, achieve dominance of the entire world.

If a leader like Hitler or Stalin had a monopoly of nuclear weapons, would these be used against cities until everyone surrendered to escape such destruction? If no one else possessed nuclear weapons, could a dictatorship force a "new order" on the world and ensure that no other state could either obtain its own weapons of mass destruction or in any other way oppose its desires? Since 1949, many individuals have feared that the type of disarmed peace the United States (quite benignly) imposed on Japan is what another nuclear monopoly might impose more malevolently on all the world.

Some analysts who are less concerned about such possibilities argue that the numbers of nuclear weapons that could be produced clandestinely—in Japan, Brazil, Russia, or the United States, for example—are relatively small, as compared with the numbers of weapons already existing in the declared and undeclared nuclear arsenals. Yet the numbers also must be compared with what the United States possessed when Hiroshima was bombed, and the first years thereafter. India today can produce more than 100 nuclear warheads, and so can Japan, utilizing only the plutonium they already have on hand. If any state in the future suddenly revealed that it possessed 100 warheads, while everyone else had none, what would be the implications? Many argue that they would be dire.

If a government were to cheat on a regime to establish total nuclear disarmament, therefore, a number of questions would be posed:

First, how many bombs had such a state actually succeeded in retaining or building, and how much destruction could it then threaten to inflict with such weapons? Missile delivery systems also might have been eliminated in the disarmament process, but could the cheating nation utilize military aircraft, or even merchant ships and commercial aircraft, to render cities vulnerable?

It is sometimes suggested that fears about such a "break-out" from a disarmament regime could be eased by the addition of anti-missile and anti-aircraft defenses, so that the worst any state had to fear, if another state were to cheat, might be substantially reduced. Yet such defenses might always seem imperfect, when even a single nuclear warhead could kill so many people.

Second, what counters could the rest of the world muster to deter the use or brandishing of such weapons, and how quickly could such counters be brought into play? Options could include the use of conventional weapons, a rebuilding of national nuclear forces, or perhaps resort to an international nuclear force that already had been established. Was the US use of nuclear weapons after 1945 deterred by Stalin's conventional-force threat to Western Europe? If so, the United States' nuclear forbearance would be less an example of a unique American high-mindedness, and more an illustration of how a nuclear monopoly can be countered by other kinds of military power.

Third, in light of the first two questions, what could be anticipated at the end of an episode of cheating? Would one expect to see a disarming of the culprit state, followed by a renewed (and now tested) ban on all such weapons? Or would the world be more likely to return to national nuclear arsenals and the uncertainties of mutual assured destruction? Can we rule out (always the worst case scenario) a domination of the world by the renegade state, the state that by cheating for the moment had achieved a nuclear monopoly?

In more elaborated analyses of nuclear disarmament, it sometimes has been speculated that the response to cheating by a state like North Korea would be an international political, economic, and military effort to eliminate the illegal nuclear arsenal entirely, while the response to cheating by a more powerful state like Russia might be only a matching renuclearization and a return to the confrontation based on mutual deterrence that we have today.[9]

Other Types of Weapons of Mass Destruction: The "Poor Man's H-Bomb"

Even if it were somehow possible to eliminate all nuclear weapons with confidence, there still could be dangers associated with other types of weapons of mass destruction, particularly chemical and biological weapons (CBW).

It is useful to speculate on what would have happened with respect to CBW if nuclear weapons had never been developed. Would the taboo on the use of lethal chemical weapons have persisted for as long as it did? Or would CBW have been used, and/or deployed extensively for deterrent purposes, to counteract the weight of the supposed Soviet advantage in conventional forces, much as US nuclear weapons were deployed?[10] If this seems like a reasonable possibility, then it might be argued that nuclear weapons served a positive purpose, as they made it possible to avoid the more extensive use of chemical and biological weapons.

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[9] See James Leonard, Martin Kaplan, and Benjamin Sanders, "Verification and Enforcement in a NWFW," in *A Nuclear-Weapon-Free World*, 132–144.

[10] On chemical weapons in general, see Victor Utgoff, *The Challenge of Chemical Weapons* (London: Macmillan, 1990).

Civilian uses of nuclear technology come close to supplying the knowledge and materials needed for nuclear weapon development,[11] but there is an even more serious "dual-use" problem in the chemical and biological industries. Countries investing in capacities for producing fertilizer and pesticides, for example, also acquire the ability to produce chemical weapons. And research that facilitates the prevention and cure of diseases may produce capacities for biological warfare. Thus, even if all existing nuclear weapons were eliminated, it might be even more difficult to eliminate all biological and chemical weapons.

The United States has pledged, along with Russia, China, and more than 150 other signatories of the Chemical Weapons Convention (CWC), to destroy all chemical weapons in its possession, and to not develop, manufacture, transfer, or stockpile any chemical weapons in the future.[12] But this agreement has been readied against a background that includes the continuing existence of nuclear weapons. It is possible that the United States and other countries were willing to sign the CWC because they believed that their nuclear weapons could deter, or respond to, cheating.

If conventional weapons and defensive measures were unable to deal with CWC cheaters, the treaty might have to be reexamined under conditions in which nuclear weapons also were eliminated. Much would depend on the details of regimes to verify the elimination and non-production of chemical and biological weapons. And, just as in the nuclear case, much would depend on what else the outside world could plausibly threaten to do if a ban on all weapons of mass destruction were violated.

From Deterrence to Taboos

The issue of chemical weapons not only complicates the problem of nuclear disarmament, however, it also offers a model that may reinforce nuclear disarmament. The evolution of human thinking on the chemical warfare taboo might usefully educate us about other weapons. The ban on the use of lethal chemical weapons offers an example of changing public consciousness about a form of warfare that may transcend ordinary calculations of inter-state deterrence, and that might apply soon to the use of nuclear weapons as well, and eventually to their possession.

Given the routine use of chemical weapons in World War I, it is indeed remarkable that a taboo on the use of such weapons was achieved thereafter. Most of the forecasts of future wars published in the 1920s and 1930s did not anticipate such a taboo, but rather predicted that chemical weapons would be used extensively, both on the battlefield and against cities. With a few important

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[11] On the dual-use problems with regard to nuclear weapons, see William C. Potter, *Nuclear Power and Non-Proliferation* (Cambridge, Mass.: Oelgeschlager, Gunn and Hain, 1982).

[12] The Chemical Weapons Convention is discussed in Benoit Morel and Kyle Olson, *Shadows and Substance* (Boulder, Colo.: Westview, 1993).

exceptions, however, the taboo against the use of lethal chemical weapons has held for nearly seventy years. Although seemingly every other weapon, including the atomic bomb, was used in World War II, even Hitler abstained from reintroducing chemical warfare.

The taboo on chemical warfare has been broken several times in recent years—not a welcome sign for the changes in culture that we are aspiring to for nuclear weapons. Yet the CBW taboo is certainly not gone, the episodes of chemical weapons use were isolated and widely condemned, and it is hardly certain yet that the world will have to confront extensive use of chemical or biological weapons in the future.

The plausibility of the elimination of all weapons of mass destruction must be grounded in changes in the underlying feelings of peoples all around the world about what are legitimate forms of state behavior. Among many other indicators, the widespread endorsement of the Nuclear Non-Proliferation Treaty (NPT) already shows that traditional notions of "sovereignty" have been modified and constrained; the taboo on chemical warfare is a similar limitation on state sovereignty.

The very notion of a "taboo" involves a ban on human behavior that is not subjected continuously to a rational balancing of costs and benefits, but that settles in, through wide-spread social acceptance, as an axiomatic redefinition of what constitutes legitimate behavior. It is not easy to establish such a limitation, and it is a mistake to discard one when it somehow emerges. In the field of arms control, the world's almost unthinking aversion to chemical warfare is one example, and the non-use of nuclear weapons since 1945 now may amount to yet another.

The lumping together of chemical and biological weapons with nuclear weapons, as "weapons of mass destruction," has posed some important policy choices for the arms control community. Is it better to try to ban all these weapons together, with the deterrent threat that *any* use of any weapon of mass destruction would draw retaliation, either in kind, or with some other type of weapons of mass destruction? (This is in effect the argument just noted above for the retention of nuclear weapons, if the United States is to have no other weapon of mass destruction.) Or would it be better to treat nuclear weapons as significantly worse than other destructive weapons, so as to make it easier to preserve the new taboo that has developed since 1945 on the use of *nuclear* weapons in particular? Similarly, should non-proliferation efforts for chemical and biological weapons be merged with the nuclear non-proliferation effort, or should nuclear weapons, being more important, be kept apart?

The answers to these questions can not be based solely on strategic logic, but also must consider the aspects of human behavior that are embodied in the concept of "taboo." Even Hitler was reluctant to initiate chemical warfare. And the world as yet has seen remarkably little chemical and biological warfare—at least as compared with the size of national arsenals. Such anomalies suggest that factors not usually considered in the normal discussions of deterrence also must be examined in determining whether or not nuclear weapons should be kept in a separate category.

Normal deterrence theory tends to focus on what is explicit in the calculations of the officials of the countries involved, and what is variable as each party attempts to gain advantage relative to the other. Such theories may not assign enough attention to what is more axiomatic and uncalculated. For example, people all around the world react to the idea of incest with disgust, rather than with any calculation of choice; the same might have become the case with chemical warfare, as well as with nuclear warfare, and eventually could hold true for the stockpiling of nuclear weapons.

Assessing the Impact of the Spread of Democracy

The enthusiasm that now characterizes many people's views about the desirability of eliminating weapons of mass destruction would not exist if the Cold War had not come to an end. It is important to recognize that this change in the basic structure of international relations was not just a victory for one side, but more importantly the spreading of the processes of democracy to a much larger slice of the world.

Many of the international relations theorists who do not accept the self-styled "realist" perspective have stressed the fact that democracies do not go to war with one another; at least, there have been no such wars in the past. Democracies, typically, do not even arm against each other.[13] If all the world's countries were like the United States and Sweden, many theorists have suggested, it would be a trivial task to eliminate weapons of mass destruction.

In some democracies—Italy and Sweden, for example—citizens' opinions, expressed democratically, helped persuade governments to abandon nuclear weapon development programs. In other newly democratic countries, the reductions in the Russian and American arsenals, and the general opprobrium weapons of mass destruction now encounter, seem to have had a similar impact. Opinion in Argentina and Brazil might once have been more supportive of a "national sovereignty prerogative" for developing nuclear weapons. But, taking their cues from recent events, voters in these countries now support abandonment of nuclear programs, and seem to accept the NPT and other barriers to proliferation.

The processes of democratic governments are not relevant, of course, for dictatorial regimes like Saddam Hussein's or that of Iran. Nor have all democracies turned down nuclear weapon programs in recent years. Israel is one example; Pakistan and India are also currently democracies, but they are neither inclined to trust one another, nor to renounce nuclear weapons.[14] Advocates of nuclear disarmament are inclined to blame the example set by Washington and Moscow for the apparent South Asian inclination to acquire nuclear weapons, a theory that Pakistani and Indian and

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[13] For examples of such optimism about the impact on international security relations of the spread of democracy, see Philip Quigg, *America the Dutiful* (New York: Simon and Schuster, 1971).

[14] An analysis of the nuclear confrontation between Pakistan and India can be found in George Perkovich, "A Nuclear Third Way in South Asia," *Foreign Policy* 91 (Summer 1993): 85–104.

other diplomats are happy to endorse. But a closer look at what is going on in the region does not necessarily support such an interpretation.[15]

Indeed, the entire optimism about the beneficial impact of the spread of democracy is somewhat intuitive and ill-defined. It reflects the deeply held, indeed ideological, feelings of most Americans, feelings that were brought to the surface already when Woodrow Wilson proposed the League of Nations during World War I. Wilson spoke of "making the world safe for democracy," but he also meant making the world safe *by* democracy.[16]

One could present several straightforward explanations for why democracies do not fight wars against other democracies, and generally initiate fewer wars. An elected government has to justify to its voters the burdens of a military effort; this often has been done against a Hitler or a Saddam Hussein, but not against a country that does not pose such an aggressive threat. The burdens of military effort will indeed be greater for a democracy. In addition to the economic costs and the risks of young men and women being killed or wounded, the military discipline and censorship that have to be imposed in wartime are a threat to democracy itself. Free elections are inherently at odds with the governmental secrecy that a military confrontation requires.

Other theories could be introduced, including the possibility that the processes of democracy themselves, which inherently require taking the feelings of other people into account, produce a greater sympathy for people abroad, and hence less of the selfishness or hostility required for wars. There is a lively literature emerging now on the assumptions that democracies avoid war, and on whether such assumptions are reliable.[17]

Regardless of specific cause, such tendencies normally would make nuclear disarmament easier, but one has to note a few contrary possibilities. If a democracy has reason to fear any foreign state, but is opposed to the militarism that emerges with larger armies, it might see nuclear weapons as an alternative to massive spending on conventional defenses, i.e., as a substitute for large standing armies and compulsory military service. Dual-purpose nuclear technology, moreover, which makes weapons possible at the same time that it offers a source of energy, will always complicate the situation. If democracies pride themselves on openness, it will always make it more difficult to slow the spread of knowledge about bomb production.

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[15] For an extended outline of this author's views on the nuclear issue in South Asia, see George H. Quester, *Nuclear Pakistan and Nuclear India* (Carlisle, Pa.: U.S. Army War College Strategic Studies Institute, 1992).

[16] The Wilsonian vision of the world is outlined in Charles Seymour, *American Diplomacy During the World War* (Baltimore: Johns Hopkins University Press, 1934).

[17] Discussions of the "liberal peace" can be found in Christopher Layne, David E. Spiro, and John M. Owen, "Give Democratic Peace a Chance?" *International Security* 17, no. 2 (Fall 1994): 5–125; and Bruce Russett, *Grasping the Democratic Peace* (Princeton: Princeton University Press, 1993).

The major question for the next several decades thus may pertain to which of these tendencies of democracy will surge ahead of the others. If democracies' empathy for other peoples is a dominant tendency, democratic Pakistanis and Indians may yet become less hostile to one another, and nuclear weapons may lose their appeal. If the general openness of democratic societies eventually overwhelms the secrecy required for nuclear weapon programs as in Israel or Pakistan, we eventually may see as much of an airing out in these nations as occurred in South Africa.

From Problematic Situations to Possible Solutions

This paper has focussed thus far on some of the political and technological difficulties cited frequently by skeptics of nuclear disarmament, and shifted then to some important developments in the background, to changing social attitudes about what is legitimate in international behavior, and to the possible consequences of the substantial spreading of democracy. A skeptic who cites history and tradition still will have to admit that such new factors in the international system may be most important, as well as difficult to interpret for the exact role they will play in creating conditions for elimination.

Having thus stipulated some possible generic obstacles to the elimination of nuclear weapons, this paper will turn now to a series of approaches to bypassing these obstacles: a global collective security system, enhanced International Atomic Energy Agency (IAEA) safeguards, a general societal transparency, a possible international nuclear force, and some options for para-disarmament.

A Global Collective Security System

Some nations have acquired nuclear weapons because they believed that they would be unable to match an adversary's conventional strength, and that their nuclear strength would deter attacks, or at least would provide an ultimate guarantee that they could not be extinguished altogether. Israel and Pakistan are examples. In the future, other states, facing a more powerful adversary, might come to believe that it would be desirable to obtain nuclear weapon capabilities for similar reasons. A Kuwait or a Saudi Arabia, for example, threatened with invasion by the overwhelming conventional forces of a neighbor like Iraq, might be tempted in the future to seek nuclear weapons to deter such an invasion, particularly if it had lost confidence that other nations like the United States would come to its defense.

But if the outside world, most probably through the United Nations, could maintain a system of collective security—a system in which any and all such threatened states were protected against attack by the certain knowledge that aggressors would be punished and aggressions undone—this reason for acquiring nuclear weapons would become less important, and additional nations might become willing to eliminate nuclear weapons.

The manner in which the United States led the United Nations into condemning, and then undoing, the 1991 Iraqi aggression against Kuwait is an excellent model of how a collective security system can work effectively. In contrast, the failure of the League of Nations in the 1930s to oppose Japanese, Italian, and German aggressions effectively is an example of how such a system can fail.[18]

With the end of the Cold War, the precedent of a successful working of collective security after Saddam Hussein's invasion of Kuwait, and generally greater confidence in the role of multinational organizations, collective security looks less implausible than it did even ten years ago. Yet, if effective global collective security is a prerequisite for nuclear disarmament, it would make the elimination of nuclear weapons more complicated.

Some argue that any collective security system could not work over the longer run. The "realists," for example, believe that nations are too self-centered to be willing to defend victims of aggression around the world, except when their own vital interests are involved. Nations look out for themselves, they argue, and will not be guided, when a war breaks out between two other countries, simply by a commitment to protect victims of aggression. In domestic politics, the most important question in any outbreak of violence is who was the first to use weapons. But the international system is distinguished from national systems of law and order by the absence of central authority and, so far, by an unwillingness of nations to submit to a shared set of rules governing their behavior.

Even if all states are peace-minded, there will be important logical complications for a collective security system. The world welcomes peace; the desire to eliminate war goes beyond any desire just to eliminate weapons of mass destruction. Yet, human intuition continually misleads us as to when a war really begins. Clausewitz illustrated the point very well in his comment that "the aggressor is always peace-loving," noting that it is the side that elects to resist an aggression that causes a war to happen.[19] We remember World War II in Europe as having begun in September of 1939, because the Poles chose to resist Hitler's attack, rather than in March of that year, when the Czechs did *not* resist the German entry into Prague.

As Clausewitz so aptly noted, a peace-loving world, having to face an aggressor like Napoleon, or like Saddam Hussein, will be asking itself continually "whether it is worth going to war" after some territory has been seized. The temptation will always be great, as voiced by opponents of President Bush's commitments to reverse the Iraqi occupation of Kuwait, to conclude that the peace should be preserved, with the result that the aggression is tolerated.

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[18] For skeptical comments, see Richard Betts, "Systems for Peace or Causes of War?" *International Security* 17, no. 1 (Summer 1992): 5–43.

[19] Karl Von Clausewitz, *On War* (Princeton, N.J.: Princeton University Press translation, 1976), 370.

But it is surely too early to conclude that collective security is unattainable. Under American leadership during the Bush Administration, the world indeed girded itself to override its intuition, in effect to go to war in the service of peace. The response to Iraqi aggression was a success for collective security. A string of such successes could be self-sustaining, just as failures tend to be self-renewing.

Few would hope to achieve total nuclear disarmament in less than twenty or thirty years. Over such a period, the rebuff to Saddam Hussein might come to loom larger as a precedent for international action than the earlier failures to rebuff Mussolini and Hitler. The more the world practices collective security, the fewer challenges it will face from aggressor states, and the more confidence there will be that what works in domestic law and order can work internationally also.

Building on the International Atomic Energy Agency

The case for the total elimination of the world's nuclear weapons is weakened by press reports that the IAEA has difficulty carrying out its assigned task of verifying compliance with the NPT. These reports of gaps in the NPT's primary safeguards are troubling when the potential gains of cheating are only that a state could become the eighth or ninth nuclear weapon state, with an arsenal dwarfed by those of the declared nuclear powers. If the IAEA were trying to verify that the very last nuclear warhead had been eliminated, flaws in its ability to confirm the absence of such weapons would be even more troubling, as the potential gains for cheating could be much greater.

Accusations have been advanced, most of them unfair and misleading, that Iraq, Iran, and North Korea have been capable of easily producing nuclear weapons even while the IAEA had its safeguards in place. The IAEA is obviously under-funded and under-equipped. Some maintain it is not competent for its task; others that the task is inherently unmanageable.[20] Because the distance between legitimate peaceful uses of nuclear technology and the production of bombs is so short, some maintain that not only would any effort at nuclear disarmament fail inevitably, but also that even the current non-proliferation effort must fail.

But reports of cheating against IAEA safeguards are often self-generating, serving the needs of a press looking for sensational stories. Analysts trying to assess the likelihood of nuclear proliferation are always burdened by a prudential pessimism; if a pessimistic prediction is wrong, no one will mind, and if it is right, the analyst will have recorded an "accurate" forecast. This is all a little like weather forecasting, in which many more tornadoes are forecast than ever happen. Yet there has never been a tornado produced by a self-confirming hypothesis. In the case of nuclear proliferation or disarmament, the concern is that rumors about defects in IAEA safeguards could become self-confirming, as countries assumed that others were getting away with cheating, and then felt a need for their own illegal programs.

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[20] For an example of such criticisms of the IAEA, see Brooks Tigner, "Europe's Greens Say Euratom, IAEA are Lying on Safeguards," *Nucleonics Week*, 2 June 1988, 5–6.

The obvious point is that the IAEA would have to be substantially expanded and better funded, and provided with greater authority, if an effort to eliminate nuclear weapons were to be undertaken.[21] In principle, this task ought to be as feasible as other endeavors. While the budgetary savings of substantial disarmament should not be exaggerated, given how many of the weapons of mass destruction have been paid for already, and how relatively cheap such weapons have unfortunately become, these savings would still be much greater than any cost of enhancing the IAEA's ability to verify a disarmament regime. Moreover, not only nuclear weapon states would pay for such a system, since all nations would have a stake in an effective system of verification and would share the financial burden.

It is easy to demonstrate that, to date, the IAEA has been starved for resources, even for the relatively small task it already has been assigned under the existing NPT regime. As compared to other international organizations, the IAEA has been a relatively efficient and professional body. There is no inherent reason why, even if it were assigned the much bigger task of verifying a global nuclear disarmament regime and of verifying the absence of any military renuclearization thereafter, the IAEA could not be funded, manned, and empowered to carry out this task efficiently.[22] As will be the case also with the CWC, the dual-use nature of nuclear technology imposes the task on the world to ensure that nuclear weapons do not emerge as a low-cost "spin-off" from legitimate civilian enterprises. Yet the costs of safeguarding against this will assuredly be lower than the cost of tolerating a global proliferation of such weapons.

If verification of a nuclear disarmament regime is to be generally trusted and respected, there could only be a tiny margin of error accepted, for both political and psychological reasons. What political arrangements might be needed to allow any verification systems, IAEA or otherwise, to meet such demands for error-free verification?

It is hardly certain that attempts to cheat on the elimination of nuclear weapons would occur. But it is much more probable that *rumors* of cheating would be circulated—by newspapers eager to win readers, by a military or intelligence officer eager to capture the attention of a head of state, or by analysts inclined to be pessimistic so as to cover themselves if the worst outcomes actually do occur.

It is important to put such pessimistic forecasts in perspective. Compared to the worst of what was predicted for the operation of IAEA safeguards under the terms of the NPT and other international agreements, the actual results thus far have been surprisingly good. During the negotiation of the NPT, and for a decade or so thereafter, some analysts warned that IAEA safeguards would be too

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[21] On needed augmentations of the resources available to the IAEA, see David Fischer, *The Future of the IAEA*, Issue Review no. 2 (Southampton: Programme for Promoting Nuclear Non-Proliferation, 1993).

[22] See Lawrence Scheinman and Irakli Gverdziteli, "Verifying a Production Cutoff for Nuclear Explosive Material: Strategies for Verification and the Role of the IAEA," in *Verification: Monitoring Disarmament*, 67–94.

intrusive, wearing away the profit margin of any firms or countries trying to make effective use of nuclear power, becoming unbearable in the demands they made for access to peaceful nuclear facilities, and all the while being ludicrously unreliable in preventing the diversion of fissile materials to weapon projects.[23]

In the actual event, automation and other cost-reducing techniques have been surprisingly effective, and the anticipated complaints of Japanese, German, Canadian, and Swedish nuclear reactor managers have not arisen in practice. No one running a nuclear power operation likes to be bothered by visitors from Vienna, but the bother has been much less than the opponents of the NPT projected. If nuclear power has not made as great a contribution to national prosperity as forecast, the explanation lies in the unanticipated safety and ecological concerns that have emerged, rather than the burden of IAEA safeguards.[24]

Similarly, press accounts of the supposed ease with which IAEA safeguards systems could be bypassed, based on misleading inferences from the experience in Iraq, also very much overstate the deficiencies. The Vienna agency was being tested in Iraq by a task it had not been assigned: monitoring undeclared facilities.

What passes for current public opinion on the reliability and manageability of IAEA safeguards is thus an indicator of opinion, much more than of reality, and a reflection of a press style that may be biased toward pessimism. Still, as a sign of what may happen to public opinion under a disarmament regime, it serves as a worrisome example of the self-confirming cycles of suspicion and doubt that might well up during any attempt to eliminate weapons of mass destruction.

Yet, world opinion, if it is so divorced from reality, also could become self-confirming in positive directions. If the world's population generally came to conclude that nuclear weapons make little or no difference, and would be of little or no value to anyone cheating on a disarmament regime, then rumors of cheating would be less likely to get a hearing or to reinforce other nations' willingness to cheat to protect themselves.

Even as things stand now, however imperfect they might be physically, IAEA safeguards work to make pairs of nations more confident that there is no point in cheating. If a nation were thinking of acquiring nuclear weapons surreptitiously, there is at least *a chance* that the action would be detected by the IAEA, or would be reported to the IAEA; this makes it less likely that the regime would take such a risk. Knowledge of this, in turn, would make it less likely that other states would feel compelled to hedge against such dangers by cheating. If a second nation were still thinking of

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[23] A discussion of anticipations of difficulty in IAEA inspections can be found in Lawrence Scheinman, *The International Atomic Energy Agency and World Nuclear Order* (Washington: Resources for the Future, 1987), especially Chapter 5.

[24] The array of problems faced by the nuclear power industry is discussed in William B. Walker and Hans Lonnroth, *Nuclear Power Struggles* (Boston: Allen and Unwin, 1983).

hedging against this risk by cheating, there is also at least *a chance* that this would be detected by the IAEA; knowledge of this would again make it less likely that the second regime would take the risk of cheating.

Most of the countries of the world have realized that they are better off if they can reassure their neighbors that they are not acquiring nuclear weapons, and that nuclear proliferation by one country in a region would be followed inevitably by proliferation by other countries, with the region then being worse off in the net. Rather than trying to frustrate international safeguards, Argentina and Brazil are now a very good example of a pair of countries interlocking their non-military nuclear activities in a way that lets each country know what the other is doing; the European institution of Euratom provided an earlier example of this among West Germany, Italy, and the Benelux countries.

Countries that wish to escape their neighbors' awareness of what they are doing in the nuclear field have been the exception during the past three decades. The task is to harness this proclivity, and to perpetuate it, in a world moving toward total nuclear disarmament.

The Role of Transparency

Closely, but not perfectly, related to the spread of democracy is the expectation that a greater transparency among countries generally will contribute to trust, and to a reduction of military tensions, and that this trend makes it easier to accomplish the total elimination of weapons of mass destruction. The principal role of IAEA safeguards, after all, is to reassure nations about each other, for example, to convince Japan that Australia is not likely to be producing nuclear weapons, and to reassure Australia about Japan, etc. Worries about cheating on the IAEA or other safeguards regimes could be reduced substantially if the societies involved shared their thinking about the settlement of international disputes, about the role of military force, about the future of all kinds of weapons, and about the actual status of their military and scientific facilities.

There are ways in which such transparency can be double-edged, however. Either in today's world, or in a future world in which all nations had abandoned nuclear weapons, we would not wish to have Argentina and Brazil keeping secrets from each other, lest each fear that the other is acquiring such weapons. But we also would not want to make it easy for a patriotic Pakistani nuclear engineer, browsing through catalogues, to purchase and put together all the components of a nuclear weapon program.

This double-edged nature of nuclear information has bedeviled American policy on secrecy ever since 1945. One must remember that an important impetus for the McMahon Act, which established the Atomic Energy Commission free of military control, was the fear that the military would be *too* committed to secrecy on nuclear matters (i.e., *too* concerned about preventing nuclear proliferation) and, as a result, would threaten scientific openness and unreasonably delay civilian uses of nuclear technology. This all seems ironic when viewed through the hindsight of later American proliferation fears, as evidenced by the Congress dismantling the Atomic Energy Commission after the Indian nuclear detonation of 1974.

Given the ecological and safety problems that have plagued the nuclear power sector since 1945, there is indeed less interest in the exploitation of nuclear electrical power production. Yet, there are still difficult choices to be made. Letting the world view nuclear facilities can help reassure nations that nuclear weapons are not being produced, but it also might help additional nations produce such weapons sooner and more easily, depending on the specific ground rules governing inspections.

"Transparency" measures can be expanded to include non-governmental actors, and here the choices may perhaps be a little less difficult. In what is sometimes labeled "societal verification," the renunciation of nuclear weapons and the opening of nuclear facilities to inspection could be accompanied by the fostering of a new norm, by which people felt it to be their duty to report anything that looked like a violation of their own country's nuclear disarmament commitments. Rather than being seen as "espionage" or "treason," such behavior could come to be viewed as "international civic duty." Rather than being sentenced to prison, someone like Mordechai Vanunu, for example, who revealed information about the Israeli nuclear program, would be regarded as a hero for reporting to the world the possibility that his own country was cheating on its promises not to produce nuclear weapons.

Whether such a norm could be achieved, and achieved evenly enough across the world, is of course uncertain. One can even imagine fears emerging of a "societal verification gap," in which one country would feel itself incapable of cheating because its own citizens or newspapers would report any attempt to do so, but would fear that a less democratic adversary would have its citizens and press more under control.

This, after all, is how many Americans saw the relationship between the United States and the USSR, as the issue was posed again and again of whether disarmament really required intrusive on-site inspection, and Moscow regularly proposed disarmament agreements without verification systems. The United States, it was argued in Washington, would have to abide by any disarmament treaty it signed, even one for total nuclear disarmament, because the US free press would insist on reporting violations. By comparison, the state-controlled Soviet press would not be free to disclose any Soviet violations of the treaty, and the result would have been a disastrous asymmetry in which the West disarmed while the Soviets retained an arsenal.

Even democracies can place a high enough value on weapon programs to make it difficult for individuals and the press to accomplish "societal verification." One must note how atypical Vanunu has been in Israel, where the general Israeli press has long censored itself from discussing the Israeli nuclear program, only repeating verbatim accounts published in the foreign press. Weimar Germany is another example, where individuals and the press felt it their patriotic duty to support cheating on the disarmament clauses imposed by the Treaty of Versailles, rather than to cooperate to make the task of foreign inspectors easier.

In short, nothing is impossible in this respect, even while nothing is assured. Very much depends on how popular attitudes develop on the conflicts that normally underpin any interest in weapons. If enough of the world's population comes to regard any retention of nuclear weapons or resurrection of such weapons as fundamentally perverse, dangerous, and irrelevant for real needs, then one could count on such societal verification much more, as a means of enhancing official arrangements to verify disarmament agreements.

One can imagine what the reaction of most Canadians would be today if they discovered a clandestine Canadian nuclear weapon program. They would applaud whoever had exposed such an outrageous venture. And one can hope that similar attitudes would prevail in the future for the parallel reactions of Brazilians or Argentines. But there is still a way to go for Iranians, Iraqis, or Israelis, or Pakistanis and Indians.

The overall trends here do provide grounds for hope, as nations become increasingly democratic politically, and hence more sympathetic to the wishes and needs of other nations, and as economies become more and more interlocked in the pursuit of prosperity. As the nations of the world converged on the completion of nuclear disarmament, there might thus be very few states remaining outside of the international community in which disarmament obligations were taken seriously by all citizens, and very few states assuredly able to carry off a clandestine weapon project.

An International Nuclear Force?

In light of the risks of inadequate verification, it might be desirable to retain some kind of international nuclear force as a hedge against one or more nations cheating on a disarmament agreement and either retaining, or building anew, a national nuclear weapon force. Just as domestic law and order is normally taken to mean the establishment, in some territory, of a monopoly of means for ordinary violence, so the "outlaw" use or possession of nuclear weapons could be deterred or prevented by a nuclear-armed multi-national sheriff.

One possibility would be a United Nations nuclear force, a force strong enough to make it pointless for any nation to cheat, and also to reassure all nations that others would not perceive incentives for cheating. Many important questions remain to be studied and answered. How would such an international nuclear force function, and what alternatives would there be to having it organized as part of the United Nations? If and when it came to be the only nuclear weapon force in the world, what would be the checks on the arbitrary use of an international nuclear monopoly? Since there would be no other nuclear weapons, what could deter this force?

An international nuclear force might be started by seconding some of the existing national nuclear forces to UN command, as has been done for decades with conventional forces. Over a period of time, the international nuclear force could grow in size as compared with the shrinking national nuclear forces, so that the UN force would have an important influence on the relationships

among the nuclear powers. Over a longer period of time, the nations of the world could eliminate any remaining national forces.

The international nuclear force might "patrol its beat" without brandishing nuclear weapons, much as British police have long kept order without usually carrying guns. But such an analogy is unfortunately suggestive in opposing directions. Law and order may depend on partial or total gun control, so that the central authority does not have to face heavily-armed challengers. But the police in Britain also have had to retain access to a reserve of firearms for cases when criminals arm themselves. Similarly, the United Nations might have to retain access to a reserve of nuclear weapons in case some criminal nation armed itself with national weapons of mass destruction.

While the path to be trod here may seem very long, and somewhat hazy, one can not rule it out. Rather than seeking at the very beginning to be definitive about the final steps in a disarmament regime, it might be better to leave some of the arrangements, by which *national* nuclear forces were seconded to, and then transformed into, an *international* nuclear force, to be worked out by a more gradual and subtle "muddling through." One can find analogies, for example, in the process by which the separate state militias of the United States came to be components of, and subordinate to, the national US Army.

Some will contend of course that the primary loyalty of seconded national armed forces can never be ignored, as independent national sovereignties remain the basic building blocks of the international system. The separate units of NATO, for example, are never the same as a "European Army." Armed forces seconded to the United Nations for peace-keeping, even if they become accustomed to wearing light-blue headgear, remain loyal to commands issued from their home countries.

Yet, even the latter generalization may be more true today for units from Ukraine or Russia than for units from Norway or Denmark, which have been taking part in UN peacekeeping for four decades. Some, or perhaps even most, of the hope for a total denuclearization of the world will depend on changes in the attitudes of the individuals involved, ranging from ordinary citizens to military officers, and even to the officers in charge of nuclear weapons.

Various proposals have surfaced since the end of the Cold War for starting the existing nuclear weapon states on what might become a very helpful "slippery slope," beginning perhaps with only a simple national commitment to consult with the United Nations Security Council before using nuclear weapons. To develop a fuller international commitment, this might then be accompanied by a promise also to use nuclear weapons, if, and only if, the Security Council were actually to request such use.[25]

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[25] Some proposals on a UN role in the management of nuclear weapons can be found in Richard Garwin, "Nuclear Weapons for the United Nations," and Vitalii Goldanskii and Stanislav Rodionov, "An International Nuclear Security Force" in *A Nuclear-Weapon-Free World*, 169–180 and 181–190, respectively; and Gerard C. Smith, "Take

The evolutions of domestic constitutions, and of international legal practice, offer many examples in which prerogatives become duties, or in which specifying what is permitted becomes an upper limit on the total of what is permitted. Chinese diplomats complain today, for example, about the duties and responsibilities that are conveyed by the veto power associated with their permanent membership on the UN Security Council. China often can not simply vote "no," they say, even when opposed to a proposal, but must limit itself to "abstaining," because it would be irresponsible to block the consensus of the rest of the world.

The weaving of such constraints takes time, and must be achieved only gradually, and almost without outside notice, lest a premature effort at clarification kill off the development, with nations retreating to the image of unfettered separate national sovereignties.

In the worst of all scenarios for the post-Cold War world—that of massive military confrontations among China, Russia, and the United States, and perhaps also Japan, Germany, France, and other nations—such an evolution is not plausible. If such confrontations among the nuclear powers do not occur, however, and the current possessors of nuclear weapons remain most of the time on the same side of the issues, as they have largely been for the Persian Gulf and Yugoslav crises, then this gradual and subtle metamorphosis to a world free of nuclear weapons might occur.

Ever since the Baruch Plan for international control of nuclear activities was proposed in 1946, analysts of nuclear disarmament have focussed on whether the veto built into the procedures of the United Nations Security Council should be retained or eliminated. A number of current proposals for nuclear disarmament specify that there must be no "withdrawal clause" in a nuclear disarmament treaty as is currently written into the Partial Test-Ban Treaty and the NPT.[26] But such discussions of legal vetoes and prerogatives for withdrawal might become moot if a new "customary international law" were to take hold, by which no one used nuclear weapons without an international go-ahead.

Para-Disarmament

When the United States and Russia announced in 1994 that their nuclear forces were no longer targeted on each other's cities, the political and psychological impact of this announcement played a positive role in the evolving US–Russian relationship. In reality, however, this change in policy meant relatively little, since such targeting could be restored on very short notice.

A more meaningful step in the transition toward total nuclear disarmament might be for the nations of the world to be permitted to retain nuclear weapons, but only in a form in which they

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Nuclear Weapons into Custody," *Bulletin of the Atomic Scientists* 46, no. 10 (December 1990): 12–13.

[26] For an example of such arguments, see Maxwell Bruce, Horst Fischer, and Thomas Mensah, "A NWFW Regime: Treaty for the Abolition of Nuclear Weapons," in *A Nuclear-Weapon-Free World*, 119–131.

could not be used without some preparations.[27] Warheads separated from missiles, or with no delivery systems to which they could be mated immediately, would pose less of a risk of accidental use—thus addressing one of the important reasons for disarmament—and also would pose less of a threat to other countries. There might thus be a case for settling for less than the total elimination of nuclear weapons, but nonetheless demanding more than a tolerance of their continuing preparedness for imminent use. A system of "bombs in the basement," rather than "bombs in the silo," might be at least a step in the right direction.

One can envisage a number of ways to increase the lag-time between any war outbreak and the possible nuclear destruction of cities. An agreement might stipulate that missile-carrying submarines be deployed out of firing-range of adversary nations. Going a step further, another arrangement would require that warheads be kept at a location separate from missiles or bombers, much as American nuclear warheads in 1947 were kept at some remove from the aircraft capable of carrying them. One also could propose banning all missiles and bombers; if verifying the total elimination of nuclear warheads would be difficult, it would be easier to monitor the elimination of missile delivery systems, as these are harder to conceal.

There are obvious problems to be solved on how compliance with each of such possible para-disarmament agreements could be verified, and it will be important to assure that such an arrangement does not increase temptations or fears of a preventive-war surprise attack.

Some will conclude that even total nuclear disarmament really would be one more variant of such para-disarmament, as the basic knowledge to build bombs always would exist. Moreover, as long as the world had to deal with fissile materials in peaceful nuclear industry and retained the knowledge of how fissile material could be made into bombs, the entire inter-relationship of states might always have to be one of "how long would it take to have a bomb ready for an attack on our city?" rather than any definitive "abolition of weapons of mass destruction."[28]

Thus, even if nuclear and other weapons of mass destruction could be eliminated in the next several decades, in one sense mutual deterrence would remain in effect. Instead of bombs being kept ready but separated from delivery systems, however, the deterrence mechanism would have receded one more step. Just as US and Soviet/Russian nuclear weapons have deterred each other since 1949, each nuclear power's latent ability to assemble and ready such weapons might deter another's readying of bombs, in a new pattern of mutual deterrence. Rather than "no-first-use,"[29] or "no-first-mating-with-delivery systems," we would have settled back to a pattern of "no-first-bomb

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[27] A well-developed analysis of these possibilities can be found in Michael J. Mazarr, "Virtual Nuclear Arsenals," *Survival* 37, no. 3 (Autumn 1995): 7–26.

[28] See, for example, Jonathan Schell, *The Abolition* (New York: Knopf, 1984), 121–122.

[29] Good examples of no-first-use arguments can be found in Richard Ullmann, "No First Use of Nuclear Weapons," *Foreign Affairs* 50, no. 4 (July 1972): 669–683.

production." The important question, for the avoidance of the *use* of nuclear weapons, might be at which stage of readiness mutual deterrence would be most robust.

If the world can never forget how to produce nuclear weapons, no-first-mating-with-delivery systems may be better than no-first-use—the proposal that has been most prevalent until now. The central question to be addressed might be whether no-first-production is still better, in terms of crisis stability, and in terms of all the other considerations that affect the likelihood of war, than the retention of some nuclear warheads in being.

Can Para-Disarmament Evolve to Something More?

Under either current national controls or UN control—or both—a number of nuclear warheads thus might have to be maintained in a "disarmed" world, even if they were separated from delivery systems. Or, if *no* nuclear weapons were kept in being, nations would at least retain contingent capabilities for a rapid renuclearization in response to some other state's action.

Under such scenarios, the use of weapons of mass destruction would be physically impossible in the short run. Additionally, every potential cheater would know that a treacherous break-out could not achieve a usable monopoly for very long, that retaliation and responsive nuclear rearmament would always come, after some decent interval, but in enough time to respond to the cheating.

Would the nations of the world thus forever be burdened by one form or another of the logic of mutual assured destruction, or could they shake free of it? If nothing less than the total destruction of every nuclear warhead is to be the goal, how might the world move from para-disarmament to a more total nuclear disarmament in which the logic of mutual deterrence would no longer hang over the world?

As everywhere else in this discussion, we have to deal with not only the concrete reality of what would be left after nuclear disarmament ("how long would it take for anyone to make nuclear weapons again?"), but also the political or psychological reality ("how often does this question ever come up?"). It is surely possible that some military or intelligence officer would feel it his or her responsibility to bring up the question of other states' latent weapon capabilities.[30] But it is not the case that presidents and prime ministers will feel the need to listen or respond to *every* worrisome warning they receive.

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[30] In the 1920s a senior officer of the Canadian Army sensed it his duty to prepare Canada for a war with the United States. See James Eayrs, *In Defence of Canada*, Vol. I (Toronto: University of Toronto Press, 1965), 70–78, 323–328.

At this final stage, total nuclear disarmament would no longer just constitute one step backward in the logic of mutual deterrence, with each state still utilizing its nuclear potential to deter other states from using their nuclear potential.

It would instead be a world without nuclear weapons in the fullest sense of the term, not just without the physical presence of such weapons, but politically and psychologically without even the thought of these weapons.