CENTRE FOR MILITARY STUDIES
UNIVERSITY OF COPENHAGEN

Adjusting the Architecture

Arms Control, Disarmament, and Non-Proliferation in NATO

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This report is a part of Centre for Military Studies' policy research service for the Ministry of Defense. The purpose of this report is to analyze the role that arms control, disarmament, and non-proliferation have played—and continue to play—in the security of the members of the Atlantic Alliance. These cooperative arrangements between states complement military strategies designed to deter, defend, and defeat adversaries by reducing force dispositions, technologies, and tactics that increase the perception, as well as the probability, that offensive military action will yield disproportionately beneficial outcomes. The current architecture of agreements was designed to reduce the probability of Soviet-led aggression and became a means of stabilizing Russian control of its military capability in the post-Cold War era. Russian weakness, however, has strained these arrangements and NATO should re-orient them toward reducing the ability of states on the periphery of the Euro-Atlantic region to threaten the security of NATO members.

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Abstract

The current security architecture builds upon that established to reduce the risk of war between the Warsaw Pact and NATO during the Cold War. It built on NATO force structure and doctrine as well as agreements between the United States and the Soviet Union—and their allies—to control the spread of nuclear weapons and missile technology, limit and reduce the deployment of strategic nuclear weapons, eliminate classes of delivery vehicles, consolidate control over tactical nuclear devices, and to codify the deployment of conventional weaponry. These arms control, disarmament, and non-proliferation agreements, formal and informal, have created an interlocking network of expectations regulating inter-state relations. They reduce the probability, that offensive military action will yield disproportionately beneficial outcomes. The current architecture of agreements was designed to reduce the probability of Soviet-led aggression and became a means of stabilizing Russian control of its military capability in the post-Cold War era. Russian weakness, however, has strained these arrangements and NATO should re-orient them toward constraining the ability of states on the periphery of the Euro-Atlantic region to threaten the security of NATO members. Denmark could influence Alliance policy in this direction in NATO's newly established Arms Control, Disarmament, and Non-Proliferation Committee (the ACDC).

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Introduction

At the Chicago Summit in May 2012, NATO political leaders agreed to the NATO Deterrence and Defence Posture Review (DDPR). The DDPR provides the framework within which the Alliance will consider the military forces and strategies required to deter and defend the territory and populations of its members against the full range of threats extant in the international security environment. Alliance leaders identified four pillars of this framework: (1) nuclear weapons, (2) conventional weapons, (3) missile defenses, and (4) arms control, disarmament, and non-proliferation agreements.

The role that nuclear weapons, conventional weapons, and missile defenses play in protecting the territory and populations of NATO countries may be obvious. But what about arms control, disarmament, and non-proliferation? NATO has had an active policy toward arms control, disarmament, and non-proliferation since the 1967 Harmel Report.[1] They have therefore complemented the Alliance's efforts to deter and defend against adversaries. How have they done so? What agreements and regimes affect the security of NATO members? Are these permanent? Do they cover all aspects of Alliance military capability? Do they cover all aspects of the military capability of the respective entities that are the object of the Alliance's deterrence and defense posture? Where is tension likely to arise in the future between the security of NATO nations and these arms control, disarmament, and non-proliferation agreements and regimes?

This report addresses these questions at the request of the Danish Ministry of Defence.[2] It does so by defining arms control as the regulation of the types, qualities, quantities, and deployment of armaments; disarmament as the reduction and elimination of classes of armaments; and non-proliferation as the regulation and prohibition of the transfer of armaments and their underlying technology. Arms control, disarmament, and non-proliferation agreements, formal and informal, have created an interlocking network of expectations regulating inter-state relations. This is particularly so for the Alliance members. This architecture of agreements conditions how the Alliance will consider the capabilities and strategies required to implement the DDPR—and how implementing the DDPR will affect this architecture.

How This Report Was Produced

In addition to following the procedures laid out in the CMS project manual, which include internal and external peer review, the analyses underlying the report were organized in the following way.[3] The author of this report was formerly employed by the United States Department of the Air Force, served as a consultant to United States Strategic Command and Joint Forces Command on issues related to nuclear strategy and arms control, and has co-authored several studies on the topic.[4] In addition to drawing on his expertise, numerous scholarly and policy studies have been consulted. Interviews and exchanges with serving United States Air Force officers and civil servants contributed to the background research. Furthermore, the Centre for Military Studies of the Department of Political Science at the University of Copenhagen hosted a seminar on Arms Control in a NATO Perspective on 29 October 2012. The purpose of the seminar was to elicit expert testimony from acknowledged external experts in the field. Dr. Karl-Heinz Kamp, the Director of Research at the NATO Defence College, addressed the purpose, expectations, outcome, and implications of NATO's May 2012 Deterrence and Defence Posture Review (DDPR) for NATO's subsequent strategic posture. Dr. Damon Coletta of the United States Air Force Academy addressed the substantive debate over the role of tactical nuclear forces in the Alliance that was resolved in the DDPR but will likely be revisited in the future. Subsequent discussion between these external experts and the seminar participants, including faculty members from the Centre for Military Studies, the Centre for War Studies of the University of Southern Denmark, officers serving at the Defence Command Denmark, and civil servants from the Danish Ministry of Defence, served to illuminate many points of interest for the parties involved and contributed substantively to this report.

Overview

This report is organized in the following manner. The first section delineates the context within which arms control, disarmament, and non-proliferation issues are being addressed by the Atlantic Alliance. Its purpose is to make clear to the reader that these three forms of armaments regulation are not considered to be ends in themselves by NATO; rather, they are deemed to be means to the end of international security for Alliance members. The second section defines and compares these concepts so as to clarify for the reader that arms control, disarmament, and non-

proliferation are not synonymous and their effects on the security of Alliance members may be contradictory as well as complementary.

The third section discusses the development, purposes, and coverage of various aspects of the arms control, disarmament, and non-proliferation architecture affecting the security of the NATO member states and that provide the context for the DDPR. First, I describe the development of the regime designed to prevent the proliferation of nuclear weapons in the interstate system, the capstone of which is the Nuclear Nonproliferation Treaty (NPT). Then I discuss the development of the regime designed to limit the transfer and supply of unmanned missiles and aircraft as well as their underlying technologies in the interstate system. This Missile Technology Control Regime (MTCR) complements the nuclear non-proliferation regime and was driven by many of the same concerns and dynamics that fortified—yet also undermined—the control of those technologies. I then discuss the strategic nuclear arms control regime between the United States and the Soviet Union and its successor states. These arms control treaties and agreements were the centerpiece of American–Soviet *détente* in the latter half of the Cold War[5] and most clearly demonstrate the logic of arms control and the relationship between strategic offence and strategic defense. Next, I address the elimination of intermediate-range nuclear weapons and the reduction of short-range nuclear weapons. Short-range nuclear weapons constitute a topic of intense Alliance discussion. Finally, I analyze the evolution of conventional arms control in Europe with the Conventional Forces in Europe Treaty (CFE), as well as its predecessor and potential successor agreements.

The fourth section discusses NATO's Deterrence and Defence Posture Review of May 2012. With it, the Atlantic Alliance has accepted that it will utilize nuclear weapons, conventional weapons, ballistic missile defenses, arms control, disarmament, and non-proliferation agreements to achieve security for its member states. This document resolved a long-standing source of dispute between key NATO allies: those who view short-range American nuclear weapons based on European soil as contributing to the security of the Alliance and those who see them as legacy systems that should be eliminated. It represents a consensus that was reached with remarkable speed. Still, this consensus may unravel as many NATO allies—including Denmark—face procurement decisions that will either support or undermine it.

The final chapter presents the conclusions of the analysis. It summarizes the argument and provides insights for Danish policy makers. These insights are the following:

1. Arms control, disarmament, and non-proliferation represent three distinct types of arms regulation; pursuit of one may compliment or undermine the pursuit of the goals of the others.

2. NATO's military posture and strategy is embedded in a multi-layered and integrated arms control architecture wherein decisions with regard to nuclear weapons, conventional weapons, missile defense, arms control agreements, disarmament agreements, and non-proliferation interact with one another.

3. Demark, like other NATO members, will face procurement decisions that could affect NATO strategy and the arms control architecture of the Euro-Atlantic region. In particular, its procurement of tactical fighter aircraft will allow it to opt in, opt out, or remain uncommitted to bearing some of the burden and responsibility of participating in NATO's nuclear strategy.

4. The arms control architecture that constrains many aspects of the Euro–Atlantic security environment is under pressure from changes in the balance of power within and rising powers on its periphery. Russian weakness and the acquisition of weapons systems by the People's Republic of China, North Korea, India, Pakistan, Iran, and others that had heretofore been the province of the United States, the Soviet Union or Russia, and the European great powers (Great Britain, France, and Germany) are undermining many of the assumptions upon which this arms control architecture has been erected. These developments will likely drive changes in this architecture, including the extension, modification, and perhaps abandonment of some of these agreements.

5. Denmark could assume a leadership position in NATO's newly established Arms Control, Disarmament, and Non-Proliferation Committee (the ACDC), encouraging the Allies to look beyond the issue of how to negotiate reductions in short- and medium-range American and Russian nuclear weapons based in Europe, focusing instead on how Russia can be accommodated, either within or beyond the current arms control architecture, while addressing threats from the periphery that are more relevant to the Alliance.

Arms Control and Disarmament in a NATO Context

The NATO Context

It has been over twenty years since the end of the Cold War. The security agenda of NATO and its members has shifted considerably since 1990. The dissolution of the Warsaw Treaty Organization and the Soviet Union itself reduced the primary threat to the security of NATO's European members. The Alliance seized the opportunity to change its orientation and expand its purposes. It accommodated the reunification of Germany and further expanded its membership eastward to encompass all non-Soviet members of the Warsaw Pact and the three Baltic states that had been incorporated into the Soviet Union. It now provides a collective security architecture spanning most of Europe, with its processes and agreements promoting transparency, coordination, and cooperation for 28 member states. The Alliance also provides these countries with a platform for expeditionary operations to deal with security threats emanating from beyond the North Atlantic area.

The current security architecture builds upon that established to reduce the risk of war between the Warsaw Pact and NATO during the Cold War. Much of this architecture was erected around NATO force structure and doctrine, as the Alliance attempted to deter Soviet and Warsaw Pact aggression. This entailed devising strategies threatening to impose costs beyond the benefits that would be derived from conquest of western Europe through strategic nuclear retaliation by the United States, increasing the conventional capabilities of NATO forces to deny the benefits of such an offensive, supplementing them with short- and intermediate-range nuclear capabilities, or some combination of these.

But this security architecture was not one-sided. Soviet and Warsaw Pact policies provided unity in the Eastern bloc that stabilized the European security situation.[6] Soviet discipline over its allies reduced the risk of minor disputes erupting and escalating as they had in the past. Furthermore, Warsaw Pact military planning provided a coordinated system of action with which NATO's planning processes could interact. Overall, this simplified the ability to erect a structure of expectations, norms, agreements, and policies that could reduce the danger of members of either side initiating armed hostilities.[7]

The threat of war was also reduced through cooperative arrangements with the Soviet Union and Warsaw Pact. As "NATO's Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats," reminds us, "[a]n active policy of arms control, disarmament and non-proliferation has been an inseparable element of NATO's contribution to security and stability since the Harmel Report of 1967."[8] Agreements between the United States and the Soviet Union—and their allies—to control the spread of nuclear weapons and missile technology, limit and reduce the deployment of strategic nuclear weapons, eliminate classes of delivery vehicles, consolidate control over tactical nuclear devices, and to codify the deployment of conventional weaponry were pursued and achieved with this objective in mind.

The Nuclear Nonproliferation Treaty (NPT), the Missile Technology Control Regime (MTCR), the Strategic Arms Limitation Treaty (SALT), the Antiballistic Missile Treaty (ABM), the Intermediate-range Nuclear Forces Treaty (INF), the first and second Strategic Nuclear Reductions Treaties (START), the Presidential Nuclear Initiatives (PNIs), and the Conventional Forces in Europe Treaty (CFE) all enhanced the strategic stability between the superpower blocs, reduced the horizontal and vertical proliferation of destabilizing technologies, increased the transparency of military forces and force dispositions, and increased the response time available to national decision makers in the event of a crisis. These achievements permitted the peaceful end of the Cold War and provide the context for further addressing the security relationship between NATO nations and Russia. As Michael Mandelbaum has argued, "the post Cold War settlement now in place in Europe is a triumph of arms control."[9]

Although no longer occupying the center of the European security agenda, the scope and reach of this architecture has increased since the end of the Cold War. The remaining two states that possessed nuclear weapons prior to 1967 have joined the NPT, the United States and Russia reduced their nuclear arsenals by 75 percent under the Strategic Offensive Arms Treaty (SORT) and the New START Treaty, nuclear weapons on the territory of former Soviet Republics have been transferred to Russia, and the CFE Treaty has been adapted to account for the dissolution of the Warsaw Pact and the expansion of NATO.

The threat of direct conflict between NATO nations and Russia is remote—in part because of this substantial arms control architecture. Maintaining it in the face of further changes in the

international environment will occupy a significant portion of the European security agenda. The Alliance has recently undertaken a Deterrence and Defence Posture Review (DDPR) that defines the broad outlines of how it will approach this architecture.

The DDPR argues that "Arms control, disarmament and non-proliferation play *an important role* in the achievement of the Alliance's security objectives."[10] It therefore established arms control, disarmament, and non-proliferation as *ways to achieve security* rather than ends in themselves. It argued that "when successful, they have contributed to more secure, stable and predictable international relations at lower levels of military forces and armaments, through effective and verifiable arms control agreements, and in the case of disarmament, through the elimination or prohibition of whole categories of armaments."[11] Yet it laments that arms control, disarmament, and non-proliferation "have not yet fully achieved their objectives and the world continues to face proliferation crises, force concentration problems, and lack of transparency."[12]

To address those issues within the arms control, disarmament, and non-proliferation framework, NATO established the Arms Control, Disarmament, and Non-Proliferation Committee (the ACDC) on 8 February 2013.[13] Its primary task is to develop "transparency and confidence-building ideas with the Russian Federation in the NATO-Russia Council, with the goal of developing detailed proposals on and increasing mutual understanding of NATO's and Russia's non-strategic nuclear force postures in Europe."[14] Its mandate could also include other arms control, disarmament, and non-proliferation issues should the Allies agree. It ought to consider what arms control, disarmament, and non-proliferation have done for the security of the Alliance and what they could do in the future.

To set up that argument, the next section discusses the logic of arms control, disarmament, and non-proliferation and their role in national and international security so as to lay the conceptual framework for the following chapter that details the evolution and primary terms of these agreements, provides an update on their status, and discusses the prospects for the future.

The Logic and Role of Arms Control, Disarmament, and Non-Proliferation

A fundamental purpose of states is to protect their citizens from the predations of others, especially other states. This has been understood to mean their "physical survival, political survival, [and] survival of a standard of living."[15] States can pursue their security in a number of

ways, including reaching formal or informal agreements with others to regulate their relations. One key area where this has been attempted is in the control and limitation of military armament.

Arms control is often confused with *disarmament*, and both are confounded with *non-proliferation*. The three approaches to regulating armaments differ significantly in purpose. *Arms control* presumes that states will always have clashing and common interests and that agreements to regulate aspects of their military forces can reduce the probability that the parties will see the resort to arms as advantageous in settling any dispute.[16] In particular, arms control seeks to reduce dispositions, technologies, and tactics that increase the perception, as well as the probability, that offensive military action, in particular pre-emptive offensive action, will yield disproportionately beneficial outcomes. In general, arms control increases national and international security by reducing the probability of war. With strategic stability as its objective, "it could be an open question whether we ought to be negotiating with our enemies for more arms, less arms, different kinds of arms, or arrangements superimposed on existing armaments."[17] These "arrangements" could include increasing the transparency of the forces and activities of all parties through the passive or active exchange of information, remote or on-site monitoring, or regular or short-notice inspections. They could also include the control of technologies and practices that provide an advantage to initiating conflict and/or that reduce the time available for decision makers to act and react in crisis situations.

Disarmament, on the other hand, aims at achieving security by reducing the ability of the parties to inflict damage upon one another. As the NATO website makes clear, "Disarmament, often inaccurately used as a synonym for arms control, refers to the act of eliminating or abolishing weapons (particularly offensive arms) either unilaterally (in the hope that one's example will be followed) or reciprocally."[18] Its utopian variant designates efforts at arms regulation that seek to ultimately eliminate, "under controlled conditions, *all* weapons of war regarded by the contracting parties as capable of being used for other than internal security purposes."[19] Its "rationale … is that armaments have been the major cause of international instability and conflict, and only through reductions in the weaponry of all nations can the world achieve peace."[20] Less utopian variants of disarmament focus on limiting potential collateral damage when states do engage in war. This type of disarmament seeks to eliminate categories of weapons deemed too indiscriminant, destructive, or uncontrollable to be used or maintained by

modern, civilized militaries such as nuclear, chemical, and biological weapons, cluster munitions, and anti-personnel landmines.

Finally, *non-proliferation* represents an effort to regulate the distribution of military capabilities and their underlying technology by limiting them to those who already possess them. According to NATO, "non-proliferation refers to all efforts to prevent proliferation from occurring, or should it occur, to reverse it by any other means than the use of military force."[21] Its purpose is to "show potential proliferators the futility of pursing WMD as a viable threat against the Alliance by raising their expected costs while diminishing their expected gains."[22] As such, it can be seen as pre-emptive disarmament. Non-proliferation also reduces the probability of a great power war in Eurasia arising through catalytic processes.

These three ways of regulating armaments are not ends in and of themselves—they are merely means to be employed to achieve national and international security. They do so by reducing the probability that the parties will resort to arms to settle their differences and/or reduce the damage that they can do if they do resort to arms. The arms control, disarmament, and non-proliferation agreements discussed here apply these purposes to different sets of actors. Almost all states participate in the Nuclear Nonproliferation Treaty (NPT). Thirty-four states formally adhere to the Missile Technology Control Regime (MTCR) and numerous others adhere to it informally. Almost all European states, including Russia and other former Soviet republics, are signatories to the Conventional Forces in Europe (CFE) Treaty. The United States, Russia, and a handful of other countries have undertaken obligations under the Intermediate-Range Nuclear Forces Treaty (INF). Finally, only the United States and the nuclear-armed successor states to the Soviet Union (Russia, Ukraine, Belarus, and Kazakhstan) are covered in the cases of SALT, ABM, START, START II, SORT, New START, and the PNIs. The next chapter will consider each in turn.

Arms Control Agreements that Affect NATO

There are many aspects to the arms control and disarmament architecture that constrain the potential forces and activities of the states in the Euro-Atlantic region. All of these formal and informal agreements were conceived of in the Cold War to address certain issues that threatened to undermine the stability of the relations between the NATO countries and those of the Warsaw Pact—in particular, the United States and the Soviet Union. Many of these developments were actually spawned by the uncoordinated search for security and influence undertaken by these states—only after the dangers in these policies were realized were they subjected to efforts to dampen their effect.

Nuclear Nonproliferation Treaty (NPT)

Nuclear weapons were originally the monopoly of the United States. Developed in cooperation with the British and Canadians during the Second World War, atomic weapons proved to be extremely effective. In the aftermath of the war, the Allies agreed to prevent the spread of the technology through secrecy and control of the world's supply of uranium.[23] Even within this tripartite alliance, the United States succeeded in controlling access to information, technology, and materials. Prohibitions were given the force of law by the Atomic Energy Act of 1946, which was passed in ignorance of the wartime agreements made between the Allies.[24] This spurred the British and Canadians to begin their own independent atomic energy programs.

When the Soviet Union acquired the technology—and nuclear weapons—the Anglo–American approach to nuclear non-proliferation took two tracks: the controlled transfer of weapons and safeguarded sharing of technology. In the former, the United States attempted to off-set Soviet conventional superiority by integrating small, "tactical" nuclear weapons into European military forces under a "dual-key" arrangement.[25] Nuclear-capable delivery systems, such as artillery and fighter-bombers, were deployed by Allied militaries. In the event of a conflict, the president of the United States could delegate authority to release these weapons to the American Supreme Allied Commander Europe (SACEUR), who could then authorize releasing U.S.-controlled nuclear weapons to Allied commanders for use by their national forces.[26] Such nuclear sharing required the revision of the Atomic Energy Act in 1954.[27] Further revision in 1958 permitted the United States to transfer delivery systems, as well as permit cooperation in research and development, to Allies such as Britain that had already made "substantial progress in the

development of nuclear weapons."[28] This policy directly augmented NATO's nuclear capability. These policies were extended further by the promotion of the NATO "Multilateral Force" (MLF) that would have established a naval fleet of 25 vessels of various NATO members carrying Polaris A-3 nuclear missiles, manned by personnel from all of the Allied nations, and under the control of the Alliance.[29] Thus, the first approach to the proliferation of nuclear weapons was to promote it throughout the Alliance in the name of Western security.

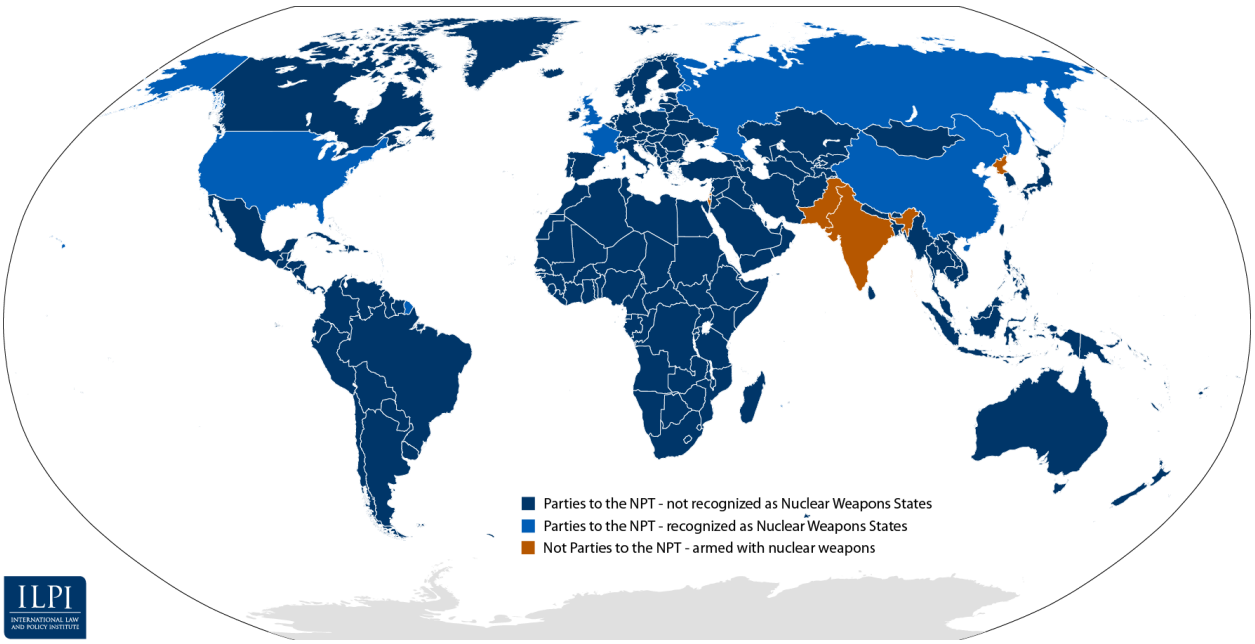
The second approach was to use the potential transfer of nuclear knowledge as a means of wooing states away from the Soviet orbit. Eisenhower proposed "Atoms for Peace," whereby states pledging to use nuclear technology for peaceful, civilian purposes and accept inspections by an International Atomic Energy Agency (IAEA) would receive technical assistance and nuclear material. In so doing, he was responding to two sets of pressures: the first was a desire on the part of the scientific establishment to share knowledge and enjoy the promise of harnessing the atom for electric power and economic development.[30] The second was that the Soviet Union—as well as other states, such as France, that had their own deposits of uranium and had managed to master some aspects of the nuclear fuel cycle—were willing to share and trade their knowledge without safeguards for political influence and commercial profit.[31] Eisenhower moved to use the American lead in this technology to limit such uncontrolled transfers between other states. "The fact that the United States was the only supplier of enriched uranium for these reactors give [sic] it an invaluable commercial as well as political advantage, and enabled it to require that reactors be used only for peaceful purposes, and be inspected first by Americans and then by the IAEA."[32] This policy accepted that the spread of knowledge and nuclear technology was inevitable and pragmatically attempted to control its use.

Strategic thought about nuclear deterrence, the importance of maintaining unity of command in the event of a conflict in Europe, and the 1962 Cuban missile crisis brought new urgency to efforts to establish strategic stability through arms control.[33] One key aspect was simplifying the problem of catalytic nuclear war by minimizing the number of states possessing nuclear weapons. The leadership of the United States and Soviet Union recognized this common interest and quickly negotiated the Limited Nuclear Test Ban Treaty, which banned atmospheric nuclear testing and thereby increased the capital investment necessary to test nuclear devices.[34] They then built upon the liberal institutional approach of the Atoms for Peace policy and negotiated

the Nuclear Nonproliferation Treaty (NPT) in 1968. The NPT distinguished between the five states that had developed nuclear weapons prior to 1 January 1967 and the rest of the world. Three of the five nuclear weapons states acceded to the Treaty and pledged to not assist any country's development of nuclear explosive devices.[35] Nonnuclear weapons states pledged to not use nuclear technology to develop explosive devices in exchange for "the right to participate in the fullest possible exchange of equipment, materials, and scientific and technical information for the peaceful use of atomic energy."[36]

The treaty entered into force in March 1970 when 40 states in addition to the United States, Soviet Union, and United Kingdom deposited their ratification. In the interim, 146 additional states have acceded to the NPT and Taiwan abides by it (but cannot accede to it because it is not recognized as a sovereign state) for a total of 190. Three states have never been party to the NPT—Israel, India, and Pakistan—and each is known or suspected to possess nuclear weapons.[37] North Korea acceded to the treaty in 1985 and withdrew in 2003—the only state to do so. Despite these four states that possess nuclear weapons and are outside of the NPT, the regime is generally judged to be quite successful given expectations regarding the incentives and opportunities for proliferation.[38] Still, dealing with states that are party to the treaty, receiving the benefits of nuclear cooperation, and yet suspected of either not adhering to their obligations or preparing to withdraw from the treaty so as to legally exercise their sovereign right to acquire any weapons they choose, pose significant challenges to the international community. The map in Figure 1 indicates the global coverage of the NPT regime.

Figure 1: Nuclear Nonproliferation Treaty Members[39]



The NPT is closer to being an arms control regime than a disarmament treaty. It is designed to reduce the probability of war by containing the horizontal proliferation of destabilizing technologies and increasing the transparency associated with such technology. By limiting the availability of nuclear weapons technology, the NPT reduces the number of states that can resort to nuclear armaments in a time of war, thereby lowering the potential number of nuclear conflicts in the interstate system. It also reduces the potential seriousness of regional conflicts, thereby suppressing the need and likelihood of armed superpower, great power, or international intervention to keep such conflicts from spiraling out of control—including the possibility that they could bring the other nuclear weapons states in direct conflict with one another to protect their allies, friends, and interests. The near-universal membership in the NPT regime enhances its legitimacy and therefore the likelihood of compliance among parties and nonparties alike.

On the other hand, the NPT is moving toward becoming a disarmament regime. The stand-off with Iran offers a case in point. The UN Security Council has repeatedly demanded that Iran cease all uranium enrichment activity, which is otherwise allowed under the terms of the NPT, and has imposed sanctions to compel Iranian compliance.[40] Scholars, analysts, and some policy

makers have proposed that non-nuclear weapons states refrain from establishing a national capability to enrich and reprocess nuclear fuel and rely instead upon members of the Nuclear Suppliers Group, including Denmark, to provide those materials and services as needed and under a strict accounting regime.[41] The International Atomic Energy Agency established a nuclear fuel bank in 2010 "to dissuade recipients from pursuing their own uranium-enrichment programs."[42] Furthermore, some have argued that non-nuclear weapons states that have already established such a capability place it under stricter international safeguards and that any new facilities should have multinational ownership.[43] Such an evolution is logical given the tensions inherent in the original structure and purposes of the regime.

Missile Technology Control Regime (MTCR)

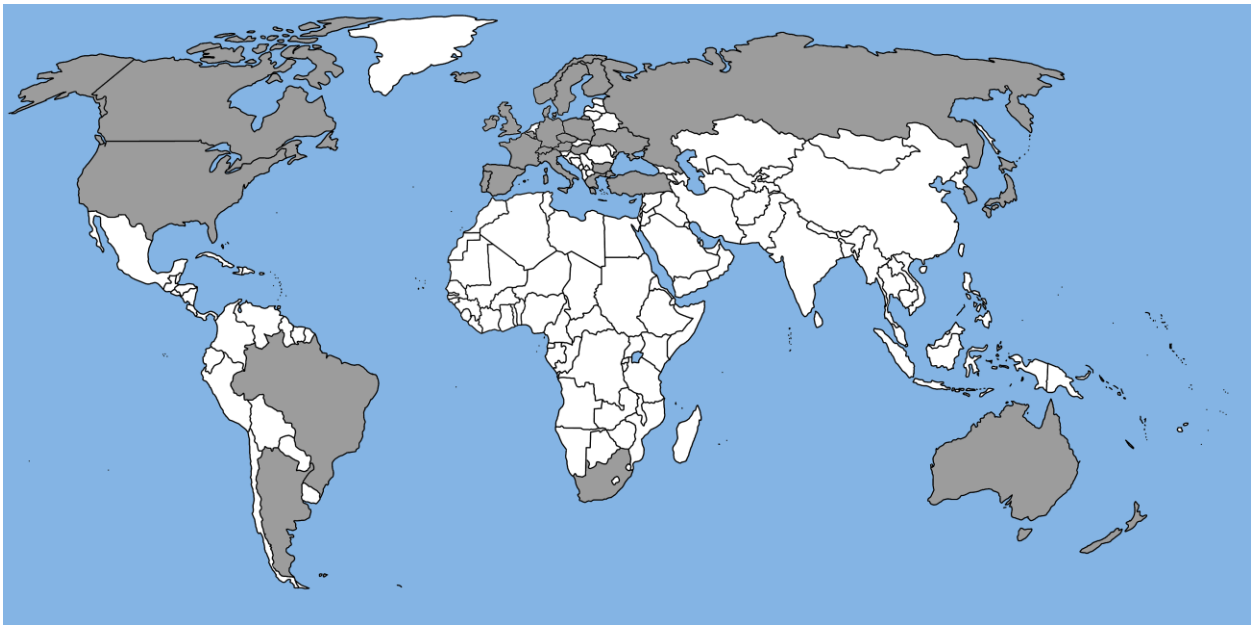
The control of missile technology has taken a similar path, with the United States and Soviet Union first spreading such weapons and technology to secure their allies and cement relationships before attempting to constrain such developments as the technology spread and the risks inherent in regional conflicts increased. The mastery of rocket science was originally the province of the United States, Great Britain, and the Soviet Union. The United States transferred missiles to NATO and other allies to increase their conventional military capabilities in the face of the larger conventional militaries of the Soviet Union and Warsaw Pact, the People's Republic of China, and North Korea. It also transferred technology and knowledge to these and other allies so that they could develop their own indigenous capabilities. In turn, the Soviet Union also transferred missiles to allies, albeit to those outside of Europe, such as Algeria and Egypt, in an attempt to bring these states into its orbit.[44]

Regional acquisition and development of indigenous ballistic missile capabilities, particularly in the Middle East in the late 1960s and early 1970s, proved troublesome to the ability of the superpowers to contain the conflicts in this region. Further developments in South Korea, India, Iraq, and Libya led the United States in 1982 to begin talks with its G-7 partners (Canada, France, Germany, Italy, Japan, and Great Britain) to contain the proliferation of missiles and missile technology.[45] Policy guidance for the Missile Technology Control Regime (MTCR) was released in April 1987. The G-7 countries agreed to "restrict their export of missiles and related technologies capable of carrying a 500-kilogram payload at least 300 kilometers or delivering any type of weapon of mass destruction."[46] These states developed a list of technologies subject

to the controls, including ballistic missiles, cruise missiles, space launch vehicles, sounding rockets, unmanned aerial vehicles, remotely piloted vehicles, drones, any system capable of delivering weapons of mass destruction (nuclear, biological, and chemical), and their underlying technologies.[47]

The informal and voluntary regime expanded quickly among Western nations, including most EU members (including Denmark).[48] Other key missile technology exporting countries were brought into the regime piecemeal, including South Africa, Brazil, Australia, New Zealand, South Korea, Turkey, and Ukraine. The Soviet Union was initially supportive of the regime yet reluctant to join. Russia joined the MTCR in 1995 as it integrated itself into Western institutions such as the G-7. The adherents now number 34.[49] Key states capable of exporting missile technology that remain outside of the regime yet have pledged to adhere to its strictures include Israel, China, India, Kazakhstan, Romania, and the Slovak Republic. Furthermore, Hong Kong, Singapore, Taiwan, and the United Arab Emirates have adopted export controls that encompass the MTCR list of prohibited technologies. The People's Republic of China has adopted this approach and is currently in discussions with MTCR members about joining the regime despite its history of supplying such technologies to many states and having sanctions imposed by the United States for recent MTCR violations.[50] The map in Figure 2 illustrates the MCTR Regime membership.

Figure 2: Members of the Missile Technology Control Regime[51]



There are mechanisms in place to enforce the regime's strictures even though the MTCR is informal and the decision to export technology resides with the member states. "U.S. law mandates that Washington sanction entities—individuals, companies, or governments (whether they are MTCR members or not)—exporting MTCR-controlled items to certain countries identified as proliferators or potential threats to U.S. security."[52] Beyond American sanctions, UN Security Council Resolution 1540 of 2004 deemed

> the proliferation of delivery systems for weapons of mass destruction (WMD) a "threat to international peace and security" warranting mandatory action; required all UN Member States to have controls on proliferation of delivery systems; and implicitly endorsed the MTCR Annex as a component of national control lists.[53]

The MTCR is thus a nonproliferation regime that compliments the NPT to reduce the probability of war and its potential destructiveness by denying destabilizing technology to states that have not yet acquired it. It increases transparency among the supplier nations, providing standards for the synchronization and cooperative application of nonproliferation policies, as well as a forum for consultation and the informal enforcement of the regime's norms.

Strategic Nuclear Arms Control (SALT, ABM, START, START II, SORT, and New START)

Although the United States and Soviet Union came to be troubled by the prospect that more states would develop nuclear weapons, the central strategic dilemma that they faced was precluding a war between themselves and their allies while still pursuing their conflicting interests.[54] The imbalance of conventional forces on the European continent, the American nuclear monopoly, and the distance of the United States from its European allies defined the possible scenarios for such a war.[55] The Western answer was extended nuclear deterrence, whereby the United States would alter Soviet incentives for undertaking aggression against Western European states by threatening nuclear retaliation.[56]

This Western strategy was challenged by the Soviet acquisition of nuclear weapons and the subsequent attack by Soviet protégé North Korea against South Korea. This demonstrated that war was possible when each superpower possessed the ability to retaliate in kind with nuclear weapons[57] and provided incentives for preventive or pre-emptive war.[58] Removing these

incentives became a core task of Western strategists, who realized that such an outcome required cooperation between the superpowers, whether implicit or explicit. In the absence of explicit cooperation, the most expedient means of achieving strategic stability was encouraging each state to undertake measures to ensure the survivability of their strategic nuclear forces—measures clearly in their self-interest. Achieving strategic stability between the United States and Soviet Union, whereby neither would escalate a crisis solely due to the reciprocal fear of a disarming surprise attack, became the primary objective of strategic nuclear arms control.[59]

ABM & SALT

Ensuring the survivability of nuclear arsenals required limiting technologies that would allow the United States or Soviet Union the ability to strike at the other's arsenals effectively *and* technologies that would defend against subsequent retaliation. The Strategic Arms Limitation Talks Interim Agreement (SALT) partially dealt with the former, while the Anti-Ballistic Missile Treaty (ABM) dealt with the latter.

SALT limited the number of nuclear launch vehicles that could be deployed by each side[60] and some characteristics of delivery vehicles, such as their maximum effective payload (throw weight).[61] These limited the potential to launch a disarming first strike through sheer weight of numbers, but it did not limit other destabilizing technologies, including MIRVs (multiple, independently-targetable re-entry vehicles) or weapons delivered by manned bomber aircraft. SALT also provided for a confidence-building inspection regime through national technical means (i.e., satellite imagery).

The ABM Treaty guaranteed that this offense-dominant regime of mutual retaliation would not be undermined by defensive weapons. The ABM Treaty was a companion to SALT. As such, it was signed only by the United States and the Soviet Union: no NATO or Warsaw Pact states possessed ballistic missile defense capabilities and therefore were not obligated to sign or abide by the treaty. It limited the number of anti-missile missiles that each state could deploy to 200 and the type of sites that these systems could protect: ICBM silo fields and the national capital. This would help ensure a survivable retaliatory force and the ability of national leaders to decide to launch a retaliatory strike in the event of war.

SALT to START

Subsequent agreements (the Vladivostok Accords and SALT II) further limited the arsenals of each side, although neither was ratified. Reductions began in 1991 with the signing of the Strategic Arms Reductions Treaty (START). START limited each side to 1,600 delivery vehicles and 6,000 re-entry vehicles (warheads)—roughly 5,000 fewer than they possessed. The agreement required the destruction of "excess" delivery vehicles, established counting rules for them, launch vehicles, and re-entry vehicles, required intrusive on-site verification, and the exchange of data to ensure compliance and to build confidence. With the dissolution of the Soviet Union, the constituent republics that had nuclear forces on their territory—Russia, Ukraine, Belarus, and Kazakhstan—were brought into the START regime and all but Russia were effectively denuclearized.

START increased strategic stability by increasing transparency and containing the effective increase in the number of states possessing nuclear weapons. The reciprocal cuts in strategic nuclear forces reduced the chance that the United States would obtain an inadvertent ability to disarm Russia in a surprise attack during a period in which superpower parity dissipated.[62] It set the stage for further reductions in numbers as well as in destabilizing technologies.

The START II treaty of January 1993 was the first between the United States and Russia. It required further reductions in strategic nuclear forces, with a flexible limit of 3,000–3,500 warheads. It banned the deployment of MIRVs on land-based ICBMs, which reduced the ability of either side to successfully launch a disarming strike while within the treaty's limits, and required the destruction of "excess" delivery vehicles. While START II was ratified by the parliaments of each and its limitations were considered to be binding for the next decade, it did not legally enter into force.

ABM Withdrawal

The United States and Russia signed memoranda of understanding (MOUs) that differentiated national missile defenses from regional or theater missile defenses in 1997.[63] The George W. Bush administration entered office intent on pursuing national missile defense and withdraw from the ABM treaty. It attempted to negotiate a mutual withdrawal from the treaty with Russia but was rebuffed.[64] The United States withdrew from the ABM Treaty in June 2002 and also

from the logic of mutual vulnerability as the basis for strategic stability in the relationship with Russia. In response, Russia announced that it would no longer be bound by its pledge to abide by the START II Treaty limits of MIRVs, potentially undermining strategic stability even further.[65] Although the American withdrawal was announced in December 2001, Russia nonetheless agreed to further strategic nuclear arms reductions in April 2002.

SORT to New START

The 2002 Strategic Offensive Reductions Treaty (SORT) pledged the United States and Russia to reduce their deployed strategic nuclear warheads to 1,700–2,200. SORT did not specify ceilings for different types of launch vehicles or delivery vehicles. Nor did SORT codify counting or accountability rules for the warheads permitted. The United States publicly announced that it would count warheads deployed operationally, but not those in storage, in reserve, or on weapons that were undergoing maintenance. Russia made no such unilateral declarations with regard to the forces that it considered accountable under the treaty. SORT relied on START's verification regime to monitor compliance.

This verification regime expired in December 2009. It was replaced when the New START treaty between the United States and Russia entered into force in February 2011. New START limited each country to 800 strategic nuclear delivery vehicles (ICBMs, SLBMs, and bomber aircraft), whether deployed or not, with a ceiling of 700 deployed. It also limited the number of deployed warheads to 1,550. It adopts most of START's verification regime, including on-site inspections, data exchanges, notifications of changes to the arms or their facilities, and national technical means.

These treaties and agreements that have constrained the strategic nuclear weapons of the United States and the Soviet Union/Russia have been central to establishing strategic stability in their bilateral relations. They have ensured that an offensive-dominant relationship has existed whereby neither side could have confidence in their ability to pre-emptively disarm the other. Such assured retaliatory capabilities served to dampen the potential for conflicts to escalate to where force would be used directly against the other. The limitations on ballistic missile defenses under the ABM Treaty ensured that this offense-dominant relationship would continue. The possibility that ballistic missile defenses could improve and be deployed in such numbers as

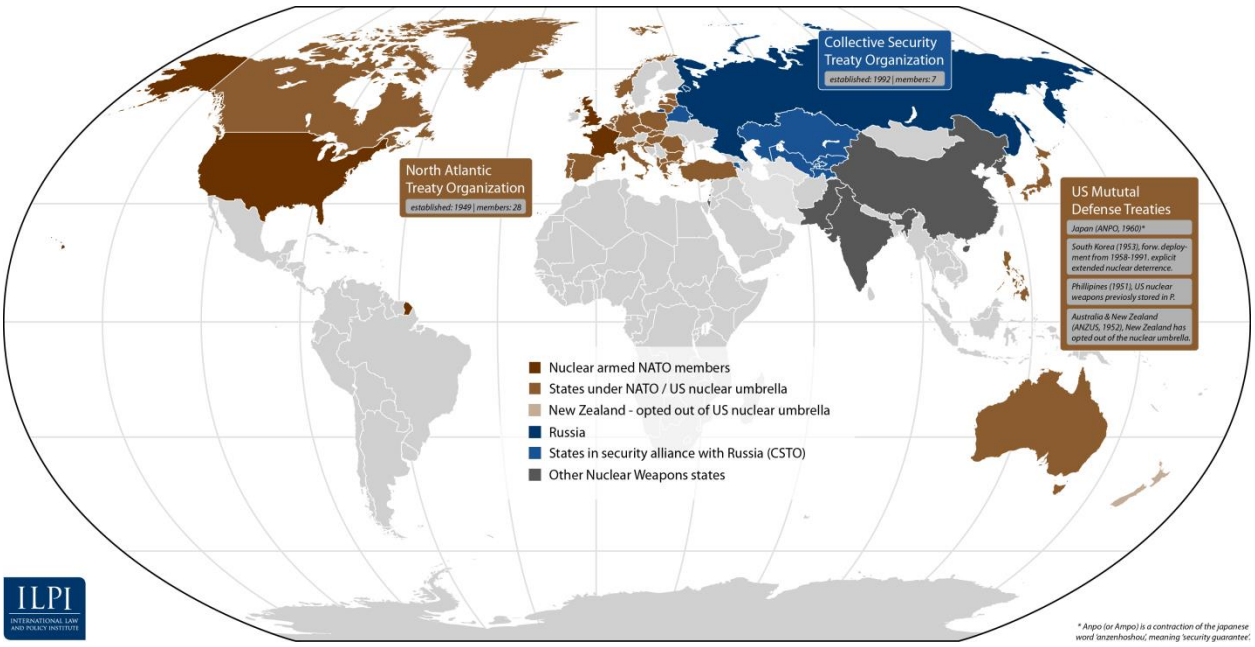
to endanger this offense-dominant situation remains remote, despite the stated fears of Russian and other officials.[66] These arms control agreements also enhanced stability through constraining technological developments that could have endangered the ability of one or the other side to retaliate effectively. They also provided substantial transparency and means of building confidence between Cold War rivals—so much so that these institutions served as models for building confidence and pursuing cooperation in other realms.

Theater Nuclear Forces

The central strategic dilemma of Western security throughout the Cold War was deterring potential Soviet aggression without provoking it. Given the imbalance of conventional forces on continental Europe in the early postwar period, the United States and its Allies relied upon nuclear weapons to remedy this situation asymmetrically: in the event of a Soviet invasion of its Allies, the United States would retaliate with its nuclear weapons.[67] Yet North Korean aggression in June 1950 demonstrated that deterrence extended across vast distances might not be effective. Therefore, the United States moved to increase its and its Allies' conventional military forces and to supplement them with nuclear weapons deployed in Europe, a tactic that appeared to have been effective in containing Soviet responses during the Berlin Airlift.[68]

Throughout the 1950s, the United States stationed thousands of nuclear weapons with short-to-medium-range delivery systems in Europe.[69] They were to bolster Allied capability in the event of a Soviet invasion, to reassure Allies of American commitment to their defense, to spread and share the risks of nuclear war within the Alliance, and to provide rungs in a ladder of escalatory steps that would allow NATO the ability to control the pace and scope of any conflict.[70] The Alliance established institutional mechanisms for sharing responsibility and authority over these weapons, such as the Nuclear Planning Group and "dual key" arrangements.[71] Figure 3 illustrates where and when the United States and Russia have undertaken commitments to use nuclear weapons on behalf of allies.

Figure 3: American and Russian Nuclear Umbrellas[72]



INF

Soviet improvements to their conventional military capabilities and deployment of their own short-to-medium-range nuclear weapons in the 1970s led NATO to increase the visibility of its theater nuclear capabilities.[73] These forces provided NATO with the capability to conduct deep strikes against Soviet and Warsaw Pact forces in the event of war[74] as well as additional rungs on the escalatory ladder that would delay the requirement for the United States to use its strategic nuclear forces.[75] The "Dual Track" decision to deploy additional American weapons while pursuing negotiations with the Soviet Union led to the Intermediate-range Nuclear Forces Treaty.[76]

The Intermediate-range Nuclear Forces (INF) Treaty of 1987 was a signal achievement—the first (and only) nuclear disarmament agreement reached. It was the first to eliminate an entire class of weapon. The Treaty removed 470 Soviet and 429 American intermediate–range missiles from Europe.[77] More important, it permitted five types of inspections carried out by 600 inspectors, monitors, and air-crew from each side, thereby providing a precedent and an institution for further confidence-building measures.[78] Indeed, all other European possessors of intermediate-range missiles agreed to comply with the INF Treaty and dismantle or destroy them, including

Belarus, Kazakhstan, Ukraine, Germany, Hungary, Poland, the Czech Republic, and Bulgaria.[79] Beyond that, its inspection regime provided the basis for what was later adopted in the START Treaty of 1991, thereby demonstrating how such confidence-building measures could reduce the mistrust between the superpowers.

Presidential Nuclear Initiatives

The reduction of mistrust was a key factor in the Presidential Nuclear Initiatives in 1991. As the Warsaw Pact disintegrated and unrest spread across the Soviet Union, the United States became concerned about the ability of the Kremlin to account for and maintain control over its vast nuclear arsenal, particularly the smaller, transportable weapons in the European theater. This was especially true given the August 1991 coup against Soviet President Mikhail Gorbachev, when it was unclear who controlled the Soviet weapons.[80] The matter was considered too urgent to pursue a formal treaty with mutual and balanced reductions that would necessarily involve NATO allies and domestic legislatures.[81] The United States decided to unilaterally remove and destroy all short-range ground-launched nuclear weapons based in Europe, remove short-range nuclear weapons from land-based naval aircraft, surface ships, and submarines, delay or cancel modernization plans for many short-range nuclear weapons, and to reduce NATO airborne nuclear weapons from 1,400 to 700.

While these initiatives were unconditionally unilateral, "the PNIs were designed as an offer Gorbachev would find difficult to refuse," and Bush offered specific suggestions for Soviet reciprocation.[82] The Soviet Union reciprocated with its own unilateral measures, including withdrawing and destroying land-based short-range nuclear munitions and placing short-range naval nuclear forces in centralized storage facilities. After the breakup of the Soviet Union, these were followed by Russian measures to halve the number of deployed airborne short-range nuclear weapons, halve its nuclear ground-to-air missile warheads, and to eliminate 1/3 of its sea-based short-range nuclear weapons.[83] These measures helped to reassure the international community that the Russian government was a responsible steward of its nuclear weapons and that it could maintain control over them.

Since these agreements, however, American and NATO conventional forces have become much more capable and oriented toward expeditionary—offensive—operations. Conversely, Russian conventional military forces have deteriorated significantly and Russia has lost its Warsaw Pact alliance partners.[84] To counteract this deterioration, Russia has chosen to rely upon its remaining tactical nuclear weapons. In many ways, Russian leaders believe that they face a situation similar to that of NATO in the 1950s—confronting "the policy of a number of leading foreign countries aimed at achieving overwhelming superiority in the military field."[85] Indeed, while "the Russian leadership sees its security very much as a function of the ability to neutralize an ever-present threat posed by the West,"[86] it is also an Asian power, bordering the People's Republic of China, which is further along in its military modernization plans than Russia.[87] With a GDP equal to that of France, Russia requires a great equalizer and, like NATO (and France) of the past, finds solace in its theater nuclear weapons.

Conventional Forces Europe

Fear of Invasion and Free Riders

Nuclear weapons dominated the security and arms control agenda of the Cold War because they were a solution to the central security problem in Europe: an imbalance of conventional military capability between potential foes. All else equal, when such an imbalance favors offensive operations, particularly the ability to quickly seize and hold territory, the likelihood that disputes will escalate to armed conflict rises.[88] During the Cold War, NATO countries believed that the conventional military balance favored the Soviet Union and its Warsaw Pact allies. Efforts to match those forces were undertaken, but the defense spending of most NATO states was inadequate relative to the task, and the consensual nature of the NATO alliance limited its ability to overcome the collective action problem.[89]

As American global commitments drained resources in areas outside of Europe in the 1960s, "*supporters* of NATO argued in the name of burden-sharing that if Europe did not do more, [the United States] should do less."[90] Many European members of NATO "were clearly counting on the deus ex machina of mutual force reductions with the Warsaw Pact" to resolve this dilemma.[91] NATO proposed negotiations with the Warsaw Pact nations in what came to be known as the Mutual and Balanced Force Reductions (MBFR) Talks. These served to forestall reductions in American commitments to European security and as a sop to European governments that wanted

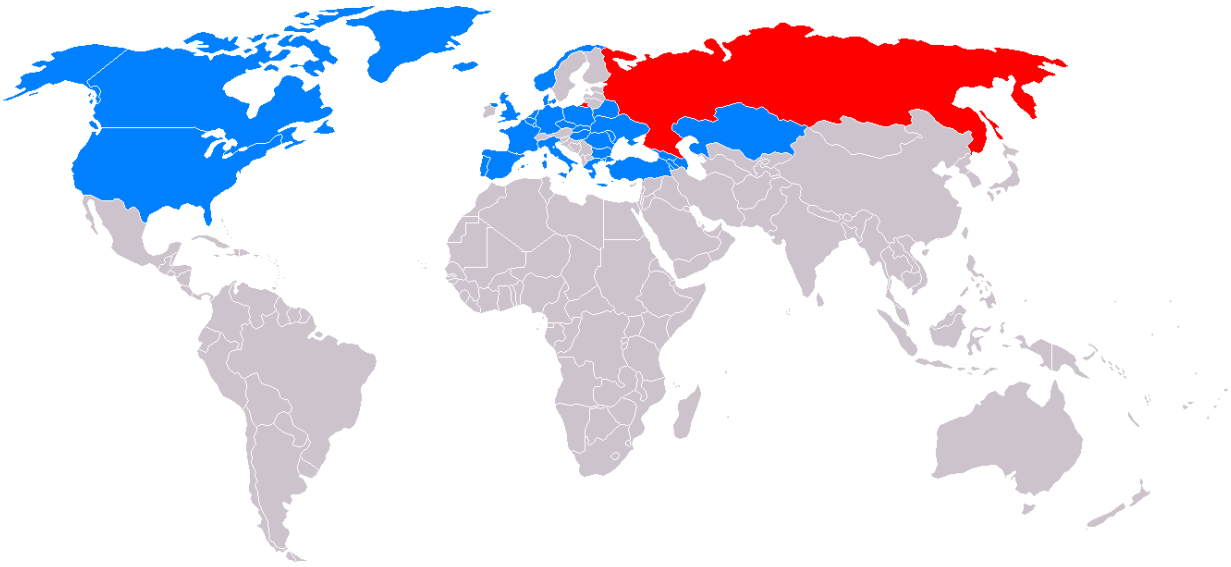
to pursue arms control in lieu of increased defense expenditures.[92] This salved some intra-Alliance disputes but, as Kissinger kindly put it,

> An alliance whose only means of preserving its strength was to offer to negotiate force reductions (with an enemy aware of enormous pressures in the direction of unilateral reductions) was not in its most creative phase, especially when its basic force structure was inadequate.[93]

MBFR to CFE

Unsurprisingly, MBFR talks did not progress until the end of the Cold War.[94] As the Soviet Union faced its own "enormous pressures in the direction of unilateral reductions," it seized upon the talks to legitimate these actions and pursue them within a mutual structure that also bound NATO countries.[95] Renamed the Conventional Armed Forces in Europe (CFE) Talks, all of the NATO and Warsaw Treaty Organization countries signed a treaty in November 1990. Figure 4 shows the European states that are signatories to the CFE Treaty.

Figure 4: Geographic Coverage of the Conventional Forces in Europe Treaty[96]



The CFE Treaty limited NATO and the Warsaw Pact to 20,000 tanks, 30,000 armored combat vehicles (ACVs), 20,000 heavy artillery pieces, 6,800 combat aircraft, and 2,000 attack helicopters within a concentric circle of geographic regions so as to establish parity.[97] "The

effect [was] to force large cuts in east European and especially Soviet forces, while leaving NATO's inventory relatively unconstrained."[98] In addition, the Treaty contained extensive monitoring and verification measures, including regular exchanges of data regarding the disposition of forces covered by the treaty, an unlimited number of inspections of the equipment subject to treaty limits, "an annual quota of inspections of its declared sites [and] a limited number of challenge inspections of undeclared sites … though the inspected party has the right to refuse access in some cases."[99]

The CFE treaty directly addressed the underlying security dilemma of the Cold War—the imbalance of conventional forces on the continent. By doing so, it decreased the likelihood that either side, but particularly the Soviet Union (or its successor states), could launch a *blitzkrieg*-style conventional operation to seize NATO territory. This enhanced the stability of the relationship and increased the transparency between the numerous European states involved.

From CFE to ACFE

Yet CFE's premise of two rival blocs collapsed even as the ink on the treaty dried. The dissolution of the Warsaw Pact and the accession of its non-Russian members into NATO forced the adaptation of the treaty.[100] A revised agreement was signed in 1999 that replaced the parity of the blocs and the zonal limitations on deployment with equipment ceilings for each signatory as well as limits on what other nations can deploy to their territory—with exceptions for exercises and temporary deployments.[101]

These changes did adapt the treaty to many of the realities of the post-Cold War era, but not all. Russia, Belarus, Kazakhstan, and Ukraine ratified the treaty regardless and Russia undertook additional political—but not legal—obligations to withdraw CFE accountable equipment from Moldova and Georgia.[102] NATO states conditioned their ratification of the adapted CFE Treaty on those withdrawals, but Russia did not meet those obligations. NATO then provided Russia an excuse for intransigence on these commitments by admitting the Baltic states and Slovenia into NATO, allowing these states to host NATO forces but remain outside of the CFE Treaty. They would be parties to the adapted CFE Treaty were it to be ratified by all parties, however.

Citing the decade-long delay in ratification of the adapted CFE Treaty, the lack of Baltic state inclusion, and the potential introduction of ballistic missile defense into NATO Europe, Russia

unilaterally "suspended" its participation in December 2007 by refraining from the required exchange of data, notification of force movements, and cooperation with requested and required inspections.[103] Despite efforts to negotiate a resolution after the "reset" of American–Russian relations, the United States announced in November 2011 that it would suspend CFE Treaty-related obligations toward Russia. The United States "will not accept Russian inspections of our bases under the CFE [Treaty], and we will also not provide Russia with the annual notifications and military data called for in the treaty."[104] The United States would "continue to implement the Treaty and carry out all obligations with all States Parties other than Russia," and promised to reciprocate full compliance if Russia reciprocated.[105] NATO countries followed suit.[106] At present, the CFE framework functions as a restraint and an additional transparency measure amongst NATO and Partnership for Peace countries that are party to its terms;[107] whether Russia will be brought back into the fold is an open question.[108]

Arms Control as Part of the Deterrence and Defense Posture Review

A Legacy Under Pressure from Within

As the previous chapter detailed, the United States and its NATO allies engaged with the Soviet Union and its allies to construct a complex, multilayered architecture of unilateral and multilateral security policies during the Cold War and thereafter. This architecture began with the unilateral and alliance-based support for increasing military capability in the name of security. The security dilemma that these policies exacerbated came to be recognized and the superpowers and their allies negotiated and coordinated measures to reduce the probability of conflict between them. These measures were designed to increase the stability of their relations by ensuring that neither side could launch a disarming nuclear strike or a *blitzkrieg*-style conventional attack by limiting some highly effective technologies, increasing the transparency of their military forces and force dispositions, increasing the response time available to national decision makers in the event of a crisis, and reducing the horizontal and vertical proliferation of destabilizing technologies to actors whose parochial conflicts could spread to include the superpowers.

This architecture helped maintain peace and stability "from the Atlantic to the Urals" as the Warsaw Pact disintegrated and the Soviet Union dissolved into its constituent republics. It provided the basis for allowing NATO to reorient itself into an alliance that undertakes expeditionary operations "out of area" without unnecessary worry that Russian weakness might cause it to lash out as might have happened in the past. Yet NATO must recognize that this architecture requires maintenance, that it must withstand the strain of Russian weakness, and sustain new pressures emanating from states on the periphery of the Euro-Atlantic region.

This security architecture faces significant strain, in part because the problem that it was designed to solve—Soviet-Warsaw Pact aggression—has largely disappeared. Today, Russian weakness—in absolute terms but especially relative to an expanded NATO—is the problem. For the Cold War architecture to be as effective as it has been in maintaining confidence in the strategic stability of this dyadic relationship would require NATO nations to reduce and constrain their capabilities significantly. It is unrealistic to expect that NATO nations should peg their collective defense spending to that of Russia, whose defense budget amounts to 6.9 percent

of that of the Alliance.[109] This is particularly the case since NATO has evolved to undertake crisis management and cooperative security as core tasks alongside collective defense.[110] Yet the Russian position on many aspects of the arms control-security architecture in Europe—CFE, theater nuclear weapons, and ballistic missile defenses in particular—are predicated on just such an equivalency. Until Russian leaders can "conceive of their security in terms other than those of an adversarial relationship with the United States and NATO … where both sides are locked into the Cold War relationship of mutually assured destruction at the global and regional level," tensions on this architecture will continue.[111]

Such a shift in perception will likely require generational change in Russia's leadership. Until such a time, NATO policy makers will have to bear the burden of maintaining this architecture where appropriate and adapting it to new circumstances—including discarding portions of it when they become counterproductive. In this regard, it will be important to bear in mind that arms control is not an end in itself; nor is the maintenance of these regimes. Rather, they are means to increase the national security of NATO members and stabilize the international environment within which NATO exists.

NATO's Response: The Deterrence and Defense Posture Review

It appears as though NATO has responded to these pressures appropriately: it has opted to bring its house in order and lay a holistic groundwork for maintaining the security of its members within this architecture despite Russia's weakness. At the May 2012 NATO Summit, the Alliance released its Deterrence and Defence Posture Review (DDPR). This document sets the framework for the Alliance's approach to this arms control architecture and the security challenges it is meant to address. The DDPR affirmed that "NATO will ensure that it maintains the full range of capabilities necessary to deter and defend against any threat to the safety and security of our populations, wherever it should arise."[112] It reaffirmed the Alliance's long-standing position that "nuclear weapons are a core component of NATO's overall capabilities for deterrence and defence alongside conventional and missile defence forces."[113] It also acknowledged that "Arms control, disarmament and non-proliferation play *an important role* in the achievement of the Alliance's security objectives."[114] As such, the DDPR is a rather unremarkable document, well-grounded in the theories of deterrence that guided NATO policies throughout the Cold War.

On the other hand, it is a rather remarkable document. NATO had difficulty achieving consensus on these issues during the Cold War when the security threat posed by the Soviet Union was fairly clear. The more benign security environment of the post-Cold War era allowed the Alliance to defer addressing these differences of opinion. Yet NATO's expansion eastward brought in Alliance members that did not entirely share a benign view of Russian intentions or capability. These members have consistently conceived of the Alliance in terms of its original purpose: territorial security. They have warily viewed the reduction in Alliance conventional capability, its recent orientation toward expeditionary operations, and the agreement reached in the 1997 Founding Act with Russia to not store American nuclear weapons on the territory of new members.[115] On the other side, members such as Germany, the Netherlands, and Belgium had long been wary of NATO's concepts for using nuclear weapons—especially the nonstrategic nuclear weapons reportedly housed on their territory that would be delivered by their own dual-capable tactical fighter-bomber aircraft.[116] They perceived the Obama administration's policy to reduce reliance on nuclear weapons, as expressed in his speech in Prague in April 2009[117] and in the Nuclear Posture Review of 2010,[118] as an opportunity to press for the removal of American nuclear weapons from their soil.[119] Thus, a potentially divisive debate was to be joined and could have resulted in calamity, consensus, or continued avoidance.

But with the DDPR, "NATO now has a consensus on the role of nuclear weapons in the twenty-first century."[120] It reaffirmed that NATO is a nuclear alliance. This effectively accepts the reality posited by President Obama that the goal of nuclear abolition "will not be reached quickly—perhaps not in my lifetime"[121] and diffused the momentum for removing American nuclear weapons from Allied territory.[122] The DDPR also echoed Obama's caveat that "[a]s long as these weapons exist, the United States will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee that defense to our allies."[123]

Furthermore, paragraph 11 of the DDPR states that

> While seeking to create the conditions and considering options for further reductions of non-strategic nuclear weapons assigned to NATO, Allies concerned will ensure that all components of NATO's nuclear deterrent remain safe, secure, and effective for as long as NATO remains a nuclear alliance.

This effectively pledged all 28 Alliance members to modernize their nuclear weapons and/or delivery capabilities. For the United States, this means the modernization of the B-61 gravity bombs deployed in Europe. For European member states that are members of the Nuclear Planning Group (i.e., all but France), they have in effect agreed to maintain or recapitalize their capabilities that support this posture, including their dual-capable aircraft. This is a very important implication of the DDPR. There are several NATO members that possess fighter-bomber aircraft capable of delivering nuclear ordinance, including Italy and Turkey, as well as Germany, the Netherlands, and Belgium—who pushed for the removal of weapons from their territory.[124] These aircraft are nearing the end of their useful service life and will have to be replaced. This decision would provide these member states the opportunity to withdraw from the nuclear mission and request that the United States concomitantly withdraw its nuclear weapons from their territory—as occurred with Greece in 2001.[125] But commitments implied by the DDPR suggest that these states will purchase dual-capable aircraft when the time comes or face the embarrassment of reversing themselves.[126] As Kamp argues, the DDPR has created "a reality from which no NATO government can quickly distance itself."[127]

In addition, the DDPR states that "Allies agree that the NAC [North Atlantic Council] will task the appropriate committees to develop concepts for how to ensure the broadest possible participation of Allies concerned in their nuclear sharing arrangements."[128] The DDPR notes that "Allies concerned in their nuclear sharing arrangements" means all members of the Nuclear Planning Group, which includes all Allies but France.[129] This could mean that NATO may reconsider the pledge to not base nuclear weapons on the territory of new Alliance members. It could also mean that future adaptations of NATO's nuclear deterrent posture to encourage more nonnuclear allies to accept some operational responsibility for the nuclear mission may involve them in a pooling and sharing arrangement. Such "Smart Deterrent" moves would surely roil the Alliance, as indicated by many participants in the 29 October 2012 seminar hosted by the Centre for Military Studies.

This point is particularly important for Denmark. Denmark currently possesses 48 F-16 A/B aircraft that have been upgraded to the MLU (Mid-Life Update) standard.[130] These planes were purchased in conjunction with those of Norway, Belgium, and the Netherlands—the latter two who use their F-16s in a dual-capable role.[131] Such aircraft are technically capable of carrying

the U.S. B-61 nuclear gravity bomb. Such missions also require extensive training,[132] however, and, to our knowledge, Danish pilots have not participated in such training. Nor have they participated with other nonnuclear NATO countries in exercises of nuclear mission-related procedures through the Support of Nuclear Operations by Conventional Air Tactics (SNOWCAT) program.[133] The F-35 has been designated as the dual-capable successor to the F-16. Therefore, it should be noted that Denmark will face a decision akin to Germany, Belgium, and the Netherlands as it considers how to recapitalize its tactical aircraft fleet: should it purchase a dual-capable aircraft, refrain from purchasing it, or maintain the current effective policy of purchasing a version that could be utilized as a dual-capable aircraft if its pilots were appropriately trained?

Finally, the DDPR formalized the consensus that "Missile defence will become an integral part of the Alliance's overall defence posture."[134] Indeed,

> In Lisbon, Allies agreed on a missile defence capability that provides full coverage and protection for all NATO European populations, territory and forces, against the threat posed by the proliferation of ballistic missiles, based on the principles of the indivisibility of Allied security and NATO solidarity, equitable sharing of risks and burdens, as well as reasonable challenge, taking into account the level of threat, affordability, and technical feasibility, and in accordance with the latest common threat assessments agreed by the Alliance.[135]

"The equitable sharing of risks and burdens" suggests that participation could expand beyond the commitments of Turkey, Romania, Poland, Spain, and the Netherlands to host components of the system.[136]

In this vein, it is important to note that the ABM Treaty is defunct. When the United States withdrew from the treaty in 2002, its remaining signatory was Russia. Russian concerns with regard to ballistic missile defense in Europe are not based upon legal commitments. Rather, they are prudential concerns that such defenses could become capable of intercepting Russian ICBMs early in their boost phase. As Russian Deputy Prime Minister Dmitry Rogozin explained,

> There are no guarantees that after the first, second, and third phases are completed, there will be no fourth, fifth, and sixth. Do you really think that they will halt all their

> technologies after 2020? That's nonsense! They will go ahead with developing and boosting the technical parameters of their interceptor missiles and performance capabilities of their warning systems.[137]

Russian President Dmitry Medvedev noted that Russia sought a guarantee "on paper in the form of clear legal obligations" that the missile defense system would not be capable of intercepting Russian ICBMs.[138]

The Russian position is entirely consistent with the logic of arms control in that it seeks to constrain potentially destabilizing technological developments so as to preserve the offense-dominant relationship of strategic stability between the United States and Russia, particularly as the number of weapons in their arsenals declines under New START and beyond. It is entirely consistent with the arms control architecture that Russia, the United States, and the other Euro-Atlantic countries have erected over the past 50 years. On the other hand, it is not necessarily consistent with the security of NATO countries. As advanced missile and nuclear technology spreads to states outside of the Euro-Atlantic area, such as Iran, the Alliance will have to follow Russia's path and weigh the costs and benefits of adapting or abandoning aspects of this architecture.

A Legacy Under Pressure From Without

In fact, failing to adapt this dyadic approach to international security in a more dynamic environment will have other costs to the security of NATO—and Russia as well. For even as NATO determines the relationship between nuclear weapons, conventional weapons, ballistic missile defense, and the extant arms control, disarmament, and non-proliferation architecture, pressures from outside of the Euro-Atlantic region will figure more prominently. As such, the degree of success enjoyed by the NPT and MTCR will directly affect the desirability of maintaining this institutional structure. Indeed, as the discussion of ballistic missile defense makes clear, these concerns are already straining this architecture.

Ballistic missile technology has proliferated to countries other than those in Europe. Currently, China, India, and Pakistan have ballistic missiles with ranges between 3,000 and 5,500 kilometers.[139] Other nations, such as North Korea, Iran, and Israel, are acquiring intermediate-range ballistic missiles. It can be argued that these states ought to be brought into the INF

regime or the treaty ought to be scrapped so that its parties would not be at a disadvantage. Recent actions by Russia and the United States indicate that the latter might eventually be considered. "Russia has raised the possibility of withdrawing from the INF Treaty. Moscow contends that the treaty unfairly prevents it from possessing weapons that its neighbors, such as China, are developing and fielding."[140] Indeed, some American force planning is proceeding as if the INF Treaty is not a constraint. The U.S. Navy is considering an "an intermediate-range ballistic missile, possibly featuring a front end that could maneuver into its target in the final stage of flight" that would be carried on modified Virginia-class submarines as part of the Prompt Global Strike program.[141] If the MTCR and NPT regimes cannot be strengthened and proliferators brought to heel, the arms control architecture valued by many NATO leaders could unravel.

Likewise, the spread of nuclear technology and nuclear weaponry may limit the desirability of further American and Russian reductions in strategic nuclear arms. Although the Obama Administration has moved to reduce American reliance on nuclear weapons[142] and there is significant discussion amongst experts in the United States that a finite deterrence posture is possible,[143] deep cuts will bring American and Russian arsenals close to Chinese, French, and British numbers—as well as those of India, Pakistan, and Israel.[144]

As unfriendly governments in states bordering the Euro-Atlantic area acquire missile and nuclear capabilities that used to be the province of great powers and superpowers, pressure on NATO countries and Russia to improve their ability to undertake offensive operations, defend against such threats through ballistic missile defenses, and perhaps deter them through threats to retaliate with nuclear weapons will only grow. Reactions to these external developments will demonstrate the geographic and strategic limits of the arms control and security architecture that has secured the peace in Europe for the past generation. A key challenge facing NATO and Russia will be to creatively adapt this valuable architecture so as to address many of these new problems while recognizing that the strain that is placed on this legacy is well worth bearing, even now that the shoe is on the other foot.

Conclusions

It is perhaps a cliché to say that NATO has turned a corner in its long evolution from a collective defense organization designed to keep the Americans in, the Russians out, and the Germans down. The Alliance has indeed transformed itself into an organization that is equally capable of collective defense, crisis management, and cooperative security beyond the territory of its member states. Yet the ability of the Alliance to pursue more than collective defense rests upon a security architecture erected during the Cold War, one that channeled unilateral and bloc efforts to ensure security into coordinated and even cooperative efforts to stabilize the relationship between adversaries.

The security problem during the Cold War was the possibility that the Soviet Union might undertake a preventive or pre-emptive campaign against the strategic nuclear capability of the United States and its nuclear allies or that it might launch a *blitzkrieg*-style land offensive to seize territory in Western Europe. It has been argued that the Soviets had similar concerns.[145] The United States and its allies and the Soviet Union and its allies pursued policies to secure themselves that they eventually came to perceive as increasing the probability of war between them. The solution to that problem was erecting a series of interlocking arms control agreements that reduced the ability of either side to launch a successful, pre-emptive surprise attack by limiting the deployment of destabilizing technologies, capping the number of forces available, and increasing transparency and communication between adversaries. Thus the first take-away from this analysis is:

Take-away #1

NATO's military posture and strategy is embedded in a multi-layered and integrated arms control architecture where decisions with regard to nuclear weapons, conventional weapons, missile defense, arms control agreements, and disarmament interact with one another.

This arms control architecture is composed of a series of interlocking and layered agreements that were cobbled together in piecemeal fashion, that are not comprehensive in either approach

or coverage, nor do they necessarily complement one another directly. These regimes, agreements, and treaties, their primary concerns, and their parties are indicated in Table 1.

Table 1: The Euro-Atlantic Arms Control Architecture

Regime, Agreement, or Treaty	Focus	Rationale	Parties
Nuclear Nonproliferation Treaty	- Containing proliferation of nuclear weapons to states other than possessors as of January 1967 - Facilitates transfer of nuclear technology in exchange for pledge to non-nuclear weapons status	- Reduce number of states possessing weapons whose use would likely require superpower intervention, thereby increasing the chances of war between them	All UN member states save Israel, Pakistan, India, and North Korea
Missile Technology Control Regime	- Containing proliferation of ballistic missiles and associated technologies	- Reduce number of states possessing weapons whose use would likely require superpower intervention, thereby increasing the chances of war between them	Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, Russia, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States
SALT, START, START II, SORT, New START	- Limit and reduce long-range nuclear delivery systems (ICBMs, SLBMs, bombers) and warheads	- Ensure the ability of both parties to retaliate even after absorbing a first strike by limiting ways in which a counterforce capability can be obtained (numbers, technology)	United States, Soviet Union (Russia, Belarus, Ukraine, Kazakhstan)

Anti-Ballistic Missile Treaty	- Limit national ballistic missile defense capability	- Ensure the ability of both parties to retaliate even after absorbing a first strike by limiting ability of defenses to reduce effective retaliation	United States (withdrew 2002), Soviet Union (Russia)
Intermediate-range nuclear Forces Treaty	- Eliminated class of ballistic missiles	- Confidence-building disarmament measure	United States, Soviet Union (Russia), Belarus, Kazakhstan, Ukraine, Germany, Hungary, Poland, Czech Republic, Slovakia, and Bulgaria
Presidential Nuclear Initiatives	- Reciprocated withdrawal of variety of short-range nuclear weapons from European theater	- Reduce potential for loss of control over numerous and portable nuclear devices in time of political instability - Confidence-building measure	United States, Soviet Union (Russia)
Conventional Forces in Europe Treaty	- Reduce categories of conventional weapons - Constrain geographic deployment of conventional forces on territory of host states	- Reduce capability for rapid offensive land operations - Build confidence through transparency	Armenia, Azerbaijan, Belarus, Belgium, Bulgaria, Canada, Czech Republic, Denmark, France, Georgia, Germany, Greece, Hungary, Iceland, Italy, Kazakhstan, Luxembourg, Moldova, the Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Spain, Turkey, Ukraine, the United Kingdom, and the United States

As can be seen, the parties to these agreements are not the same. Different subsets of actors have undertaken different types of obligations within this architecture. This can pose some difficulties for reconciling and harmonizing approaches toward these agreements. Beyond that, this security architecture blends the objectives of arms control, disarmament, and non-proliferation. These concepts imply different ways of achieving security through the regulation of armaments. Arms control seeks to manage the types, numbers, and capabilities of weapons systems so as to limit the incentives for resorting to arms. Disarmament seeks to reduce the numbers and types of weapons available to the relevant parties beyond those necessary for domestic security under controlled conditions. And non-proliferation seeks to prevent countries from acquiring certain

classes of weaponry and/or the underlying technology. Thus, the second take-away from this analysis is:

Take-away #2

Arms control, disarmament, and non-proliferation regulate armaments in different ways and the pursuit of one may undermine as well as compliment the pursuit of the others.

This architecture served the Alliance well and made a peaceful conclusion to the Cold War possible together with NATO's reorientation toward crisis management and cooperative security beyond its borders. This success allowed the Alliance to manage the strains on the architecture emanating from within the Euro-Atlantic region for two decades. Yet this security architecture faces significant pressure in part because the problem that it was designed to solve—Soviet-Warsaw Pact aggression—has largely disappeared. Relative Russian weakness and NATO's reorientation toward security concerns outside of its original area of concern are stressing these regimes.

NATO began responding to these pressures with its Deterrence and Defence Posture Review of May 2012. With it, the Atlantic Alliance has accepted that it is and will remain a nuclear alliance in the twenty-first century. It therefore resolved a long-standing area of dispute between key NATO allies—whether short-range nuclear weapons retain a key role in Alliance strategy—for the time being. Indeed, the DDPR appears to go farther, committing Alliance member states to modernize their contributions to the nuclear mission, in particular dual-capable aircraft, and to further share responsibility for nuclear deterrence by increasing the reach of NATO's pooling and sharing. This is perhaps a bridge too far and it is possible that the implications of the DDPR have not yet become clear to the governments that signed on to it—i.e., all of NATO. The potential for this newfound consensus to unravel exists as many NATO allies—including Denmark—will face procurement decisions that will either support or undermine it. Thus, the third take-away from this analysis is:

Take-away #3

Demark, like other NATO members, has committed itself to increasing its share of responsibility for NATO's nuclear mission. It will face procurement decisions that could affect NATO strategy and the arms control architecture of the Euro-Atlantic region. In particular, its procurement of tactical fighter aircraft (to be decided in the summer of 2015) will allow it to opt in, opt out, or remain uncommitted to bearing some of the burden and responsibility of participating in NATO's nuclear strategy.

But these changes are still oriented toward the old problem of ensuring security within the Euro-Atlantic region from threats emanating from within. As NATO has gone out of area to deal with threats to its larger interests, out of area problems are impinging upon the Euro-Atlantic security architecture. The proliferation of nuclear weapons and ballistic missile technology to states along the periphery threatens to strain the architecture from without. This periphery includes not only North Africa and the Middle East, but extends to the Far East since changes in the capabilities of American allies, such as Japan, and other states, such as the People's Republic of China, will affect Russian calculations that will, in turn, concern the European theater. As NATO and Russia adjust their policies, forces, and doctrines to deal with these new actors, the arms control regimes binding these parties together must likewise be adjusted. This is a problem that is only beginning to be realized within the capitals of the Alliance. Indeed, the fourth take-away from this analysis is:

Take-away #4

The arms control architecture constraining many aspects of the Euro-Atlantic security environment is under pressure from rising powers on its periphery. The acquisition of weapons systems by the PRC, North Korea, India, Pakistan, Iran, and others that had heretofore been the province of the United States, the Soviet Union, or Russia, and the European great powers (Great Britain, France, and Germany) is undermining many of the assumptions upon which this arms control architecture has been erected.

On 8 February 2013, NATO established a new "Special Advisory and Consultative Arms Control, Disarmament, and Non-Proliferation Committee" (the ACDC) as called for in the DDPR.[146] Its primary task is to develop "transparency and confidence-building ideas with the Russian Federation in the NATO-Russia Council, with the goal of developing detailed proposals on and increasing mutual understanding of NATO's and Russia's non-strategic nuclear force postures in Europe."[147] Its mandate could also include other arms control, disarmament, and non-proliferation issues if the Allies agree. It should. But its ambit should not be limited to dealing with issues originating from NATO-Russian relations.

The ACDC ought to consider how the architecture of agreements and understandings that regulate Euro-Atlantic security can address and potentially accommodate pressures from the periphery—including whether certain agreements are no longer useful. The United States withdrew from the ABM Treaty in 2002 because it believed that this bilateral constraint prevented it from defending against emerging threats from the PRC and North Korea. More recently, Russia's Deputy Defense Minister, Anatoly Antonov, argued that

> In the current military-political environment there is no need to keep unchanged the tools of control over arms and disarmament that was formed in the times of the Cold War and based on the concept of military confrontation between two political systems.[148]

"He also said that more and more nations were coming to the conclusion that the Treaty on Conventional Weapons in Europe (CFE) has fully depleted itself and is practically dead."[149] When the ACDC takes its counsel to the NATO-Russia Council it should have thought through many of these implications, if not reached a comprehensive answer or position.

Take-away #5

Denmark could take a leadership position in the ACDC, encouraging the Allies to look beyond the issue of how to negotiate short- and medium-range American and Russian nuclear weapons based in Europe and instead focus on how threats from the periphery that are more relevant to the Alliance and Russia can be accommodated, either within or beyond the current arms control architecture.

Notes

[1] Eugene V. Rostow, "A Practical Program for Peace: The Twentieth Anniversary of the Harmel Report," *Atlantic Community Quarterly* 25 (1987); Frédéric Bozo, "Détente versus Alliance: France, the United States and the Politics of the Harmel Report (1964–1968)," *Contemporary European History* 7, 3 (November 1998); Ronald D. Asmus, "Rebuilding the Atlantic Alliance," *Foreign Affairs* 82, 5 (September/October 2003).

[2] http://cms.polsci.ku.dk/english/performance_contract/Production___servicecontract_for_2012.pdf/

[3] The Centre for Military Studies project manual stipulates a set of quality control procedures for projects that are part of the research-based government services offered by the Centre. This report has been carried out by the Centre for Military Studies in accordance with the contract between the University of Copenhagen on behalf of the parties to the Danish Defence Agreement 2009–2014. For more information about the Centre, the quality control procedures, and the contract, see the Centre's homepage at http://www.cms.polsci.ku.dk.

[4] James W. Forsyth, Jr., B. Chance Saltzman, and Gary Schaub, Jr., "Remembrance of Things Past: The Enduring Value of Nuclear Weapons," *Strategic Studies Quarterly* 4, 1 (Spring 2010); James W. Forsyth, Jr., B. Chance Saltzman, and Gary Schaub, Jr., "Minimum Deterrence and Its Critics," *Strategic Studies Quarterly* 4, 4 (Winter 2010); Joseph I. Coffey and Gary Schaub, Jr., "Extended Deterrence After the Cold War," paper presented at the 36th Annual Conference of the International Studies Association, Chicago, Illinois, February 21–25, 1995; Gary Schaub, Jr., "Nuclear Weapons and the New European Security Architecture," paper presented at the Joint Annual Meeting of the Northeastern Political Science Association and the International Studies Association–North East, Newark, New Jersey, November 10–12, 1993; Gary Schaub, Jr., "Back to the Future … Again: Perpetuating Stability in Post-Cold War Europe," paper presented at the Joint Annual Meeting of the International Studies Association (South) and the International Security Studies Section of the ISA, Maxwell Air Force Base, Montgomery, Alabama, October 15–17, 1993; Gary Schaub, Jr., "START and Strategic Stability," paper presented at the 33rd Annual Convention of the International Studies Association, Atlanta, Georgia, April 1992; and Joseph I. Coffey with Gary Schaub, Jr., Deep Cuts and Extended Deterrence: START and the Implications for NATO, prepared for the United States Institute of Peace (Washington: U.S. Institute of Peace, 1992).

[5] Gary Schaub, Jr., "Détente," in The Encyclopedia of Political Science, Volume 2 (Washington: CQ Press, 2011).

[6] Hedley Bull, The Anarchical Society: A Study of Order in World Politics (London: Macmillan, 1977), pages 207–212; Daniel N. Nelson, editor, Soviet Allies: The Warsaw Pact and the Issue of Reliability (Boulder: Westview, 1984).

[7] John Lewis Gaddis, "The Long Peace: Elements of Stability in the Postwar International System," *International Security* 10, 4 (Spring 1986); John J. Mearsheimer, "Back to the Future: Instability in Europe After the Cold War," *International Security* 15, 1 (Summer 1990).

[8] NATO, "NATO's Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats," (Brussels: NATO, 1 September 2009), paragraph 5, available at http://www.nato.int/cps/en/natolive/official_texts_57218.htm, accessed 23 July 2013.

[9] Michael Mandelbaum, "The Post-Cold War Settlement in Europe: A Triumph of Arms Control," *Arms Control Today* 27, 1 (March 1997).

[10] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012. *Emphasis* in original.

[11] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[12] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[13] Daryl G. Kimball, "NATO Agrees on New Arms Control Body," *Arms Control Now* (26 February 2013), available at http://armscontrolnow.org/2013/02/26/nato-agrees-on-new-arms-control-body/

[14] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[15] Donald G. Brennan, "Setting and Goals of Arms Control," in Donald G. Brennan, editor, Arms Control, Disarmament, and National Security (New York: George Braziller, 1961), page 20.

[16] Thomas C. Shelling and Morton Halperin, Strategy and Arms Control (New York: Twentieth Century Fund, 1961), page 1.

[17] Thomas C. Schelling, "Reciprocal Measures For Arms Stabilization," in Donald G. Brennan, editor, Arms Control, Disarmament, and National Security (New York: George Braziller, 1961), pages 168–169.

[18] NATO, "Arms control, disarmament and non-proliferation in NATO," NATO website, available at http://www.nato.int/cps/en/natolive/topics_48895.htm, accessed 22 July 2013.

[19] Jerome B. Wiesner, "Comprehensive Arms-Limitation Systems," in Donald G. Brennan, editor, Arms Control, Disarmament, and National Security (New York: George Braziller, 1961), page 198.

[20] Jeffrey Larsen, "Arms Control," in The Encyclopedia of Political Science, Volume 1 (Washington: CQ Press, 2011), page 77.

[21] NATO, "NATO's Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats" (Brussels: NATO, 1 September 2009), appendix, available at http://www.nato.int/cps/en/natolive/official_texts_57218.htm, accessed 23 July 2013.

[22] NATO, "NATO's Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats" (Brussels: NATO, 1 September 2009), paragraph 5, available at http://www.nato.int/cps/en/natolive/official_texts_57218.htm, accessed 23 July 2013.

[23] Bertrand Goldschmidt, "A Historical Survey of Nonproliferation Polices," *International Security* 2, 1 (Summer 1977), page 70.

[24] "The Atomic Energy Act of 1946," *Bulletin of the Atomic Scientists* 2, 3/4 (August 1946); Raymond Dawson and Richard Rosecrance, "Theory and Reality in the Anglo-American Alliance," *World Politics* 19, 1 (October 1966).

[25] David C. Elliott, "Project Vista and Nuclear Weapons in Europe," *International Security* 11, 1 (Summer 1986); John Lewis Gaddis, Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy (Oxford: Oxford University Press, 1982), pages 167–168.

[26] Lawrence S. Kaplan, NATO and the United States: The Enduring Alliance, Updated Edition (New York: Twayne, 1994), page 88; Henry D. Sokolski, "What Does the History of the NPT Tell Us about its Future?" in Henry D. Sokolski, editor, Reviewing the Nuclear Nonproliferation Treaty (NPT) (Carlisle: Strategic Studies Institute, May 2010), page 31.

[27] Dawson and Rosecrance, "Theory and Reality in the Anglo-American Alliance," page 35.

[28] Henry A. Kissinger, "The United States and Nassau," *Survival* 5, 3 (May-June 1963); Dawson and Rosecrance, "Theory and Reality in the Anglo-American Alliance," page 42; Richard E. Neustadt, Alliance Politics (New York: Columbia University Press, 1970); Donette Murray, Kennedy, Macmillan, and Nuclear Weapons (Basingstoke: Macmillan, 2000). This was formalized in the bilateral US–UK Mutual Defence Agreement of 1958.

[29] Kaplan, NATO and the United States, pages 91–95.

[30] There was great pressure to declassify the scientific studies behind many basic nuclear technologies, such as plutonium production. More stringent controls were applied to transferring technology, particularly military technology.

[31] Goldschmidt, "A Historical Survey of Nonproliferation Polices," pages 71–74.

[32] Goldschmidt, "A Historical Survey of Nonproliferation Polices," page 73.

[33] Smoke, National Security and the Nuclear Dilemma, pages 139–154.

[34] Smoke, National Security and the Nuclear Dilemma, pages 144–145; Bureau of Arms Control, Verification, and Compliance, United States Department of State, "Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water," available at http://www.state.gov/t/isn/4797.htm, accessed 18 November 2012.

[35] Neither the People's Republic of China nor France joined the NPT regime until 1992. Indeed, the PRC pledged that it would "support the proliferation of nuclear weapons in order to break the hegemony of the superpowers," and proceeded to assist Pakistan with scientific personnel, design specifications, enriched uranium, tritium gas, and other assistance that permitted Pakistan to develop its own nuclear weapons program (P.R. Rajeswari, "The Missile Technology Control Regime: Chinese and US Positions," *Strategic Analysis* 22, 5 (August 1998), pages 738 and 742).

[36] NPT text quoted by Goldschmidt, "A Historical Survey of Nonproliferation Polices," page 76.

[37] Joseph I. Coffey, "Part I Introduction: Where We Are …," *The Annals of the American Academy of Political and Social Science* 430 (March 1977), page 14; Seymour M. Hersch, The Samson Option: Israel's Nuclear Arsenal and American Foreign Policy (New York: Random House, 1991); Avner Cohen and Marvin Miller, "Bringing Israel's Bomb Out of the Basement," *Foreign Affairs* 89, 5 (September/October 2010); Victor Gilinsky, "Casting a Blind Eye: Kissinger and Nixon Finesse Israel's Bomb," in Henry D. Sokolski, editor, The Next Arms Race (Carlisle: Strategic Studies Institute, July 2012).

[38] Albert Wohlstetter, "Nuclear Sharing: NATO and the N+1 Country Problem," *Foreign Affairs* 39, 3 (April 1961); John F. Kennedy, "The President's News Conference," 21 March 1963, online by Gerhard Peters and John T. Woolley, The American Presidency Project, available at http://www.presidency.ucsb.edu/ws/index.php?pid=9124, accessed 13 November 2012; Richard N. Rosecrance, The Dispersion of Nuclear Weapons: Strategy and Politics (New York: Columbia University Press, 1964); Lawrence Scheinman, Atomic Energy Policy in France under the Fourth Republic (Princeton: Princeton University Press, 1965); Albert Wohlstetter, "Spreading the Bomb Without

Quite Breaking the Rules," in Henry D. Sokolski, editor, Reviewing the Nuclear Nonproliferation Treaty (NPT) (Carlisle: Strategic Studies Institute, May 2010), page 140; Matthew Fuhrmann, "Spreading Temptation: Proliferation and Peaceful Nuclear Cooperation Agreements," *International Security* 34, 1 (Summer 2009); George H. Quester, The Politics of Nuclear Proliferation (Baltimore: Johns Hopkins University Press, 1973); and Ashok Kapur, "Nth Powers of the Future," *Annals of the American Academy of Political and Social Science* 430 (March 1977).

[39] Source: International Law and Policy Institute Nuclear Weapons Project, "The Treaty on the Non-Proliferation of Nuclear Weapons," available at: http://nwp.ilpi.org/wp-content/uploads/2011/10/NPT_members.png.

[40] United Nations Security Council Resolutions 1696, 1737, 1747, 1803, 1835, and 1929. See Lauren Weiss, "UN Security Council Resolutions on Iran," Arms Control Association website, available at http://www.armscontrol.org/factsheets/Security-Council-Resolutions-on-Iran, accessed 25 July 2013.

[41] Ian Anthony, Christer Ahlstrom, and Vitaly Fedchenko, Reforming Nuclear Export Controls: The Future for the Nuclear Suppliers Group SIPRI Research Report Number 22 (Oxford: Oxford University Press, 2007); Scott D. Sagan, "The International Security Implications of U.S. Domestic Nuclear Power Decisions," Prepared for the Blue Ribbon Commission on America's Nuclear Future (18 April 2011).

[42] Daniel Horner, "IAEA Board Approves Fuel Bank Plan," *Arms Control Today* (January/February 2011), available at http://www.armscontrol.org/act/2011_01-02/Fuel%20Bank

[43] Sagan, "The International Security Implications of U.S. Domestic Nuclear Power Decisions," page 4.

[44] Savita Pande, "Missile Technology Control Regime: Impact Assessments," *Strategic Analysis* 23, 6 (September 1999), page 923.

[45] Pande, "Missile Technology Control Regime," pages 923–924.

[46] Arms Control Association, "Fact Sheet: The Missile Technology Control Regime at a Glance" (Washington: Arms Control Association, September 2004), page 1.

[47] Arms Control Association, "Fact Sheet: The Missile Technology Control Regime at a Glance," page 1; Principal Deputy Assistant Secretary, Bureau of International Security and Nonproliferation, "The Missile Technology Control Regime in U.S. Nonproliferation Strategy" (Washington: Department of State, 30 July 2012), page 2.

[48] Pande, "Missile Technology Control Regime," pages 924–925.

[49]Principal Deputy Assistant Secretary, Bureau of International Security and Nonproliferation, "The Missile Technology Control Regime in U.S. Nonproliferation Strategy," page 1.

[50] Arms Control Association, "Fact Sheet: The Missile Technology Control Regime at a Glance," pages 1–2; Stephanie Lieggi, "From Proliferator to Model Citizen? China's Recent Enforcement of Nonproliferation-Related Trade Controls and its Potential Positive Impact in the Region," *Strategic Studies Quarterly* 4, 2 (Summer 2010).

[51] Source: Wikipedia. Available at: http://upload.wikimedia.org/wikipedia/commons/2/23/MTCR_Map.GIF

[52] Arms Control Association, "Fact Sheet: The Missile Technology Control Regime at a Glance," page 1.

[53] Principal Deputy Assistant Secretary, Bureau of International Security and Nonproliferation, "The Missile Technology Control Regime in U.S. Nonproliferation Strategy," page 2.

[54] Bernard Brodie, "Nuclear Weapons: Strategic or Tactical?" *Foreign Affairs* 32, 2 (January 1954); Henry A. Kissinger, Diplomacy (Boston: Simon and Schuster, 1994), pages 607–608.

[55] Richard Smoke, National Security and the Nuclear Dilemma: An Introduction to the American Experience, Second Edition (New York: Random House, 1984), page 53. Matthew A. Evangelista, "Stalin's Postwar Army Reappraised," *International Security* 7, 3 (Winter 1982/1983) provides a critical assessment of the size and offensive capabilities of Soviet forces in 1947–1948, "which coincides with the completion of Soviet demobilization" (page 111). Evangelista argues that Western perceptions of Soviet capability were exaggerated; nevertheless, they drove Western defense planning and strategic thinking to a considerable extent.

[56] Secretary of Defense Forrestal wrote to President Truman: "Throughout my trip in Europe I was increasingly impressed by the fact that the only balance that we have against the overwhelming manpower of the Russians, and therefore the chief deterrent to war, is the threat of immediate retaliation with the atomic bomb," (Walter Millis with E.S. Duffeld, editors, The Forrestal Diaries, New York: Viking, 1951), page 538.

[57] This is the "stability–instability paradox," whereby the inability of either side to disarm the other at the strategic nuclear level (stability) reduces the credibility of the threat to escalate to that level in the event of conventional war, thereby making such a war more likely (instability). See Glenn H. Snyder, "The Balance of Power and the Balance of Terror," in Paul Seabury, editor, The Balance of Power (San Francisco: Chandler, 1965) and Robert Jervis, The Illogic of American Nuclear Strategy (Ithaca, NY: Cornell University Press, 1984).

[58] Thomas C. Schelling, The Strategy of Conflict (London: Oxford University Press, 1960).

[59] Other agreements that shaped and regulated the relationship between the United States and Soviet Union, such as the establishment of a "hotline" to facilitate crisis communication and those that limited superpower competition geographically (the Antarctic Treaty, the Seabed Treaty, and the Outer Space Treaty) contributed greatly to reducing the risk of war. See Gaddis, "The Long Peace" and Alexander L. George, Avoiding War: Problems of Crisis Management (Boulder: Westview, 1991).

[60] SALT limited the United States to 1,054 ICBM silos and 657 SLBM tubes on SSBNs. It limited the Soviet Union to 1,607 silos and 740 SLBM launch tubes.

[61] Throw-weight is defined "for an ICBM or SLBM the final stage of which executes a procedure for dispensing reentry vehicles, the aggregate weight of that stage including its propellant and elements not separated from the stage, at the time at which the first release of a reentry vehicle or penetration aid occurs, and its payload" (United States Department of State), "Protocol on ICBM and SLBM Throw-weight Relating to the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms," page 1, available at: http://www.state.gov/documents/organization/27381.pdf).

[62] But not entirely. See Gary Schaub, Jr. "START and Strategic Stability," paper presented at the 33rd Annual Convention of the International Studies Association, Atlanta, Georgia, (April 1992); Keir A. Lieber and Daryl G. Press. "The End of MAD? The Nuclear Dimension of U.S. Primacy," *International Security* 30, 4 (Spring 2006); Keir A. Lieber and Daryl G. Press, "The Rise of U.S. Nuclear Primacy," *Foreign Affairs* 85, 2 (March/April 2006); and Keir A. Leiber and Daryl G. Press, "Correspondence: The Short Shadow of U.S. Primacy?" *International Security* 31, 3 (Winter 2006/07).

[63] "First Agreed Statement Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972," available at http://armscontrol.org/act/1997_09/docsept, accessed 10 November 2012.

[64] Wade Boese, "Bush Announces U.S. Intent to Withdraw From ABM Treaty," *Arms Control Today* (January/February 2002), available at http://armscontrol.org/act/2002_01-02/abmjanfeb02, accessed 10 November 2012.

[65] Wade Boese, "U.S. Withdraws from ABM Treaty; Global Response Muted," *Arms Control Today* (July/August 2002), available at http://armscontrol.org/act/2002_07-08/abmjul_aug02, accessed 10 November 2012.

[66] Jeff Kueter, "Missile Defense and Arms Control," in Henry D. Sokolski, editor, The Next Arms Race (Carlisle: Strategic Studies Institute, July 2012).

[67] David Alan Rosenberg, "U.S. Nuclear War Planning, 1945–1960," in Desmond Ball and Jeffrey Richelson, editors, Strategic Nuclear Targeting (Ithaca: Cornell University Press, 1986).

[68] John Lewis Gaddis, Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy (Oxford: Oxford University Press, 1982); John Lewis Gaddis, We Now Know: Rethinking Cold War History (Oxford: Clarendon, 1997); Richard K. Betts, Nuclear Blackmail and Nuclear Balance (Washington: The Brookings Institution, 1987).

[69] David Alan Rosenberg, "The Origins of Overkill: Nuclear Weapons and American Strategy, 1945–1960," *International Security* 7, 4 (Spring 1983); Robert S. Norris, William M. Arkin, and William Burr, "Where They Were," *Bulletin of the Atomic Scientists* (November/December 1999).

[70] Bernard Brodie, "Unlimited Weapons and Limited War," *The Reporter* 11, 9 (November 18, 1954); Henry A. Kissinger, Nuclear Weapons and Foreign Policy (New York: Harper & Brothers, 1957); David C. Elliott, "Project Vista and Nuclear Weapons in Europe," *International Security* 11, 1 (Summer 1986); and Thomas C. Schelling, "Nuclear Strategy in Europe," *World Politics* 14, 3 (April 1962).

[71] Joseph I. Coffey, Arms Control and European Security: A Guide to East–West Negotiations (New York: Praeger, 1977), page 106; Lawrence S. Kaplan, NATO and the United States: The Enduring Alliance, Updated Edition (New York: Twayne, 1994); Lawrence Freedman, The Evolution of Nuclear Strategy (New York: St. Martin's, 1983), page 304; Lawrence Freedman, "British Nuclear Targeting," in Desmond Ball and Jeffrey Richelson, editors, Strategic Nuclear Targeting (Ithaca: Cornell University Press, 1986), page 115.

[72] Source: International Law and Policy Institute Nuclear Weapons Project, "The Nuclear Umbrella States," available at: http://nwp.ilpi.org/?p=1221.

[73] Richard Smoke, National Security and the Nuclear Dilemma: An Introduction to the American Experience, Second Edition (New York: Random House, 1984), pages 197–200.

[74] Bernard Rogers, "Sword and Shield: ACE Attack of Warsaw Pact Follow-On Forces," *NATO's Sixteen Nations* 28, 1 (1983); Bernard W. Rogers, "Follow-on Forces Attack (FOFA): Myths and Realities," *NATO Review* 32, 6 (1984); Boyd D. Sutton, John R. Landry, Malcolm B. Armstrong, Howell M. Estes III, and Wesley K. Clark, "Deep Attack Concepts and the Defence of Central Europe," *Survival* 26, 2 (1984).

[75] Phil Williams and William Wallace, "Emerging Technologies and European Security," *Survival* 26, 2 (1984); Jeffrey Record and David B. Rivkin, Jr., "Defending Post-INF Europe," *Foreign Affairs* 66, 4 (Spring 1988).

[76] Catherine McArdle Kelleher, "The Present As Prologue: Europe and Theater Nuclear Modernization," *International Security* 5, 4 (Spring 1981); Joseph I. Coffey, Deterrence and Arms Control: American and West German Perspectives (Denver: Graduate School of International Studies, University of Denver, 1985); Christopher Kirkey, "The NATO Alliance and The INF Treaty," *Armed Forces and Society* 16, 2 (Winter 1990).

[77] Lawrence S. Kaplan, NATO and the United States: The Enduring Alliance. Updated Edition (New York: Maxwell Macmillan, 1994), page 154.

[78] Kaplan, NATO and the United States, page 154.

[79] Arms Control Association, "The Intermediate-Range Nuclear Forces (INF) Treaty at a Glance," available at http://www.armscontrol.org/factsheets/INFtreaty, accessed 20 August 2012.

[80] Susan J. Koch, The Presidential Nuclear Initiatives of 1991–1992. Center for the Study of Weapons of Mass Destruction Case Study 5 (Washington: National Defense University Press, September 2012), pages 3–4; Peter Grier, "When the Nuke Plan Changed," *Air Force Magazine* 94, 9 (September 2011), page 120.

[81] Indeed, "close allies of the United States were apprised of the PNI only at the most senior level, and just hours before the announcement" (Koch, The Presidential Nuclear Initiatives of 1991–1992, page 9).

[82] Grier, "When the Nuke Plan Changed," page 120.

[83] Arms Control Association, "The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance," available at http://armscontrol.org/factsheets/pniglance, accessed 29 October 2012; Dunbar Lockwood, "U.S. Completes Announced Tactical Nuclear Withdrawal," *Arms Control Today* 22, 6 (July/August 1992), page 27.

[84] Zoltan Barany, Democratic Breakdown and the Decline of the Russian Military (Princeton: Princeton University Press, 2009).

[85] The National Security Strategy of the Russian Federation until 2020, Presidential Decree No. 537, Moscow, Russia, 12 May 2009, quoted by Daniel Goure, "Caught Between Scylla and Charybdis: The Relationship Between Conventional and Nuclear Capabilities in Russian Military Thought," in Stephen J. Blank, editor, Russian Nuclear Weapons: Past, Present, and Future (Carlisle: Strategic Studies Institute, November 2011), page 266.

[86] Goure, "Caught Between Scylla and Charybdis," page 267.

[87] George E. Hudson, "Russian Perspective on Tactical Nuclear Weapons," in Tom Nichols, Douglas Stuart, and Jeffrey D. McCausland, editors, Tactical Nuclear Weapons and NATO (Carlisle: Strategic Studies Institute, April 2012), page 113; Jacob W. Kipp, "Asian Drivers of Russia's Nuclear Force Posture," in Henry D. Sokolski, editor, The Next Arms Race (Carlisle: Strategic Studies Institute, July 2012).

[88] John J. Mearsheimer, Conventional Deterrence, (Ithaca: Cornell University Press, 1983); Stephen D. Biddle, "Offense, Defense, and the End of the Cold War: Criteria for an Appropriate Balance," *Defense Analysis* 11, 1 (April 1995); Sean Lynn-Jones, "Offense–Defense Theory and its Critics," *Security Studies* 4, 4 (Summer 1995); Charles L. Glaser and Chaim Kaufmann, "What is the Offense–Defense Balance and How Can We Measure It?" *International Security* 22, 4 (Spring 1998); Stephen Van Evera, "Offense, Defense, and the Causes of War," *International Security* 22, 4 (Spring 1998); James W. Davis Jr. "Correspondence: Taking Offense at Offense-Defense Theory," *International Security* 23, 3 (Winter 1998/99); Bernard I. Finel, "Correspondence: Taking Offense at Offense–Defense Theory," *International Security* 23, 3 (Winter 1998/99); Stacie E. Goddard, "Correspondence: Taking Offense at Offense–

Defense Theory," *International Security* 23, 3 (Winter 1998/99); Charles L. Glaser and Chaim Kaufmann, "Correspondence: Taking Offense at Offense–Defense Theory," *International Security* 23, 3 (Winter 1998/99); Stephen Van Evera, "Correspondence: Taking Offense at Offense–Defense Theory," *International Security* 23, 3 (Winter 1998/99); Peter Liberman, "The Offense–Defense Balance, Interdependence, and War," S*ecurity Studies* 9, 1/2 (Autumn 1999/Winter 2000).

[89] Mancur Olson, Jr. and Richard Zeckhauser, "An Economic Theory of Alliances," *The Review of Economics and Statistics* 48, 3 (August 1966); Glenn Palmer, "Corralling the Free Rider: Deterrence and the Western Alliance," *International Studies Quarterly* 34, 2 (June 1990); Todd Sandler, "The Economic Theory of Alliances: A Survey," *Journal of Conflict Resolution* 37, 3 (September 1993); John A.C. Conybeare, "The Portfolio Benefits of Free Riding in Military Alliance," *International Studies Quarterly* 38, 3 (September 1994).

[90] Henry A. Kissinger, White House Years (Boston: Little, Brown and Company, 1979), page 399, *emphasis* in original.

[91] Kissinger, White House Years, page 401.

[92] Smoke, National Security and the Nuclear Dilemma, pages 195–196.

[93] Kissinger, White House Years, page 402. For how the Soviets capitalized on their position, see Jack Snyder, "Limiting Offensive Conventional Forces: Soviet Proposals and Western Options," *International Security* 12, 4 (Spring 1988).

[94] Jonathan Dean, "MBFR: From Apathy to Accord," *International Security* 7, 4 (Spring 1983).

[95] Indeed, the Soviet Union redeployed "some 17,000 tanks, 25,000 ACV and 34,000 pieces of artillery … east of the Urals" in the three years prior to signing CFE (International Institute for Strategic Studies, Strategic Survey 1990–1991 (London: Brassey's, May 1991), page 249).

[96] Richard Weitz, "The Potential Demise of the CFE Treaty: A Major Concern for Turkey," *Turkey Analyst* 4, 8 (24 April 2011), available at: http://www.crethiplethi.com/the-potential-demise-of-the-cfe-treaty-a-major-concern-for-turkey/islamic-countries/turkey/2011/.

[97] Arms Control Association, "The Conventional Armed Forces in Europe (CFE) Treaty and the Adapted CFE Treaty at a Glance," available at http://www.armscontrol.org/factsheet/cfe, accessed 29 October 2012.

[98] International Institute for Strategic Studies, Strategic Survey 1990–1991, page 247.

[99] International Institute for Strategic Studies, Strategic Survey 1990–1991, pages 248–249.

[100] Richard A. Falkenrath, "Resolving the CFE 'Flank' Dispute," *Arms Control Today* 25, 4 (May 1995); Richard A. Falkenrath, "The CFE Flank Dispute: Waiting in the Wings," *International Security* 19, 4 (Spring 1995); Crispin Hain-Cole, "Taking up the Challenge of CFE Treaty Adaptation," *NATO Review* 45, 6 (November/December 1997); Jeffrey D. McCausland, "NATO and Russian Approaches to 'Adapting' the CFE Treaty," *Arms Control Today* 27, 5 (August 1997); Jeffrey D. McCausland, "European/Eurasian Security and the Treaty on Conventional Armed Forces in Europe," in Stephen J. Blank and Louis H. Jordan, Jr., editors, Arms Control and European Security (Carlisle: Strategic Studies Institute, August 2012).

[101] Wade Boese, "CFE Adapted at OSCE Summit in Istanbul," *Arms Control Today* 29, 7 (November 1999), available at http://www.armscontrol.org/act/1999_11/cfeno99, accessed 11 November 2012; McCausland, "European/Eurasian Security and the Treaty on Conventional Armed Forces in Europe," pages 33–34.

[102] McCausland, "European/Eurasian Security and the Treaty on Conventional Armed Forces in Europe," page 34.

[103] Wade Boese, "Russia Suspends CFE Treaty Implementation," *Arms Control Today* (January/February 2008), available at http://www.armscontrol.org/act/2008_01-02/cfe, accessed 11 November 2012; Paul Schulte, "The Precarious and Far-Reaching Current Undecidability of the Conventional Forces in Europe Treaty," in Stephen J. Blank and Louis H. Jordan, Jr., editors, Arms Control and European Security (Carlisle: Strategic Studies Institute, August 2012), page 7; McCausland, "European/Eurasian Security and the Treaty on Conventional Armed Forces in Europe," page 36.

[104] State Department spokeswoman Victoria Nuland, quoted in Arms Control Association, "The Conventional Armed Forces in Europe (CFE) Treaty and the Adapted CFE Treaty at a Glance."

[105] State Department Press Release, quoted in Arms Control Association, "The Conventional Armed Forces in Europe (CFE) Treaty and the Adapted CFE Treaty at a Glance."

[106] NATO, "NATO's Role in Conventional Arms Control: Conventional Arms Control Agreements: The Conventional Forces in Europe (CFE) Treaty," available at http://www.nato.int/cps/en/natolive/topics_48896.htm, accessed 25 July 2013.

[107] Schulte, "The Precarious and Far-Reaching Current Undecidability of the Conventional Forces in Europe Treaty," page 9.

[108] Schulte, "The Precarious and Far-Reaching Current Undecidability of the Conventional Forces in Europe Treaty," page 10.

[109] In 2011, NATO's collective defense spending was $1.039 trillion while Russian defense spending was $71.853 billion—or 6.9% of NATO's (in current 2011 U.S. dollars) (Stockholm Peace Research Institute, SIPRI Military Expenditure Database, available at http://milexdata.sipri.org/files/?file=SIPRI+milex+data+1988-2011.xls, accessed 20 November 2012).

[110] North Atlantic Treaty Organization, Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organization, Adopted by the Heads of State and Government in Lisbon (Brussels: North Atlantic Treaty Organization, 2010), pages 2–3.

[111] Stephen Blank, "Russia Challenges the Obama Administration," *Op-Ed* (Carlisle: Strategic Studies Institute, December 2008), available at http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubid=900, accessed 19 November 2012.

[112] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[113] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[114] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012. *Emphasis* in original.

[115] Malcolm Chalmers and Andrea Berger, "Introduction," in Hugh Chalmers, Malcolm Chalmers, and Andrea Berger, editors, A Problem Deferred? NATO's Non-Strategic Nuclear Weapons After Chicago (London: Royal United Services Institute, October 2012), page 1.

[116] Damon Coletta, "Deterrence Logic and NATO's Nuclear Posture," *Strategic Studies Quarterly* 7, 1 (Spring 2013); Hans M. Kristensen, U.S. Nuclear Weapons in Europe: A Review of Post-Cold War Policy, Force Levels, and War Planning (Washington: Natural Resources Defense council, February 2005), pages 24–35.

[117] "Remarks by President Barak Obama, Hradcany Square, Prague, Czech Republic" (Washington: The White House, Office of the Press Secretary, 5 April 2009), available at: http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered.

[118] Nuclear Posture Review Report (Washington: Department of Defense, April 2010), available at: http://www.defense.gov/npr/docs/2010%20nuclear%20posture%20review%20report.pdf.

[119] Chalmers and Berger, "Introduction," page 1; George Perkovich, Malcolm Chalmers, Steven Pifer, Paul Schulte, and Jaclyn Tandler, Looking Beyond the Chicago Summit: Nuclear Weapons in Europe and the Future of NATO (Washington: Carnegie Endowment for International Peace, april 2012), page 3.

[120] Karl-Heinz Kamp, "NATO's New Nuclear Consensus," in Hugh Chalmers, Malcolm Chalmers, and Andrea Berger, editors, A Problem Deferred? NATO's Non-Strategic Nuclear Weapons After Chicago (London: Royal United Services Institute, October 2012), page 7.

[121] "Remarks by President Barak Obama, Hradcany Square, Prague, Czech Republic."

[122] Kamp, "NATO's New Nuclear Consensus."

[123] "Remarks by President Barak Obama, Hradcany Square, Prague, Czech Republic."

[124] Hans M. Kristensen, Non-Strategic Nuclear Weapons (Washington: Federation of American Scientists, May 2012), page 17.

[125] Kristensen, U.S. Nuclear Weapons in Europe, pages 55–59.

[126] Coletta, however, argues that they will do so nonetheless. See Coletta, "Deterrence Logic and NATO's Nuclear Posture."

[127] Kamp, "NATO's New Nuclear Consensus," page 9.

[128] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[129] "The Nuclear Planning Group (NPG)," available at http://www.nato.int/cps/en/natolive/topics_50069.htm.

[130] Denmark also possesses 14 spare F-16 A/B MLU aircraft. "Denmark," F-16.net, available at http://www.f-16.net/f-16_users_article3.html.

[131] These are the four original European Participating Air Force (EPAF) countries. "Denmark," F-16.net, available at http://www.f-16.net/f-16_users_article3.html.

[132] Kristensen, U.S. Nuclear Weapons in Europe, page 42.

[133] Kamp, "NATO's New Nuclear Consensus," page 10.

[134] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[135] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[136] NATO, "Ballistic Missile Defence," (8 May 2012), available at http://www.nato.int/cps/en/natolive/topics_49635.htm, accessed 23 January 2013.

[137] Quoted by Steven Pifer, Missile Defense in Europe: Cooperation or Contention? (Washington: Brookings Institution, May 2012), pages 15–16.

[138] Quoted by Steven Pifer, Missile Defense in Europe, page 15.

[139] Arms Control Association, "Worldwide Ballistic Missile Inventories," available at https://www.armscontrol.org/factsheets/missiles, accessed 29 October 2012.

[140] Arms Control Association, "The Intermediate-Range Nuclear Forces (INF) Treaty at a Glance," available at www.armscontrol.org/factsheets/INFtreaty, accessed 29 October 2012.

[141] Elaine M. Grossman, "U.S. Brass Reviews Prompt Global Strike, Mulling Submarine-Fired Arms," *Global Security Newswire* (6 November 2012).

[142] Department of Defence, Nuclear Posture Review Report (Washington: Department of Defence, April 2010).

[143] James Forsyth, Bradley Chance Saltzman, and Gary Schaub, Jr., "Remembrance of Things Past: The Enduring Value of Nuclear Weapons," *Strategic Studies Quarterly* 4, 1 (Spring 2010); Gary Schaub, Jr., and James W. Forsyth, Jr., "An Arsenal We Can All Live With," *The New York Times* (24 May 2010); James Forsyth, Bradley Chance Saltzman, and Gary Schaub, Jr., "Minimum Deterrence and Its Critics," *Strategic Studies Quarterly* 4, 4 (Winter 2010); Elaine M. Grossman, "U.S. can safely take deeper nuclear arms cuts, senior Defense official says," *Global Security Newswire* (16 February 2012); Henry A. Kissinger and Brent Scowcroft, "Nuclear Weapon Reductions Must be Part of Strategic Analysis," *The Washington Post* (22 April 2012); Thom Shanker, "Former Commander of U.S. Nuclear Forces Calls for Large Cut in Warheads," *The New York Times* (15 May 2012); Robert A. Manning, Envisioning 2030: US Strategy for a Post-Western World (Washington: The Atlantic Council, 2012), pages 47–49.

[144] David J. Baylor, "Considerations for a US Nuclear Force Structure Below a 1,000-Warhead Limit," *Strategic Studies Quarterly* 5, 2 (Summer 2011), page 55, Table 1: Global Nuclear Weapons Inventories, 1945–2010. Jim Wolf, "China Submarines Soon to Carry Nukes, Draft U.S. Report Says," *Reuters* (8 November 2012).

[145] Douglas Seay, "What are the Soviets' Objectives in their Foreign, Military, and Arms Control Policies?" in Lynn Eden and Steven E. Miller, editors, Nuclear Arguments: Understanding the Strategic Nuclear Arms and Arms

Control Debates (Ithaca, NY: Cornell University Press, 1989); George F. Kennan, "Toward Peace on Two Fronts" *Christianity and Crisis* (13 December 1982).

[146] Daryl G. Kimball, "NATO Agrees on New Arms Control Body," *Arms Control Now* (26 February 2013), available at http://armscontrolnow.org/2013/02/26/nato-agrees-on-new-arms-control-body/

[147] "Deterrence and Defence Posture Review," Press Release (2012) 063 (20 May 2012), available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease, accessed 18 July 2012.

[148] Quoted in "Russia calls on NATO to Review Cold War Methods of Arms Control," *RT* (25 July 2013), available at http://rt.com/politics/russia-nato-conventional-control-572/, accessed 25 July 2013.

[149] "Russia calls on NATO to Review Cold War Methods of Arms Control," *RT* (25 July 2013), available at http://rt.com/politics/russia-nato-conventional-control-572/, accessed 25 July 2013.