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The Future of Arms Control

By **Alyson JK Bailes**, **Des Browne**, **Steven Pifer**, **Nikolai N. Sokov**, **Oliver Meier**, **Agnieszka Brugger**, **Mark Hibbs**, **Dennis M. Gormley**, **Götz Neuneck**, **Mohamed Kadry Said**, **Emily Landau**, **Bernd W. Kubbig**, **Nobuyasu Abe**, **Pervez Hoodbhoy**, **Ben Coetzee**, **John Pokoo** and **Marc Kösling**

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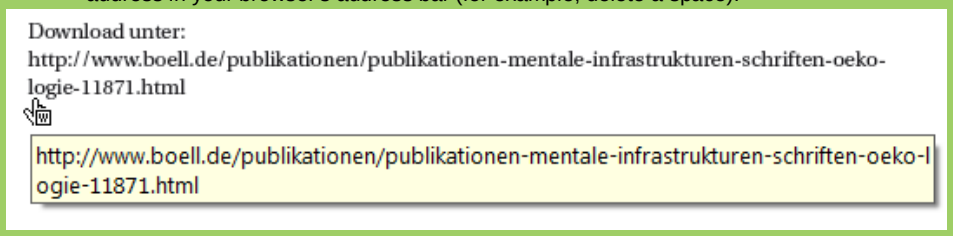

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THE FUTURE OF ARMS CONTROL

HEINRICH BÖLL STIFTUNG
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VOLUME 37

The Future of Arms Control

Edited by the Heinrich Böll Foundation

In cooperation with Anne Finger and the Institute for Peace Research and Security Policy at the University of Hamburg (IFSH)

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FOREWORD

The topic of this publication has been central to Green international politics over the last three decades. The anti-nuclear movement and the struggle for disarmament in the West and the East were vital issues that contributed to the breakthrough of the German Greens in the early 1980s. We want to refer to that tradition explicitly while exploring ways to respond to the new challenges for disarmament and arms control that have emerged since the end of the Cold War. Obviously, the fall of the Berlin Wall did not lead to a new era of peace and collective security, but rather to new frictions and conflicts. That is why the international community requires joint efforts to prevent new wars and to reduce military capabilities in a balanced and cooperative way. The alternative would be uncontrolled military competition – with all of its risks and unintended side effects.

The escalation of the armed conflict in Syria has been a painful reminder of the need to strengthen arms control and non-proliferation efforts with respect to weapons of mass destruction as well as conventional weapons. Genocide can be executed by using chemical weapons or machine guns and ordinary bombs. It is obvious that the civil war in Syria can only continue with an influx of different kinds of weapons. It has become clear that we need to rethink the Cold War concept of arms control. How can international cooperation be strengthened to prevent the proliferation of weapons of mass destruction? How can the use of these weapons in internal conflicts be prohibited? How can verification mechanisms be improved? And how can compliance with international norms be enforced if the United Nations Security Council remains blocked?

The conflict in Syria and the developments in Ukraine and Crimea have also revealed a rift between the West and Russia on key issues of international security. The renewed geopolitical rivalry between Russia and the United States may undermine global security cooperation and the international arms control regime on a much broader scale. Mutual assured destruction – the essence of deterrence policy during the Cold War – unfortunately seems to remain a factor of the current security architecture in the 21st century. It may remain so, as long as thousands of nuclear weapons continue to exist – 90 percent of those nuclear warheads are held by the United States and Russia. That is why the deterioration in US-Russia relations makes a difference. The new stalemate has had an impact already on efforts to reduce armaments through a cooperative arms control approach in Europe. Differences regarding new missile defense deployments are the most visible example that cooperation is increasingly being replaced by competition. It is obvious that Cold War-type arms control, with its goal to establish strategic balance, is no longer adequate.

The European perspective on arms control is still shaped by the experiences of the Cold War. In other regions, different experiences and priorities shape existing arms control approaches. Conflicts in regions such as the Middle East and Asia require an arms control framework that may draw lessons from Europe's experiences, but they will most likely be much different. The renewed strategic competition between Russia and the United States is part of a much broader global security development involving a growing number of new actors following their own agendas and interests. One rather positive trend: not only governments negotiate and implement arms control agreements. The Anti-Personnel Mine Ban Convention, the Convention on Cluster Munitions, and the Arms Trade Treaty would not have been possible without initiatives launched by civil society.

Finally, as important as it is that relations between Russia and the United States become more cooperative, it is clear that we have to proceed toward a renewed multilateral, multilevel system of arms control and disarmament based on equal rights and equally binding rules for old and new powers. The rise of China and the ambitions of old-new powers such as India, Iran, and Brazil are changing the global security equilibrium. The emergence of a multipolar world order is another strong argument in favor of a multilateral architecture of arms control and collective security.

The Heinrich Böll Foundation has not lost sight of disarmament and arms control in its foreign and security policy-agenda over the last decades. This holds especially true now as the international community prepares for the 2015 NPT Review Conference to assess the Treaty on the Non-Proliferation of Nuclear Weapons. This publication is an opportunity to figure out what steps should be taken to strengthen cooperative efforts in controlling and reducing military capabilities. It is not about *whether* arms control should be an option, but rather *how* arms control, non-proliferation, and disarmament policies can be strengthened.

We would like to express our gratitude and satisfaction in co-publishing this book with the Institute for Peace Research and Security Policy at the University of Hamburg (IFSH), which is a renowned German think tank with an esteemed reputation for its extensive research on disarmament and arms control.

We wish our venerable readership an informative and stimulating read. For those involved in the decision-making process, we hope that this publication leads them to make well-informed decisions about the vital issues we have raised here.

Berlin, March 2014

Ralf Fücks
President
Heinrich Böll Foundation

Gregor Enste
Department Head, Foreign and Security Policy
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INTRODUCTION

Arms control and disarmament substantially contributed to ending the ruinous and dangerous Cold War period by creating a network of treaties, institutions, and verification capabilities. They contributed to preventing the outbreak of an all-out war, to fostering trust and confidence, and to limiting the consequences of inhuman warfare by reducing or eliminating weapons of mass destruction and conventional stockpiles. Modern arms control was first invented and implemented under the conditions of the nuclear age, and later expanded to other areas of warfare. Now, in the 21st century, the political, cultural, and technical environment is changing rapidly. Classical arms control concepts are being squeezed in the changing conditions of a more globalized world of many actors, emerging regional conflicts, and new technical and economic developments.

The dismantlement of chemical weapons in Syria underlines the importance and qualities of existing arms control treaties. The largely unsung Chemical Weapons Convention (CWC) from 1993, and its well-qualified Organization for the Prohibition of Chemical Weapons (OPCW), which received the 2013 Nobel Peace Prize, created the foundation for the declaration and elimination of Syria's chemical weapons stockpile. Without the international cooperation of leading UN members, the mutual consent of the international community, and in particular the legal framework of the CWC and the expertise of the OPCW, such an undertaking would not have been possible.

The Heinrich Böll Foundation in Berlin, together with the Institute for Peace Research and Security Studies at the University of Hamburg (IFSH) and the German Institute for International and Security Affairs (SWP), held an international expert conference on «The Future of Arms Control» on September 9–10, 2013. Around 20 speakers from 13 countries and some 30 practitioners and academics came together to discuss the conditions and options for modern arms control, disarmament, and non-proliferation. The conference participants debated what functions arms control can fulfill under the changing conditions of the 21st century as well as the interests of its key actors. Additionally, the participants discussed how disarmament, arms control, and non-proliferation instruments can be rendered more effective and sustainable.

The two days of presentations and discussions resulted in 17 conference contributions consisting of four chapters, which reflect the main themes of the current arms control debate. The papers focus on obstacles to arms control and offer the perspectives of different actors, who ask which adjustments of existing approaches are necessary and whether there are new approaches and instruments evolving.

The volume starts with the five contributions in chapter one, «Arms Control in Times of Global Change,» which broaches the issue of the fundamental changes that have taken place in arms control as a result of the demise of the Cold War polarity. *Alyson JK Bailes* gives an overview of the evolution of arms control from a 20th to a 21st century environment while exploring the purposes of arms control and outlining the spectrum of different measures and instruments to restrain arms. To cope with today's multipolar environment with defused destructive capacities, she calls for a constant review and adaptation of existing arms control approaches. *Des Browne* subsequently underlines the importance of cooperating with Russia – without which a stable future nuclear order cannot be achieved – and casts a positive light on the P5 dialogue, which, in his view, has proven more productive than expected and might become a future forum for multilateral disarmament. *Steven Pifer* and *Nikolai N. Sokov* deal with US conventional military supremacy and its effects on conventional as well as nuclear arms control. Pifer illustrates how further progress in nuclear disarmament is closely linked to better understanding and agreement in the areas of ballistic missile defense, conventional prompt global strike systems, multilateral approaches to disarmament, as well as to regulations and limitations regarding both conventional forces in Europe and outer space. Sokov stresses Russia's ability to progressively close the technology gap with the United States in modern conventional strike and defense capabilities in the coming years. Not agreeing on arms control measures regarding evolving technologies, in his opinion, could therefore lead to a new arms race between Russia and the United States in the near future, and most likely be joined by China. In his contribution, *Oliver Meier* advocates broadening traditional arms control approaches. Not only do traditional treaty-based regulations need to be revised, but it is also necessary to look at who is conducting arms control. The author identifies three distinct types of arms control under such a broadened approach: classical arms control, non-proliferation regimes, and humanitarian arms control.

Chapter two, «New Challenges and Technological Developments,» takes a closer look at the problems of nuclear proliferation and the challenge of regulating evolving technologies. *Mark Hibbs* explores the manifold political and technological challenges that the Nuclear Suppliers Group is facing as well as ways to strengthen its endangered legitimacy and effectiveness. *Agnieszka Brugger* explores the problem of the transparency deficit regarding financial investments by European banks into companies directly or indirectly involved in the production of nuclear weapons, cluster munitions, and/or anti-personnel landmines. She calls on the German government to prohibit any investments in these weapons, which, in her view, violate humanitarian law. In his contribution, *Dennis M. Gormley* assesses the need to regulate US conventional prompt global strike systems as well as less prompt strategic conventional systems. Furthermore, he discusses possibilities to accommodate Russian concerns regarding evolving US capabilities. Lastly, in the evolving area of unmanned systems, *Götz Neuneck* is faced with the more elementary question of whether the use of armed drones can be regulated at all, and whether sources of regulation on which states could build already exist. There is some hope that the complex ethical, legal, and technical questions about banning autonomous combat systems can be solved, although it is

very hard to define what full autonomy is, thus preventing further research and development in this area.

Chapter three deals with the efforts to create «A Zone Free of Weapons of Mass Destruction in the Middle East.» *Mohamed Kadry Said* describes how the NPT Review Conference in 2010 agreed to hold a conference on the establishment of such a zone by the end of 2012, and how, subsequently, the Finnish diplomat Jaakko Laajava had been appointed the official UN facilitator in 2011. He further elaborates how the unbridgeable differences between the different parties became manifest, leading to the postponement of the conference. He suggests confidence-building measures as a possible first step toward further understanding. *Emily B. Landau* criticizes the set-up and framework of the approach of the Finnish facilitator, Ambassador Laajava, explaining why it has not worked yet – and why it will not work in the future. She explores the underlying conflicts and obstacles hindering dialogue on confidence-building measures in the region. Furthermore, she proposes the idea of a broader regional security dialogue to overcome the stalemate. *Bernd W. Kubbig* discusses the idea of using confidence-building measures and reductions regarding missiles in the Middle East as starting points for a broader security dialogue that, at a later stage, could – and should – include weapons of mass destruction as well.

The fourth and last chapter focuses on «Proliferation in Asia and Africa.» The contributions regarding North Korea and the ongoing conflict between India and Pakistan concern key ongoing challenges for the nuclear arms control regime. Dealing with the confrontation over North Korea's nuclear weapons program, *Nobuyasu Abe* outlines the unsuccessful attempts to negotiate a robust solution with North Korea. There are still no indications that North Korea is willing to give up its nuclear program and/or dismantle its nuclear facilities. This situation could generate the demand to deploy nuclear weapons both in South Korea and Japan. Possibilities for disarmament and arms control would be fostered if the importance of nuclear deterrence in the security concepts of the region could be lowered. Looking at the case of India and Pakistan, *Pervez Hoodbhoy* first describes the rationale behind the buildup of Pakistan's nuclear arsenal. He shows that the country is prepared for nuclear warfare with tactical nuclear weapons and explains why Pakistan continues to block negotiations on the Fissile Material Cutoff Treaty. He further gives recommendations to both India and Pakistan on how to mitigate the current tensions and to prevent further military conflict. For African states, the nuclear threat remains mainly abstract, whereas the death of thousands of people from small arms and light weapons is a daily reality. *Ben Coetzee* describes the particular impact of the unregulated propagation of small arms and light weapons on African states and warns against the possible deleterious consequences for arms control efforts, for example those of the Southern African Development Community, if countries such as Angola and Mozambique should again regress into civil war. *John Pokoo* explores how arms control measures can be incorporated into peacebuilding activities. His contribution gives insights into the arms control approaches being pursued by the African Union in cooperation with the different regional economic communities and the additional measures that the Economic Community of West African States have agreed on. Furthermore,

he presents the work of the Kofi Annan International Peacekeeping Training Centre, a sub-regional peace- and security-training research center. *Marc Kösling* explains the particular threat presented by the non-state armed groups that exist in at least 25 African states. Approaches to arms control regarding these actors either aim at securing existing stockpiles or at improving export controls to prevent illegal trade.

The Heinrich Böll Foundation and the IFSH are pleased to publish these conference proceedings. We would like to thank the authors for their eclectic and fruitful contributions and we hope to help continue and deepen this important debate through this publication. We would further like to thank the Heinrich Böll Foundation, which made this project possible, and Oliver Meier, now at SWP, who not only helped to launch the project but also developed the conference concept with us. We would like to end this introductory note by quoting John F. Kennedy. In his determination to implement arms control in the 1960s, he stated: «Peace is a daily, a weekly, a monthly process, gradually changing opinions, slowly eroding old barriers, quietly building new structures.»

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Chapter One

Arms Control in Times of Global Change

ALYSON JK BAILES

The Evolution of Arms Control: A Longer-term Perspective

The starting point: What drives evolution?

Evolution can be an enlightening concept to apply to arms control, provided that evolution itself is correctly understood. It is not synonymous with progress and improvement, nor is it necessarily unidirectional. It focuses on how organisms adapt to their physical and temporal circumstances: The «survival of the fittest» does not mean the triumph of the objectively «best» or most advanced, but rather of those whose adaptation is most successful. Furthermore, in the modern understanding, the process of evolution is not smooth and continuous. It has been called a «punctuated equilibrium»[1] in which things may stay the same for a long time before facing a sudden, rapid change, which might lead either to progress or to regression.

The way that arms control is understood and pursued, its relative standing, and its relative success have similarly varied over time. Arms control – both in Europe and worldwide – has been through numerous crises and changes of direction; many would say that its progress has stalled, or even been reversed at times. At its simplest, evolution in this area seems to be responsive to two sets of forces in the environment: the economics of fear and the economics of economics. What matters most about fear is not its origin or extent, but rather how one-sided it is. If we feel unlimited apprehension about an enemy and/or define our opponents as inherently evil, no level of defensive capability can be enough to satisfy us, and any arms restraint will be assumed only to help the «bad guys.» If, however, we are aware that our own arsenals may also contribute to arms races and trigger conflict; if we would prefer to avoid the responsibility for killing and wounding and pursue instead our interests by non-violent means; and above all, if we have historical reasons for self-mistrust and fear of our own instincts, then we will be more inclined to seek safety at lower and balanced levels of capacity.

The economics of economics is even simpler. Arms and armies cost money, and although we need them to defend the other things we hold dear (territory, population, resources, and welfare), very few countries have been prepared to spend so much on defense that their civil economies stop functioning and their people start to starve.

1 A term coined by evolutionary biologists Niles Eldredge and Stephen Jay Gould in the early 1970s.

But there are also some reasons for producing and owning weapons that have less direct links to survival. Some motives are related to status, prestige, and display, both within and beyond the country. Others are linked to the productive economy: the value of arms factories for employment and for regional development, or the profits from defense industry sales. Armed forces can also be used to train young citizens and create a sense of national unity, or to assist in law and order and civilian tasks such as natural disaster responses. These motivations for maintaining a certain level of capacity mitigate the «economics of economics» logic, and may make countries reluctant to go too far in cuts or restraints, even when the «fear» factors are well balanced. Thoughts on arms control have arguably not gone far enough to address these complications; but at least such factors tend to be less directly linked with risks of conflict.

If the elements line up to make arms restraint – unilateral, bilateral, or multilateral – possible *prima facie*, a host of alternative ways exist to pursue it. Most of them have been attempted in some context and to some degree over the last century, and – at least for this author – there is no obvious reason to consider any one «superior» to any other. The most extreme and comprehensive are the physical interdiction and destruction of (somebody else's) weapons, and the complete prohibition of classes of weaponry, as seen recently with chemical and biological weapons and various weapons/techniques viewed as «causing unnecessary harm and having indiscriminate effects.»[2] At the other end of the spectrum are self-control and voluntary avoidance, which may be prompted both by economic constraints and moral preferences, and includes help given by countries to others to destroy their weapons voluntarily.[3] In between these extremes, control methods can intervene at every stage of the arms cycle, starting with controls and limitations on production, on ownership, and on trade and transfer. These last methods may take the form of export and technology-transfer regimes, but also of physical checks and confiscation. When it comes to the employment of weapons in a military context, there may be limits or conditions placed on where and how the items are used (e.g., demilitarized zones; confidence-building measures constraining military movements and activities; transparency and data-exchange stipulations); or there may be actual limitations placed on numbers – freezes, ceilings, or cuts – possibly accompanied by verification.

Viewed in the light of evolutionary theory, whether all these options, or only some of them, should be labeled as «arms control» – or where to draw the line between «arms control» and «disarmament» – is not an interesting issue. Rather, the question should be focused on *what works*, or what is most likely to work, in promoting the

2 The cited definition was used in the international treaty known for (short) as the Certain Conventional Weapons convention of 1980. More broadly, humanitarian-motivated bans or limitations on military techniques and weaponry have evolved out of the Geneva Conventions developed from 1864 to 1949. They now include additional protocols to those conventions as well as separate treaties on items such as anti-personnel mines.

3 A modern example is the Global Partnership, which helps mainly Russia to destroy obsolete and surplus stocks of nuclear and chemical weapons; available at: www.nti.org/treaties-and-regimes/global-partnership-against-spread-weapons-and-materials-mass-destruction-10-plus-10-over-10-program. Programs to collect and destroy small arms have also been sponsored i.a. by NATO and the Organization for Security and Co-operation in Europe.

aims for any given attempt at arms restraint; the answer will often be some *combination* of approaches. Indeed, the complex interdependencies between the various methods deserve more thought than they have been given. Just as one example, there are problems in ordering a poor country to give up a certain weapon when it relies economically on selling that weapon, when it believes that that weapon is the only thing keeping its border safe against a troop concentration on the other side, and when it cannot afford to safely destroy its stocks.

From a 20th- to a 21st-century environment

The late 20th century is rightly seen as having been the most productive historical period ever in arms control. Its successes, however, depended on making a shrewd selection from the spectrum of measures just outlined to address a given set of problems – also carefully selected for their urgency and manageability – that typified the age. Its architects proceeded from a number of hypotheses and principles that, by and large, correctly reflected the prevailing realities. In particular – and as this author has argued at more length elsewhere[4] – they could assume a broad balance of military capabilities, of deterrent doctrines, and of what are here called «fears» between the two armed camps of the Euro-Atlantic region. They were addressing the risks of war between states, rather than the internal conflicts or the «wars of liberation» that took place in many former European colonies in Africa and Asia. (This is not to say that the latter were neglected, but they were not associated with arms control measures, except for weapons collection after some of the civil wars.) They worked also to secure universal bans on «inhumane» items such as chemical weapons, incendiaries, and booby-traps, confident in the assumption that all human beings would share an abhorrence toward these on the basis of common experience or knowledge. Finally, they saw the method of negotiating legally binding treaties and conventions – whether open for universal participation or in regional settings such as the Conventional Armed Forces in Europe (CFE) agreements[5] – as the «classic» and most powerful instrument available, both for actual disarmament and for defining other forms of restraint.

Underpinning or flowing from these preferences were other less explicit assumptions, starting with the belief that states were the (only) relevant actors and were equally competent to make and implement such agreements. Thus, with some exceptions, such as the establishment of the Organisation for the Prohibition of Chemical Weapons[6] to service the Chemical Weapons Convention, the implementation of commitments was seen as a national business, and enforcement depended on the vigilance of the community of other signatories. Further, the initiative for action aiming at actual disarmament (other than for «inhumane» weapons), for non-proliferation measures, and for export controls came overwhelmingly from the Euro-

4 Alyson JK Bailes, «The Changing Role of Arms Control in Historical Perspective,» in *Arms Control in the 21st Century*, ed. Oliver Meier and Christopher Daase (London: Routledge, 2012), 15–38.

5 For background, see: www.armscontrol.org/factsheet/cfe.

6 See: www.opcw.org.

Atlantic zone. It had a double logic there, since it not only reduced risks of war in Europe, but lowered the temperature in the East-West strategic rivalry exported by the two blocs to most of the world.

Since the dissolution of the Warsaw Pact and the Soviet Union in the 1990s, and as the world moved into the 21st century, these features of the «classic» arms control environment have changed quite dramatically, more than once. The obvious differences started with the loss of true strategic balance between the East and West, even if the Russian Federation maintained approximate nuclear parity with the United States. Not only was the United States left with the world's single greatest conventional forces and military-technical capacity, but its notions of national security and the strategic use of military means shifted progressively away from the European focus and from the preservation of an East-West status quo through deterrence. It adopted a more active and truly global posture of transformative intervention (Former Yugoslavia, Gulf War), retaliation, and – under President George W. Bush – even forceful «pre-emption.»[7] Russia's posture, at the same time, became less global through the loss of former Soviet territories and overseas bases, and hence more exclusively territorial and defensive. China also has been focused on its own territory and neighborhood up to the very recent past, and it has not made active war against anyone since Vietnam in 1979. Even more than asymmetry in numbers, this *asymmetry in doctrines* and strategic visions makes negotiations for mutual restraint particularly difficult, even in regions where the powers concerned are simultaneously present. To take only the most obvious example, the United States has developed its missile defense plans in and around Europe as a shield against possible Middle Eastern nuclear proliferation; for Russia, any such installations near its borders mean a further extension of US military influence and a flaunting of Western strategic superiority in its own backyard.[8]

Broader changes have included the general shifting of the world system toward multipolarity, with other regions no longer divided between the adherents of East and West, leaving more scope both for autonomous regional conflicts (especially intrastate ones) and for emergent regional powerbases. Matching this greater strategic complexity is a greater, and ongoing, diffusion of military power and associated technological knowledge. Over and above the post-9/11 recognition of terrorism as an «asymmetric» threat, cyber technology has emerged as a weapon that an otherwise weak state – or even an individual – can wield with effect against even the most powerful adversary.

The proliferation of such multi-use, potentially subversive techniques and unconventional means of attack, and the worldwide smuggling of small arms and light weapons (SALWs) at the other end of the technological spectrum, have both helped to drive a major shift in strategic thinking – led by, but not confined to, the West –

7 This idea was developed in response to the terrorist attacks of 9/11 and is expounded in the US National Security Strategy of September 2002; see: www.state.gov/documents/organization/63562.pdf.

8 Zdzislaw Lachowski, «Foreign Military Bases in Eurasia,» SIPRI Policy Paper no. 18, 2007; available at: http://books.sipri.org/product_info?c_product_id=339.

A nuclear weapon test by the United States military at Bikini Atoll on 25 July 1946.

Source: US Federal Government – Wikimedia

toward the challenges presented by non-state actors.[9] Whether these be parties to civil wars, terrorist movements, violent criminals, shady businesses, or cyber «hackers,» their negative roles in security processes not only threaten the general monopoly of force by nation-states, but they are also intimately linked with the circulation, use, design, and even the production of weaponry, including weapons of mass destruction. Yet the classic «treaty method» of defining arms restraints and the classic state-led method of implementing them are almost completely unsuited to handling such actors. The latter have neither the legal personality to make international agreements, nor the executive competence, in many cases, to control their own assets and adherents.[10] National and international laws that define obligations for governments and for traditional actors such as armed forces are ill-designed to «capture» and regulate the actions of such players, especially when working in the new transnational, globalized space, or indeed in a virtual environment. Not only have weak governments in conflict countries been struggling with these conundrums for more than two decades now, but also the world's strongest states and organizations.

Arms restraint: A new mix of tools?

The pattern of endeavors for arms restraint has not evolved unnaturally as a result, driven by conscious choices but also by some less carefully examined assumptions. Few efforts are made today toward continent-wide restraints, and in the implementation of the East-West CFE Treaty, there has been actual regression.[11] Instead, measures are typically designed either at the global level to involve all poles of power and all possible transnational dissemination routes, or at the country level (possibly plus immediate neighbors) during conflicts or as part of the peace-building thereafter.[12] Even more significantly – or, at least, more controversially – the *method* of promoting restraint has shifted away from the centrality of treaty processes. The Bush Administration was exceptionally forthright in seeing treaties (and other forms of negotiated, law-based institutional action) as hampering the good guys more than restraining the bad guys. But it would be unfair to give the United States sole responsibility for the shift, or to see it reflected only in coercive military action – as with the invasions of Iraq and Afghanistan. Large numbers of Western states and others – often including the other great powers – have joined in actions to «coercively» block supplies to maverick states and violent non-state actors by methods ranging from formal embargoes, sanctions,

9 See, for example, Alyson JK Bailes, «The Strategic Object of War,» in *The Oxford Handbook of War*, ed. Julian Lindley-French and Yves Boyer (Oxford: Oxford University Press, 2012).

10 A new and encouraging way of overcoming these particular problems has been developed by the NGO Geneva Call in its work with non-state groups on honoring humanitarian restrictions; see: www.genevacall.org.

11 As a result of political disputes connected with Russian deployments in the South Caucasus, NATO states did not proceed to ratify the Adapted CFE Treaty of 1999. In 2007 the Russian Federation stated it would cease implementing CFE commitments as of December that year.

12 The reference is to arms trade embargoes imposed on specific destinations, and «disarmament, demobilization and reintegration» programs applied in post-conflict locations to dispose of illegal/surplus fighting units and their weapons.

and regulations[13] negotiated at the UN, to tighter safety standards at production sites (including new nuclear safeguards), wider participation in export-control regimes,[14] improved controls on cargoes by air and sea, monitoring of shipping (the Proliferation Safety Initiative[15]), and more.

All these examples could be argued to reflect adversarial «us against them» thinking and to be inherently asymmetrical, in that the implementing countries have not been restrained in their own military capacities – or have even increased them for the new tasks. Some post-9/11 initiatives, however, also had the effect of improving positive cooperation and sharing, not least between former adversaries. The Organization for Security and Co-operation in Europe, for instance, has adopted common positions on non-proliferation and the control of SALWs that unite EU and NATO member states with Russia and its adherents. The United States, the EU, Norway, and Japan have worked to help Russia destroy its surplus and obsolete nuclear holdings and to close down or convert dangerous chemical production facilities. Regimes developed at the UN for universal application, such as UN Security Council Resolution 1540 on possession and transfer of weapons of mass destruction (WMD), have included follow-up processes to help weaker or less-informed states live up to their obligations. Sizeable funds have been dispensed by states and organizations to help partners build new competences in weaponry and WMD control, including training for border- and customs officials. Such solutions reflect the «classic» conception of arms control by implying equal recognition, balanced obligations, and the growth of trust. But these solutions also belong within the more general post–Cold War trend of seeking security through active cooperation and intervention rather than restraint – a tendency also seen in the multiplication of «peace missions» worldwide.[16]

At the same time, the treaty method has not, in fact, been extinguished, but rather corralled into more specific areas, and experimented with in newer ones. The latest and largest experiment is the Arms Trade Treaty adopted in the UN General Assembly (itself an intriguing procedure) on April 2, 2013,[17] but the UN Security Council Resolutions already alluded to on terrorist financing and WMD governance represent

13 These include UN Security Council Resolutions 1373 and 1540 introducing worldwide restraints on terrorist financing and unauthorized possession of or trade in WMD, respectively.

14 Among multilateral export control groups with purely Western roots in the Cold War, the Nuclear Supplies Group and Zangger Committee now include both Russia and China (with totals of 47 and 38 members, respectively), whereas the Wassenaar Arrangement on conventional arms exports (41 members) includes Russia and Ukraine. See also Amitav Mallik, *Technology and Security in the 21st Century: A Demand-Side Perspective*, SIPRI Research Report no. 20, 2004; available at: http://books.sipri.org/product_info?c_product_id=3.

15 Currently with 72 members; see: www.state.gov/t/isn/c10390.htm.

16 Such missions, if civilian and mixed operations are included, have roughly doubled in two decades, mainly as a result of other organizations besides the UN entering the field. Latest details can be found in the contribution by Jane Dundon, «Global Trends in Peace Operations,» in *SIPRI Yearbook 2013: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2013).

17 See: www.un.org/disarmament/ATT.

distinct new forms of universal, legally binding instruments.[18] The process of finding new classes of «inhumane» weapons to be universally banned has continued, most recently with the 2008 Convention on Cluster Munitions.[19] However, in the last two decades, it has focused largely on low-tech, «poor men's» techniques that are less likely to be considered vital by advanced military nations, while avoiding topics linked with new-horizon technologies (with the honorable exception of the ban on using lasers for blinding)[20] and with equipment for use in internal security. The United States and the Russian Federation concluded the New START Treaty in 2010 and brought it into force in 2011, though the two nuclear superpowers remain divided over the need for controls on ballistic missile defense – where President Barack Obama has chosen to continue the Strategic Defense Initiative, albeit in a much reduced form.[21] Last but not least, legally binding agreements made in the context of post-conflict peace settlements have sometime created arms control/reduction obligations for specific states or groups of states, though this method – highly successful in the Florence Agreement applied to former Yugoslav nations after the Dayton Agreement[22] – has not been as widely experimented with as one might wish.

Should the friends of arms control today be trying to re-extend the treaty method from this surviving foundation and to re-conquer the space taken up since the 1990s by other methods and other actors advocating arms restraint? Trying to turn the clock back in an environment so drastically changed, and still changing, would go against general evolutionary logic. Further, when considered as just one element in an arms control toolbox, it becomes clearer that formal international-legal instruments have their limitations as well as strengths. Not only are they harder to apply to non-state actors, but they take time to negotiate and, once adopted, are hard to amend and adapt. They do not per se create cooperative communities of the kind that have brought most of the world's advances in peaceful coexistence. Rather, they have often spurred blaming-matches over compliance that have exposed (if not actually aggravated) international tensions. The worst-behaving countries can simply decline to sign up, or find a way of withdrawing when the constraints become inconvenient, as North Korea did with the Non-Proliferation Treaty in 2003. Above all, such instruments are difficult to apply to tensions arising from doctrinal asymmetries, such as the uneasy coexistence in Europe between Russia's (and some of its Western neighbors') territorial concerns on the one hand, and intervention-oriented concepts that see the continent more as a launching pad, on the other.

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18 As such, they are also controversial; see Christer Ahlström, «Security Council Resolution 1540: Non-Proliferation by Means of International Legislation,» in *SIPRI Yearbook 2007* (Oxford: Oxford University Press, 2007); available at: www.sipri.org/yearbook/2007/11/11A.

19 See: www.clusterconvention.org.

20 Lasers are covered in Protocol IV to the Certain Conventional Weapons convention (see note 2), adopted by the UN in 1995. In another important technological sphere, a convention to Prevent an Arms Race in Outer Space has been on the Conference on Disarmament agenda at Geneva for many years but remains politically blocked.

21 See: www.armscontrol.org/factsheets/usmissiledefense.

22 See: www.osce.org/item/43725.

The way forward

What to do? To be «fit» for survival in a Darwinian sense, arms control must constantly review its instruments and perhaps work harder on using them in conjunction. To survive in a multipolar environment with widely diffused destructive capacities, it must similarly broaden the *ownership* of – which is more than just participation in – all phases of weaponry restraint. This means assimilating more varied interests and cultures, but it should not be impossible at a time when «rising» states are creating more constituencies with a stake in a peaceful status quo. The latter is also true of the great majority of lawful non-state actors, whose understanding and expertise in their own fields should be better harnessed to deal with the maleficent minority.

Two more specific thoughts: When in discussions with transitioning or post-conflict governments on how to reform their security sectors, topics of defense budgeting, procurement, and arms management – including export control – should be more strongly and systematically integrated than they have been hitherto. And it would be worth considering whether a wider global buy-in could be assured for «humanitarian» efforts by opening up the concept to address topics such as human rights in military service, anti-corruption in procurement, and stronger «green» standards on weapons production, use, and disposal worldwide.

With such a wide range of possible options, arms control will only become obsolete and infertile if it allows itself to do so. Yet the short-term environment for its survival is not promising. To return to our starting points: The economics of economics after the global crash have prompted many defense cuts, but they are also shifting balances between the worst-hit – and less-affected – players in a potentially destabilizing way. They encourage new export drives by hard-pressed defense producers, and increase the temptation to rely on relatively cheap nuclear weapons, or perhaps new mass-destruction techniques. Nor is an early solution visible to the disrupted and dysfunctional economics of fear. Although the United States has a president inclined toward caution, both in military investment and deployment, Russia continues to strive to make up what it sees as a 20-year shortfall in defense production and force strength. The US policy «pivot» toward Asia[23] merely highlights another, Asia-Pacific strategic complex that involves multiple powers in rapid evolution and includes few, if any, arms control traditions.[24] Problems of balance and mutual comprehension in other regions such as the Middle East and South Asia are getting no easier. None of this is made better by 12 years of relative international downgrading of arms control «culture» and the imperatives of restraint since 9/11. Clearly, the supporters of these causes are going to have to tap new energies and seek better synergy between their efforts in different fields if arms control is to survive. They should also ponder the complex and sometimes unwelcome lessons of evolutionary history.

23 A notion introduced in the US National Security Strategy of May 2010; see: www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf.

24 China and Russia do apply force restraints and confidence-building measures on their mutual border.

DES BROWNE (LORD BROWNE OF LADYTON)

Pursuing an Improved Nuclear Order in Difficult Times

Times are difficult for the nuclear agenda. With the United States and Russia possessing 95 percent of all nuclear weapons on earth, the relationship between them matters, and that relationship – despite developments on Syria and Iran – is not in a good place.

Underlying disagreements between the United States and Russia on missile defense, Edward Snowden, and non-strategic nuclear weapons, to name a few, are disparate views on something even more fundamental, namely the nature and role of sovereignty in the international affairs of the 21st century. But we must realize that across the fields of economics, the environment, public health, and security issues, all countries' destinies today are not only linked, but to a large extent are shared with those living beyond their borders. Governments must therefore look to each other for help in managing problems and seizing opportunities. In that context, traditional sovereignty defined as the right of a state government to do what it likes on its own territory – without considering the effects on others – no longer seems fully practical or even beneficial. Moscow's and Beijing's more traditional interpretations of sovereignty as non-interference – almost no matter what the circumstances – still seem to hold sway. It is going to be very difficult to build a common approach to international security problems, including nuclear problems, until and unless we can begin to bridge this fundamental conceptual divide.

And if one looks beyond the US-Russia relationship, nuclear arsenals elsewhere in the world are growing or being modernized for the long term. China, India, and Israel are currently seeking to build effective land-, sea-, and air-launched nuclear triads. France and the United Kingdom have both pledged to keep – and invest in – their nuclear weapons for the long term, though in the United Kingdom the debate is ongoing. India and Pakistan – two countries that have fought three wars with each other, and at least one other major skirmish in recent decades – are also both increasing their nuclear forces and building new plutonium production reactors, which could add to their fissile material stocks and warhead production potential. North Korea is improving its long-range missile capabilities and may be learning how to make warheads small enough to put atop missiles. Alarmingly, the mainstream political leaders in South Korea are beginning to break the nuclear taboo. Does anyone believe that what the Middle East needs today is a second state with nuclear weapons? If the times are difficult, what should we do about it?

Source: US Federal Government – Wikimedia

A Soviet inspector examines a BGM-109G Tomahawk ground launched cruise missile prior to its destruction.

One thing is certain, we have to keep talking to the Russians. Even before the recent developments on Syria, there was evidence that cooperation can deliver things of value: the New START Treaty; an amendment to a Plutonium Management and Disposition Agreement; joint measures aimed at bringing Iran's pursuit of nuclear weapons to a close.

As a permanent member of the UN Security Council, Russia is an important diplomatic player in the Middle East and a key actor in Euro-Atlantic security affairs. To pursue core US and broader Western interests – including on nuclear issues – the West has no choice but to find effective ways of working with Russia.

We also have to keep trying because the unfinished business of the Cold War and the legacy of mistrust that still hangs over Europe as a result are sapping valuable intellectual and analytical energy that could be focused on events outside of the Euro-Atlantic area. Frankly, they are distracting us – economically, diplomatically, and militarily – from the fact that, in the Middle East and Asia, huge changes are under way that will have profound effects on the interests of both Russia and the West. Or simply put, Russia and the West have good reasons to cooperate more effectively in a world where the center of power and attention is beginning to move away from the Euro-Atlantic area and from us.

But perhaps for shorter-term progress on the nuclear agenda, we should look elsewhere, namely the ongoing P-5 nuclear dialogue and the upcoming Nuclear Security Summit in the Netherlands in 2014.

I had a hand in setting up the P-5 dialogue when I was UK Secretary of State for Defence. It is currently operating with a moderate level of ambition, but it has begun to develop a diplomatic momentum of its own and has generated a number of outcomes.[1] But the P-5 dialogue could still be much more ambitious. It could be used to promote a much broader dialogue on strategic stability between the United States, Russia, and China, and to reduce mistrust in strategic relations between these major powers. This could also develop into a discussion about strategic reassurance and even collective security in the longer-term. The P-5 dialogue could be used as a venue to multilateralize the START talks. The Russians, in particular, have always said they favor multilateralization; if they can be induced to be more positive in a multilateral framework, then this could help get us out of the current impasse in bilateral US-Russia talks.[2] Any moves in this direction in the P-5 dialogue could help boost preparations for the 2015 NPT Review Conference.

With regard to the Nuclear Security Summit in the Netherlands next year, there is an opportunity for progress. The Washington Summit in 2010 focused exclusively on fissile materials. The Seoul Summit in 2012 expanded the scope to include the interface between nuclear safety and nuclear security at nuclear facilities and the protection of highly radioactive source materials. Now, at the 2014 summit, the focus needs to shift to improving global nuclear security governance arrangements as a whole.

Despite the fact that nuclear security is important in the fight against nuclear terrorism, the current global system for addressing it is a patchwork of mostly voluntary agreements and requirements that allow states to opaquely pick and choose among them. The system as a whole has many gaps and weaknesses. Progress is particularly important in four areas, according to Kenneth Luongo:

- We need the patchwork of existing agreements to be made more cohesive and its current components to be both universalized and implemented more effectively.
- We need to see greater cross-border communication of non-sensitive information for the purpose of international confidence-building in the system.
- We need to introduce some sort of peer review process, similar to the one deployed in the nuclear safety regime, so that states can begin to reassure each other about their nuclear security practices.
- We need best practices to be disseminated, but allowed to be implemented in a flexible and culturally sensitive manner – need for specific benchmarks.[3]

1 Andrea Berger and Malcolm Chalmers, *Great Expectations: The P5 Process and the Non-Proliferation Treaty*, RUSI Whitehall Report Series, August 2013; available at: www.rusi.org/go.php?structureID=whitehallreports&ref=O5220A834AB3A4.

2 Nick Ritchie, «Pathways and Purposes for P-5 Nuclear Dialogue,» European Leadership Network, September 3, 2013; available at: www.europeanleadershipnetwork.org/pathways-and-purposes-for-p-5-nuclear-dialogue_748.html.

3 Kenneth Luongo, «Improving Nuclear Security Governance through the Nuclear Security Summits,» European Leadership Network, September 4, 2013; available at: www.europeanleadershipnetwork.org/improving-nuclear-security-governance-through-the-nuclear-security-summits-_733.html.

The Hague summit should sign up to these goals and set itself the task of developing a cohesive action plan with implementation to be the focus of Nuclear Security Summit in Washington in 2016.

I am not arguing that progress in any of the areas will be easy. But I am arguing that the stakes are too high to allow the difficulties in the current scene to forestall all diplomatic efforts to strengthen the nuclear order. We have opportunities before us. They will not be taken without active political leadership and willingness to engage. We have to keep pushing those in office to take this agenda seriously. I intend to do that from my vantage point as Chair of the European Leadership Network and as the Convenor of the UK Top Level Group.

STEVEN PIFER

US Military Advantages and the Future of Nuclear Arms Control

Introduction

The United States and Russia are implementing the New START Treaty, which requires that each side reduce the number of deployed strategic warheads to no more than 1,550 on no more than 700 deployed strategic missiles and bombers by 2018. The administration of President Barack Obama would like to go further. Doing so, however, will require that Washington address several related issues, first and foremost missile defense. Solutions on these issues are possible if both Washington and Moscow are prepared to engage seriously.

In June 2013 in Berlin, President Obama proposed to reduce New START's limit of 1,550 deployed strategic warheads by one-third and called for «bold» – though unspecified – reductions in non-strategic nuclear weapons (NSNWs, also referred to as tactical nuclear weapons). Administration officials have said privately that Washington also is prepared to make corresponding reductions in deployed strategic missiles and bombers, as well as in New START's limit on deployed and non-deployed missile launchers and bombers.

Following New START's entry into force in 2011, US officials expressed interest in negotiating an agreement that would constrain all US and Russian nuclear weapons – strategic and non-strategic, deployed and non-deployed – under a single aggregate limit, perhaps with a sublimit on deployed strategic warheads. That would mean that, for the first time, all US and Russian nuclear weapons would be on the negotiating table.

US officials have shown less interest in such an approach recently, believing that such a «big» treaty would require considerable time to negotiate, and likely would not be finished during the remainder of President Obama's time in office. (It would be best to submit a treaty to the Senate for consideration before 2016 – a presidential election year – so such a treaty would need to be finished in 2015.) US officials now talk of taking different approaches to limits on different classes of nuclear arms. While the US government seeks to reduce the numerical limits in New START, it is consulting with NATO on transparency and confidence-building measures regarding non-strategic nuclear weapons, which may be necessary first steps for engaging Russia on reducing such weapons.

For its part, Moscow has shown little enthusiasm for nuclear reductions beyond those required by New START and has said that other questions must be addressed in conjunction with a discussion about further reductions. These include: differences over missile defense; treatment of conventional prompt global strike systems; multilateralization of the nuclear arms reduction process; limitations on conventional forces in Europe; and outer space. With regard to NSNWs, Russian officials have said that all such weapons should be withdrawn to national territory – which would require the removal of some 200 US nuclear bombs from Europe – as a precondition for any negotiation. US officials reject the precondition but allow the possibility that this could be the outcome of a negotiated agreement.

The manner in which Moscow has drawn these linkages reflects Russia's concerns about US advantages in these areas, which the Russians say could undercut the balance in strategic nuclear forces established by New START. Some question Russia's general readiness for further reductions and believe that the purpose of the linkages may be to give Moscow a pretext not to reduce the number of warheads beyond the number stated in New START, at least for the present.

Although US military forces have developed certain leads in missile defense and high-tech conventional weapons, it is important not to overstate US military superiority or advantages. The American military has just disengaged from a long effort in Iraq, is drawing down from an even lengthier campaign in Afghanistan, faces significant budget cuts, and must recapitalize its military equipment holdings. Most US allies in Europe likewise face significant budget reductions, whereas the Russian military has embarked on a major modernization program.

That said, Washington appears to understand that, if it wishes to make progress on further nuclear arms reductions, it must address at least some of the linked questions posed by Moscow. It should be possible to do so. The rest of this paper will explore how.

Missile defense

The underlying Russian concern about missile defense stems from the offense-defense interrelationship, which is recognized in the preamble of the New START Treaty. Moscow worries that, should the United States deploy larger numbers of more sophisticated and effective missile interceptors, that could undermine the strategic offensive nuclear balance. This concern is entirely understandable, in principle.

The Russians have, since 2011, been asking for a legally binding guarantee – that is, a treaty – that US missile defenses will not be directed against Russian strategic forces. They seek to have the guarantee accompanied by «objective criteria,» by which they mean limits on the numbers, velocities, and locations of missile interceptors. That would amount to a revival of the 1972 Anti-Ballistic Missile Treaty, from which the George W. Bush administration withdrew in 2002.

There is no way, at present, that Senate Republicans would consent to ratification of such a treaty. Unfortunately, the debate over missile defense in Congress currently is driven as much by ideology as it is by an appreciation of strategic questions or

an understanding of the actual capabilities of individual missile defense systems. Although Russian officials correctly note that this is an «American» problem, it precludes the kind of treaty on missile defense that Moscow seeks.

A legally binding treaty on missile defenses may, at some future point, be necessary and appropriate if the numbers of strategic ballistic missile warheads and ballistic missile warhead interceptors are more proximate. But that is not the case now – and will not be for the foreseeable future. The gap between strategic offense and strategic defense is huge.

The New START Treaty requires that the United States and Russia each have no more than 1,550 deployed strategic warheads as of February 2018. By that date, the US military will deploy – at most – 44 interceptors with a velocity capable of engaging a strategic warhead, which is about two-thirds the number of strategic missile interceptors that the Russian military currently deploys around Moscow. Forty-four or 68 interceptors – even if each had a 100 percent probability of killing an incoming warhead (which they do not) – would still pose little threat to the strategic offensive forces of the other side.

Although the US decision in March 2013 to cancel phase 4 of the European phased adaptive approach to missile defense was driven by cost and technology issues rather than Russia considerations, it nonetheless ended the aspect of that missile defense system that was of greatest concern to Moscow: SM-3 interceptor missiles, which have velocities capable of engaging strategic ballistic missile warheads. In April, US officials proposed a bilateral executive agreement requiring the sides to provide transparency about current and planned missile defense programs. Such transparency would allow each side to determine whether there was any serious threat pending to its strategic offensive forces and provide sufficient warning time to react, were such a missile defense threat to emerge.

Russian officials understand that a legally binding treaty is not possible now. If Moscow dropped its demand for a legal guarantee and limits – while preserving the right to return to the question later, in the event of a serious narrowing of the gap between offense and defense – the path to a resolution of missile defense concerns would be open.

Moreover, the path would also be open for a cooperative NATO-Russia missile defense system of Europe, which NATO and Russian leaders agreed to explore in November 2010. Washington and Moscow could build on ideas already discussed in both Track I (Pentagon-Ministry of Defense) and Track II channels for how independent NATO and Russian missile defense systems – neither side would be prepared, at least initially, to work under the command of the other – would interact.

These ideas include:

- transparency regarding current and planned missile defenses;
- joint missile defense exercises (the United States, NATO, and Russia already have experience of such exercises);

- a jointly manned NATO-Russia data fusion center to receive early warning and tracking data from US, NATO, and Russian radars and other sensors, combine it, and send the enhanced product back to the NATO and Russian missile defense commands; and
- a jointly manned NATO-Russia planning and operations center to exchange views regarding possible ballistic missile threats to Europe, likely attack scenarios, and plans and rules of engagement for operating missile defenses.

These ideas could go a long way to addressing Russia's concerns about missile defense ... if Moscow wants to find a solution to this issue, as opposed to keeping it alive in order to have a pretext to avoid discussion about further nuclear arms reductions.

Conventional prompt global strike

The Russians have expressed concern about the increasing accuracy and lethality of long-range, conventionally armed systems on the US side, worrying that such systems could attack targets – including strategic targets in Russia – that previously would have required nuclear weapons. The question of conventional prompt global strike can be broken down into three parts, each of which can be addressed in a different way.

First, should either the United States or Russia consider putting conventional warheads atop strategic ballistic missiles, those warheads would be captured by the New START Treaty. The 1,550 limit on deployed strategic warheads makes no distinction between nuclear warheads and conventional warheads. A side choosing to deploy a conventional warhead on an intercontinental ballistic missile (ICBM) or submarine-launched ballistic missile (SLBM) would have to deploy one less nuclear warhead.

Second, hypersonic glide vehicles, although accelerated on a ballistic missile, do not fly a ballistic trajectory, and thus would not be captured by New START. The US military is seeking to develop a hypersonic glide vehicle capable of delivering a conventional warhead to a range of 6,000 miles within one hour of launch. Were the Pentagon to make serious progress on such a vehicle, it would be developing a weapon that nearly replicates the capability of an ICBM. In that case, New START's Bilateral Consultative Commission provides a venue to discuss such systems, their impact on the viability of the treaty, and how to deal with such systems. (It should be noted that the Russian military is exploring hypersonic glide vehicles as well.)

The United States sees the requirement for hypersonic glide vehicles as limited. It is described as a «niche» capability, measured in terms of a few dozen warheads at most. A hypersonic glide vehicle would be a very expensive way to deliver a conventional payload to a target at long distance, running in the tens or hundreds of millions of dollars per vehicle. Limited defense budgets would constrain the number of hypersonic glide vehicles that the United States might deploy, if they could be perfected. Given the small number, one solution would be to put them under the New START warhead limit, in the same way that the Obama Administration accepted placing conventional warheads on ICBMs or SLBMs under the 1,550 limit.

Third, conventionally armed air- and sea-launched cruise missiles, according to some Russian analysts, pose a threat to strategic nuclear forces, including ICBM silos. It would be difficult for one side to move sufficient numbers of cruise missile platforms to the vicinity of the other without detection, which would give the other strategic warning. The Russians appear to have a particular concern about conventionally armed sea-launched cruise missiles on submarines, including the four former Ohio-class ballistic missile submarines that have been converted to carry sea-launched cruise missiles, fearing that submarines might approach Russian coasts undetected.

Beyond that, US and Russian military analysts appear to have different assessments of the capabilities of conventionally armed cruise missiles against certain targets, particularly hardened ICBM silos. Russian analysts express concern that US cruise missiles could effectively attack ICBM silos, whereas the US military doubts that conventionally armed cruise missiles would have a high probability of killing a silo.

Conventionally armed cruise missiles represent a key part of US force projection capabilities, and it is difficult to see the US military accepting significant limits on them (the same may be true for the Russian military, which also seeks to develop new cruise missile capabilities). But Washington and Moscow might constitute a military-to-military working group to explore the capabilities of conventionally armed cruise missiles and their implications for the overall strategic nuclear balance.

Multilateralization of the nuclear arms reduction process

Washington and Moscow between them hold more than 90 percent of the world's nuclear weapons, and this will remain the case even after New START's limits take full effect in 2018. The United States and Russia thus have primary responsibility to lead on nuclear arms reductions. But the process cannot forever remain solely a US-Russian enterprise. That said, the two nuclear superpowers hold a large numerical advantage over third countries: Estimates put the US and Russian nuclear arsenals each at around 4,500 total nuclear warheads, compared to 300 for the largest third-country nuclear force. It is unlikely that third countries will be prepared at this point to engage in or accept negotiated reductions on their much smaller nuclear forces.

Discussions are under way among the UN Security Council Permanent Five on how they should meet their obligations under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). Washington and Moscow could discuss a joint strategy for encouraging the other P5 states to become more involved in the nuclear arms control process. For example, those states could provide transparency regarding their total warhead numbers. Going further, they might offer unilateral political commitments not to increase their nuclear weapons numbers as long as the United States and Russia are reducing their nuclear warhead levels. The approaching 2015 NPT Review Conference might provide a venue for mobilizing diplomatic efforts by non-nuclear weapons states to encourage Britain, France, and China to take at least some steps.

One consideration for Washington and Moscow is that many Chinese, and some French, nuclear weapons systems are not «strategic» in the sense of the New START Treaty. Nor are the nuclear weapons systems of other third countries «strategic.»

This is an additional reason for the United States and Russia to engage on NSNWs: It will be difficult to ask third countries to constrain their NSNWs if US and Russian NSNWs are not limited.

Conventional forces in Europe

Russia suspended its observation of the 1990 Conventional Armed Forces in Europe (CFE) Treaty in 2008, complaining that NATO had not moved to ratify and bring the 1999 Adapted CFE Treaty into force. After a failed effort to restore Russian observance of the CFE Treaty, NATO countries suspended certain of their CFE obligations as regards Russia in 2011. At this point, it is difficult to see how the CFE Treaty might be revived, let alone how the Adapted CFE Treaty might be brought into force.

The CFE Treaty (as did its successor) limited five categories of treaty-limited equipment (TLE): main battle tanks, armored personnel carriers, artillery, attack helicopters, and combat aircraft. Most adherents to the treaty, including NATO member states and Russia, are well below the limits provided in the CFE Treaty or those provided in the Adapted CFE Treaty. For example, in 2013 the United States withdrew the last of its main battle tanks from Europe. (Whether CFE's TLE categories are the right measure of modern combat power in an era of new technologies such as drones is another question.)

With the defense budgets of most NATO countries in significant decline, TLE numbers are likely to decrease further on the NATO side. Although Russia is increasing its defense budget and has launched a major military modernization effort, that program appears to be going slower than planned. It will be some time before the Russian military restores capabilities that pose a serious threat to NATO.

Although the CFE Treaty is for all practical purposes dead, it achieved its principal objective. Neither NATO nor Russia appear capable now – or for the foreseeable future – of mounting a major surprise ground offensive and/or seizing and holding large swatches of the other's territory.

It thus may make more sense for NATO, Russia, and other European countries to focus their efforts on confidence- and security-building measures (CSBMs) regarding conventional forces: notifications of exercises and major military movements; observations of exercises; and inspections of military forces. In doing so, the sides could build on the Vienna Document on CSBMs and the Open Skies Treaty regime, to which NATO countries and Russia largely continue to adhere.

Such measures could strengthen confidence regarding knowledge of the military capabilities and intentions of other countries, particularly as regards the ability to conduct a large-scale surprise attack. Progress on such CSBMs might provide a foundation for a later return to the question of limits of specific categories of conventional weapons.

Outer space

Moscow has for many years decried the possibility of the militarization of space and called for negotiation of a treaty to prevent it. It is not clear, however, what kinds of space-based systems are driving Russia's concerns. The US military currently has no serious plans to deploy strike systems in space.

The United States, nevertheless, makes heavy use of space in its military operations, including for command and control, communications, surveillance, reconnaissance, and targeting. The Defense Department historically has been concerned that any agreement to limit military activities in space could infringe on these sorts of capabilities.

The European Union has suggested an international code of conduct for space operations, and the US government is open to the idea. It may offer a way forward. Although considerably less sweeping than Russia's proposal, it would provide a starting point for discussions on outer space issues.

Conclusion

Unfortunately, the various linkages drawn by the Russians have knotted up the process of further nuclear arms reductions. As noted above, there are approaches to resolve or address the issues that Moscow has linked to nuclear cuts, which might create a path to unravel the knot. The US government has engaged on missile defense and would likely be prepared to explore approaches to address some of the other questions. It would be important, however, to have an indication that, were Washington to do so, Moscow would be prepared to deal seriously on further reductions in nuclear arms.

NIKOLAI N. SOKOV

Russian Efforts to Acquire Precision Conventional Strike and Defense Capability

Implications for Conventional Arms Control in Europe

The current situation

NATO's existing defense strategy is built around «an appropriate mix of nuclear, conventional, and missile defense capabilities,» according to the 2010 Strategic Concept. To a large extent, that formula refers to the near-monopoly of the United States and its allies on the precision-guided, long-range conventional-strike capability coupled with advanced missile defense assets. This capability was successfully used on a number of occasions, starting as early as the 1990 Gulf War, and has fundamentally changed the global security landscape. It allows overcoming limitations inherent both to «traditional» conventional forces and to nuclear weapons. Military operations do not require large armies, can be conducted at a faster pace, and do not involve large-scale losses of own troops or collateral damage. At the same time, modern conventional forces do not carry the moral and political stigma of nuclear weapons, which makes them effectively unusable for achieving specific, limited political and military goals and renders threats with nuclear use hollow (with the possible exception of general deterrence situations). In other words, technological progress has helped to return «raw» power into the interstate relations for both defensive and offensive missions.

In Europe, US and NATO superiority in conventional assets has helped to build a highly credible deterrence to a range of existing and potential threats not limited to Russia. Equally important, it has also allowed for reducing reliance on nuclear weapons in the Alliance security policy, as reflected in the Strategic Concept and a deep reduction in American tactical nuclear weapons deployed in Europe.

Two decades of near-monopoly on modern conventional-strike and defense assets have resulted in complacency, however. An unspoken assumption seems to underlie defense planning in NATO, and especially in the United States, which provides the bulk of the modern conventional capability of the Alliance – namely, that technological superiority will continue almost indefinitely. This assumption has resulted, among other things, in a stubborn resistance in the United States to any arms

control measures that could limit US conventional power. This became particularly evident during the ratification of the New START Treaty: The US Senate resolution prohibits any additional limitations on the conventional-strike and missile defense capabilities, and this issue has contributed to the continuing deadlock in consultations on new measures to reduce nuclear weapons. The refusal of a significant part of the US establishment and the public to apply arms control measures to these assets not only reveals a strong belief in the continued technological superiority of the United States, but also presents a serious potential challenge: namely, if Russia (as well as perhaps China) acquires similar capabilities, it will also remain unrestricted.

The challenge

It is well known that Moscow regards the superiority of the United States in this class of weaponry as a potential threat. This perception has been exacerbated by a series of successful limited wars, which, in spite of the military successes, have also created numerous instabilities in Eurasia and are regarded as a potential direct threat to Russia itself. To counter it, the Military Doctrine adopted in 2000 and modified in 2010 proposes the option of the limited use of nuclear weapons, but that strategy is explicitly classified as a «temporary fix» until Russia acquires similar capabilities of its own. The downside of reliance on nuclear weapons is obvious: There is a strong international norm against the use of – and the threat of – nuclear weapons; although they can be utilized for the purposes of deterrence, they cannot be used for the projection of power and influence – even as a deterrence tool, they lack credibility vis-à-vis conventional threats. Thus, the conventional capabilities of the United States are seen not only as a threat, but also as an example to emulate: It could give Russia new leverage in its own foreign policy by enabling the use of military options, whether overtly or through threats.

In the late 1990s and the first half of the 2000s, work on modern conventional assets was slow – it was plagued by the chronic underfunding and the generally poor state of the defense industry. The pace of these efforts has since accelerated, especially following the 2008 war with Georgia, which, in spite of victory, was regarded by many – both inside and outside Russia – as an indicator of a poor capability to wage war. Although it has become customary to wave away the prospects of Russia's modern conventional capabilities, such an attitude is no longer warranted.

A review of relevant Russian programs reveals that, with regard to conventional cruise missiles, both air- and sea-launched, as well as precision-guided gravity bombs, Moscow has reduced the gap: from 10 to 20 years in the 1990s to perhaps as few as 5 to 7 now. Where missile defense capabilities are concerned, the gap has narrowed from about 10 years to perhaps no more than 5, if not less (the new interceptor for the S-400 system should give Russia the capability to intercept intermediate-range missiles; development of the S-500 system, with projected capability against strategic missiles, is in full swing). The same is true for the space-based component (the GLONASS system) – the gap has been reduced from 15 or so years to only a few. The system is currently coming online, although it will trail behind the GPS system of the United

States in terms of military capabilities for some time. The same is true for air- and sea-launched cruise missiles. With regard to Prompt Global Strike capability, Russia even today is probably only a few years behind the United States: Whereas Washington has abandoned earlier plans to equip strategic missiles with non-nuclear warheads and has opted instead for the development of new delivery vehicles, the Russian military has announced a plan to create a new intercontinental ballistic missile for conventional missions. Given the state of Russia's missile industry, one should not be surprised if, in the end, it acquires an operational Prompt Global Strike capability at about the same time as the United States. In other words, pieces of the puzzle regarding Russia's conventional capabilities seem to be gradually falling into place.

Of course, the success of these efforts depends on the ability of the Russian government to adequately fund and properly organize the R&D and production processes (a major uncertainty, given the anticipated drop in revenues from oil and gas exports). Yet, this progress begs closer attention as well as an assessment of its impacts on international – and especially European – security. Although one should not overestimate Russia's achievements in that area and the chances for success, it would be equally undesirable to underestimate them – a tendency that has resulted in widespread complacency following the 2008 Russia–Georgia War. It seems significant that the large-scale maneuvers in 2013 were apparently the first since 1999 that did not involve simulated limited use of nuclear weapons.

One feature of Russia's emerging conventional capabilities that deserves closer attention is the emphasis on intermediate-range strike assets; short-range and strategic systems appear to attract somewhat more attention than in the United States. The main reason is the simple fact that the majority of potential targets are in Eurasia, that is, much closer to Russia than to the United States. In this regard, the proposals to abrogate the 1987 Intermediate-Range Nuclear Forces Treaty, which reappear with considerable regularity (in 2000, 2005–2007, and, most recently, in 2012–2013), deserve close attention: They apparently reflect the desire of the Russian military to acquire a conventionally armed weapon analogue to the SS-20s, which were banned by that treaty and could give Moscow a prompt-strike capability with a Eurasian reach.

The consequences

The impact of Russia's modern conventional capabilities, when they take shape, is likely to be multifaceted and asymmetric. The most direct and visible consequences will likely be seen in Russia's policies toward the Middle East, South Asia, and other areas to its south. There, the ability to credibly threaten the limited, targeted use of force from a distance will give it major leverage to advance its interests, support friends and clients (even acquire new ones), and generally have a much greater impact on the development of events in Eurasia.

Consequences for Europe will be probably less visible or dramatic, but nonetheless significant. On the one hand, Moscow's present concerns about the conventional-strike capabilities of the United States will be somewhat alleviated, which could have a moderating effect on its national security policy. It appears possible that Russia might

become more open to reducing its reliance on nuclear weapons, and perhaps even agree to put its tactical nuclear arsenal on the negotiating table.

On the other hand, the credibility of NATO's conventional deterrence is bound to decline. In the absence of the current asymmetries («usable» precision-guided conventional assets vs. «unusable» nuclear weapons and «outdated» conventional forces), Russia will acquire many of the capabilities similar to what NATO has, including the capability to credibly threaten the limited use of force. Accordingly, the ability of NATO (the United States foremost) to threaten the use of force (whether for the purposes of deterrence or coercion) will be less credible because it will be balanced by Russia's capability to respond in kind. Although practical implications of that capability will be modest (i.e., Russia is unlikely to openly threaten members of NATO), some members of the Alliance will nonetheless perceive the decline in the deterrence capabilities of NATO as a threat to their security and request the strengthening of NATO deterrence.

This is particularly true for the Baltic states, which even regard Russia's existing conventional forces to be a direct threat. Other new members of NATO might also feel threatened by the expanded capabilities and range of Russia's conventional forces. Advanced defense assets could be regarded by them as a sign of NATO's diminished ability to hold vital military and political targets in Russian territory. Under conditions of military symmetry, one cannot rule out requests on the part of some members of the Alliance to increase reliance on nuclear weapons to compensate for the perceived reduction in the credibility of conventional (strike and defense) deterrence.

Thus, the greatest challenge for the Alliance will likely be the risk of internal disagreements and conflicts, which could undermine its cohesion. Depending on the political lineup in the United States five or seven years from now, calls for greater reliance on nuclear weapons could meet a favorable response, which, in turn, might alienate countries that have consistently advocated the removal of US nuclear weapons from Europe, and the reduction of a reliance on nuclear weapons in general. In other words, fault lines – which were visible several years ago during the discussion on tactical nuclear weapons and were mitigated with some difficulty by the Deterrence and Defense Posture Review – could reappear on a greater scale. This time, it might be more difficult to mend them, however, because the security landscape in Europe will have changed. To more clearly understand the dynamic of the situation, it might be advisable to recall the debates of the 1980s, when the credibility of the security guarantees of the United States was called into question: Since the United States and the Soviet Union were locked in a stable mutual deterrence relationship, some European members of NATO began to fear that Washington might be reluctant to use force if Europe were attacked. The intensity of security concerns will certainly not be as high as it was then, but we could witness the emergence of similar sentiments.

The inadequacies of existing arms control frameworks

Existing arms control regimes as well as, more broadly, the arms control toolbox developed during the last years of the Cold War were not designed to address the military assets that are moving to the center of security dilemmas in Europe. For example, the only category of delivery vehicles for precision-guided assets that is covered by the CFE regime is aircraft. Conventional cruise missiles on strategic bombers, short-range land-based missiles, and a broad variety of sea-launched cruise missiles remain outside the scope of that regime. If the Intermediate-Range Nuclear Forces Treaty is abrogated, conventionally armed intermediate-range missiles will also be outside any limitations. There are no arms control instruments to address more futuristic systems, such as hypersonic vehicles.

To remedy the negative impact of the progress in conventional-strike and defense technologies, including their acquisition by Russia, on both European security as a whole and on NATO, one will need a new set of arms control tools that could help enhance predictability and mitigate the perception of an increased threat by Russia to some members of the Alliance, as well as the Russian perception of a continuing threat from NATO.

The characteristics of the assets in question, especially their long ranges, mobility, and possibility of use on short notice, make the traditional territory-based principles inapplicable or, at best, only partially applicable.

- Under some scenarios, even small-scale use of long-range, precision-guided conventional weapons can have significant political and security implications; hence, straightforward limits used by the CFE cannot have the same effect when applied to modern assets (100 tanks do not make much difference, but 100 delivery vehicles with precision-guided weapons might). Moreover, a precise accounting of items following the rules of the US-Russia START treaties cannot be used either: The dimensions of the items in question are small (making an intrusive verification difficult) and coincide with dimensions of weapons that do not have precision guidance.
- Many assets in question have long ranges (in particular air- and sea-launched cruise missiles) or can be quickly moved from one region to another (from Siberia to the European side of Russia, or from the United States to Europe, for example) using aircraft, ships, or submarines. As a result, the zone approach used in the CFE Treaty will have limited application; even Europe as a whole (from the Atlantic to the Urals) will not encompass all relevant items. Worse still, naval weapons (including submarine-launched cruise missiles) are not subject to the CFE, and there is no mechanism for including them into a CFE-type regime (in fact, mobility was one of the arguments that the United States used to exempt naval weapons from the scope of the treaty).
- Defense assets (whether air or missile defense) are not subject to any limitations and, moreover, there is little chance that the United States or NATO will be prepared to accept such limits. Yet, if used in conjunction with offensive

conventional weapons, these assets can be seen as a factor that enhances military capabilities, both for deterrence and for use as a political lever. Baltic states might be especially sensitive to a combination of offensive and defensive assets on the Russian side.

In search of a solution

One possible way forward to contemplate might be to build a new system of arms control measures around the principles of the Vienna Document – namely, to emphasize transparency and notifications about the movement of weapons systems. These measures could help enhance predictability of the overall security landscape. The provisions of this document will have to be expanded to new areas and systems, though, including notifications about the movement of relevant weapons systems on both sides, their general characteristics, an estimate of how much time it might take to move them to Europe, or its vicinity (and, hence, determine the timing for advance notifications). It will also require a set of confidence-building measures, including an obligation to refrain from the large-scale movement of such assets, notifications about military exercises that involve their relocation and/or concentration, etc. Similar measures could be applied to defense systems. Although numerical limits are hardly advisable (or feasible), it might make sense to consider an exchange of technical data and notifications (maybe even some loose limits) on the concentration of these assets in particular areas and the inclusion of these systems into notifications about large-scale military exercises, etc.

As noted above, it would be best to begin considering these and other arms control measures preemptively – before the acquisition of modern conventional capabilities by Russia begin to affect both the security situation in Europe and relations within NATO. The very fact that we do not have precedents from past arms control negotiations to rely on will make the task of devising a new toolbox a challenging and lengthy process. Without doubt, preemptive arms control is politically controversial – the domestic political process in the United States is bound to become a major obstacle to such an exercise, among other problems. Consequently, a consideration of options might best be started within the expert community, both within NATO (especially in Europe) as well as in the form of Track II dialogue with Russia. Options developed (or at least discussed) within that format could, at a later stage, be used by policymakers and negotiators when the time is ripe for action.

OLIVER MEIER

The Changing Shape of Arms Control: Background and Implications[1]

Is there an arms control crisis? At first sight, the answer seems obvious. Since 2010 Russia has suspended implementation of the Conventional Forces in Europe treaty (CFE), once a cornerstone of arms control in Europe. Looking beyond Europe, Iran continues to be in non-compliance with its obligations under the safeguards agreements it concluded with the International Atomic Energy Agency. Because some nuclear weapon possessor states refuse to sign the accord, the Comprehensive Nuclear-Test-Ban Treaty has still not entered into force, some 17 years after it was opened for signature. In February 2013, North Korea conducted its third nuclear weapon test. The Geneva Conference on Disarmament has been blocked since 1996. Future military technologies – including missile defenses, cyber technology, and armed drones – still defy any arms control regulation. There is a clear and present danger of new arms races.

Yet, at a second glance, the picture appears to be not quite so gloomy. In April 2010, Russia and the United States concluded the New START Treaty on the reduction of strategic nuclear forces, and both sides are still engaged in a dialogue on further reductions of their nuclear arsenals. The military situation in Europe has become so relaxed that CFE upper limits are being observed, even though the treaty's transparency and verification provisions are no longer being implemented. North Korea and Iran did try to cheat on their non-proliferation obligations, but the international community caught them red-handed. After 10 years of stalemate, members of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in May 2010 adopted a politically binding action plan to strengthen the regime. And since 1997, states have agreed upon key treaties to strengthen humanitarian arms control, namely comprehensive multilateral accords on the prohibition of anti-personnel landmines and cluster munitions. More recently, in April 2013, the UN General Assembly, with overwhelming majority, approved an international Arms Trade Treaty.

This article argues that we need to apply a broad concept of arms control in order to capture these contradictory developments. Since the 1960s, the treaty-based

1 This article is a revised and updated translation of the article by Oliver Meier, «Gibt es einen Formwandel der Rüstungskontrolle?,» *S+F. Sicherheit und Frieden* 31(2): 99–101.

Pallets of 155 mm artillery shells containing mustard gas before destroying.

regulation of existing military capabilities has been at the center of arms control.[2] But this narrow focus no longer sufficiently captures current arms control practices. A modern concept of arms control must encompass all aspects of cooperative efforts to control military-relevant capabilities, technologies, and capacities. We also need a fresh look at who conducts arms control. In the past, governments belonging to the two military blocks – NATO and the Warsaw Treaty Organization – were the main arms control actors. Today, new non-governmental actors are influencing the success of arms control instruments. Under such a broad approach to arms control, three distinct types can be identified:

- *Classical arms control*, as a stability-oriented approach, aims to regulate military potentials.
- *Non-proliferation regimes* want to minimize the risks that sensitive technologies are misused for hostile purposes.
- *Humanitarian arms control* wants to reduce the level of suffering caused by weapons during and after conflicts.

The success of arms control depends to a large degree on obligations being accepted and implemented voluntarily as well as on the reciprocity and inclusiveness of accords. Coercive arms control can support – but not replace – consensually agreed

2 See, for example, Hedley Bull, «Arms Control and World Order,» *International Security* 1(1): 3–16.

rules.[3] Thus, in the context of this article, enforced disarmament – for example, in the context of an armistice or peace agreement – is not considered part of arms control.

In Europe, classical arms control is in a state of crisis because under conditions of US military supremacy, it is difficult to pursue approaches that aim to maintain or improve military balances. In 2011, the United States accounted for about 40 percent of global defense expenditures. From 2000 to 2009, European NATO states together spent seven times more on defense than Russia. If one includes the United States, the NATO-Russia relation of defense spending during the same period is 19:1.[4] Military imbalances are particularly stark if one looks at future defense technologies, such as missile defenses and advanced conventional weapons with strategic reach and great precision. When it comes to these potentially destabilizing systems, the US lead is so great that arms control approaches based on symmetry can hardly be applied. China and Russia, therefore, try to respond asymmetrically to US military dominance. China (8.2% of global military expenditures) invests in cyber warfare. Russia (4.1%) promotes its tactical nuclear weapons – which, militarily, have become largely irrelevant – to symbols of strategic parity with the United States and NATO. In both cases, there are risks of new arms races being kick-started or old ones accelerating.[5]

The greatest opportunities for applying traditional arms control concepts may exist in those regions where the classical security dilemma dominates political relations. South Asia and the Middle East are often named as the regions where security is still viewed primarily through the lens of military capabilities. However, in both regions, the multipolar nature of security relations complicates a transfer of the arms control lessons that were learned in Europe under conditions of bipolarity.

For the global *non-proliferation regime*, the effects of globalization represent the greatest challenge. The diffusion of military-relevant technologies, the accelerating speed of technological advances, as well as the growing importance of new non-state actors make it necessary to reform the rules and procedures of existing regimes.[6] Take the example of the Chemical Weapons Convention (CWC). Negotiations of the treaty were concluded in the early 1990s, when the Cold War confrontation was just coming to an end, and both sides no longer viewed chemical weapons as militarily useful. Since the entry into force of the CWC in 1997, the dismantlement of existing chemical weapons stocks has made great progress: 70,000 metric tons of chemical weapons have been declared under the convention. More than three quarters of those stocks have been destroyed under international control, mostly in the two biggest possessor states, the United States and Russia. It is still too early to assess the consequences of the use of chemical weapons in Syria. However, after the massive use of chemical

3 For this problem, see Oliver Meier and Christopher Daase (eds.), *Arms Control in the 21st Century: Between Coercion and Cooperation* (New York: Routledge, 2012).

4 All numbers based on research of the Stockholm International Peace Research Institute.

5 Michael Brzoska, Anne Finger, Oliver Meier, Götz Neuneck, and Wolfgang Zellner, «Prospects for Arms Control in Europe,» Berlin: Friedrich-Ebert-Stiftung, 2011; available at: library.fes.de/pdf-files/id/ipa/08718.pdf.

6 Jonathan B. Tucker (ed.), *Innovation, Dual Use, and Security: Managing the Risks of Emerging Biological and Chemical Technologies* (Cambridge, Mass: MIT Press, 2012).

weapons on August 20, 2013, the Assad regime joined the CWC as a result of international pressure and opened its arsenal for international inspections. Damascus is now legally obliged to get rid of all of its chemical weapons.

Future challenges for the CWC include the development of instruments for the effective control of novel, rapidly developing technologies. Modern production chemical facilities can be flexibly adjusted for the production of a variety of civil products. These facilities could thus be easily misused for the production of chemical weapons, too. More than 5,000 such facilities exist today, the majority of them in threshold countries of the global South. CWC verification procedures were negotiated before the impact of these technological developments was fully realized. The focus of industry inspections is thus still on facilities working with any of the chemicals listed in the three «schedules» attached to the CWC. As a result, newer facilities are inspected less intensely, even though they objectively pose a greater proliferation risk. The political reason is clear: Countries such as China and India fear the «burden» of additional inspections that could be the result of a revision of the inspection rules. At the same time, new technologies make it possible to produce novel chemical (and biochemical) agents, which are only partially captured by existing verification regimes. Similar problems in capturing novel production technologies exist with regard to biological and nuclear dual-use technologies.[7]

However, globalization also creates new opportunities for strengthening non-proliferation accords. New information technologies make it possible to improve the verification by bringing in new actors and enabling the combination of several sources of information about treaty compliance. And private stakeholders are increasingly involved in the effective implementation of non-proliferation efforts, for example in the context of activities to improve biological or nuclear security. As a result, governance-based approaches can be applied to treaty implementation mechanisms.[8]

The main goal of *humanitarian arms control* is to limit the suffering that is created through the use of military forces in conflicts between or within states.[9] This humanitarian impulse behind arms control is not new. Certain kinds of warfare have been prohibited for almost a century. After World War I, the international community outlawed the first use of biological and chemical weapons. The Convention on Certain Conventional Weapons, agreed in the 1980s, contains prohibitions on particularly cruel weapons such as dum-dum bullets and incendiary or blinding weapons.

The 1997 Ottawa Treaty, prohibiting anti-personnel landmines, and the 2008 Oslo Treaty, on the prohibition of cluster munitions, were recent humanitarian arms control milestones. These agreements became possible because non-governmental actors were able to establish new discourses. The rationale behind these agreements did not focus on the effects that arms control agreements would have on military

7 John Hart and Ralf Trapp, «Science, Technology, and the Biological Weapons Convention,» *Arms Control Today* 42(8): 15–21.

8 On these problems, see, for example, Oliver Meier (ed.), *Technology Transfers and Non-proliferation of Weapons of Mass Destruction: Between Control and Cooperation* (Routledge, 2014).

9 Simone Wisotzki, «Humanitäre Rüstungskontrolle im 21. Jahrhundert,» *Die Friedens-Warte* 83(2-3): 177–198.

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capabilities or stability, but rather on the human suffering caused by certain types of weapons. Non-governmental actors turned out to be extremely effective in establishing new norms based on such arguments. This made it possible to circumvent the consensus principle. The prohibitions of anti-personnel landmines and cluster munitions were agreed even though significant powers such as China, Russia, and the United States continue to fiercely oppose them.

Nevertheless, the military policies of outsiders that stayed away from humanitarian arms control accords is measured against the norms laid down in these agreements. For example, Israel's use of cluster munitions in the 2006 war against Lebanon was internationally condemned, even though Jerusalem has never signed the Oslo accord. Viewed from this perspective, humanitarian arms control benefits from globalization because it takes advantage of the spread of global norms.

What is next? There can be no doubt that arms control remains important. «The world is over-armed and peace is under-funded,» as United Nations Secretary-General Ban Ki-moon has remarked.[10] Global annual military expenditures are about $1.7 trillion. That is roughly $4.6 billion spent on defense every single day.[11] In many regions, these immense military expenditures increase conflicts. Modern weapons possess greater precision and, as a result, may lower the threshold for use of military force because collateral damages can be minimized. The destructive potential of dual-use technologies is unparalleled, and there are large risks of their misuse, including by terrorists. And those small arms and light weapons that cause the largest degree of suffering are still largely uncontrolled.

Thus, there are many reasons to continue to further develop arms control – despite, or maybe because of, the many novel challenges that arms control presents. If arms control is to remain successful, cooperative efforts to control military-relevant technologies, capabilities, and capacities must be as diverse as the problems they are trying to address. Modern arms control should include some of the following elements:

- Those states with the largest and most modern military capabilities have to come to the conclusion that it is in their enlightened self-interest to restrict the development, possession, and use of the most advanced weapons.
- Classical arms control remains important, but a legally binding and verifiable treaty is not always the most promising model for cooperative regulation of military capabilities.
- Globalization offers new opportunities for strengthening controls, particularly of dual-use technologies, by involving new stakeholders in the implementation of arms control agreements.

10 Ban Ki-moon, «The World is Over-armed and Peace is Under-funded,» United Nations Office for Disarmament Affairs, August 30, 2012; available at: http://www.un.org/disarmament/update/20120830.

11 Ibid.

- The normative effects of arms control agreements should be used in order to constrain the research, development, production, export, and use of weapons, particularly novel types of destabilizing weapons.

So there is no reason for arms control gloom. Rather, many good reasons exist to think about the adaptation of existing arms control regimes and the development of novel arms control concepts and instruments.

Chapter Two

New Challenges and Technological Developments

MARK HIBBS

Strengthening Legitimacy and Political Will for Nuclear Trade Controls

In responding to the challenge of nuclear proliferation, nuclear trade controls and nuclear disarmament have separate missions. Disarmament is a process to reduce, remove, and eliminate nuclear weapons.[1] Nuclear export controls instead are intended to prevent states or non-state actors from obtaining the means to possess nuclear arms.

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) entered into force in 1970, thereby providing a mechanism allowing these two missions to be complementary. Nearly all 190 state parties understand the treaty as a bargain consisting of obligations in three areas: nonproliferation, access to nuclear technology, and disarmament. Put simply, if «haves» disarm and share their nuclear knowledge for peaceful purposes, the «have nots» will not obtain nuclear weapons, and they will cooperate with the «haves» to prevent others from obtaining them.

The genesis of multilateral nuclear export controls can in fact be assigned to the NPT itself, since Article III.2 obligates state parties not to provide nuclear items to non-nuclear weapon states unless International Atomic Energy Agency (IAEA) safeguards are applied. Nearly immediately after the treaty entered into force, the NPT's Zangger Committee established which commodities would be subject to constraints under Article III.2, as well as conditions and procedures governing export of these items.

Erosion of the NPT basis for trade controls

From the outset, however, the locus of decision-making on nuclear trade controls began shifting from the NPT to the Nuclear Suppliers Group (NSG) – an association of the world's nuclear «haves» that came into existence after India tested a nuclear explosive device in 1974 using materials that India had pledged to supplier states it would confine to peaceful-use applications. The NSG's founders had no confidence that the NPT alone would halt the spread of nuclear arms.

1 Graham Evans and Jeffrey Newnham, *The Penguin Dictionary of International Relations* (London: Penguin, 1998), 131.

In 1978, the NSG published guidelines that exceeded the stipulations of the NPT by establishing additional criteria that recipient states must meet to import nuclear goods. These included bans on explosive uses and production of high-enriched uranium, requirements for physical protection, and restrictions on retransfers and uranium enrichment and reprocessing.

Events during the 1990s contributed to the rise of the NSG as well as to conditions that encouraged an NPT-based challenge to the NSG's supremacy. The discovery in 1991 that Iraq had a secret nuclear weapons program relying on dual-use goods galvanized the NSG to expand the scope of its controls still further beyond what the NPT required.

In 1995 supplier states linked the NSG to the NPT by requiring full-scope IAEA safeguards as a condition of the supply of nuclear items to non-nuclear weapon states. This link was broken in 2008 when the NSG's members followed the United States and agreed to exempt India, a non-NPT state, from its guidelines. This step marked a further departure from the NPT as the basis of multilateral trade controls.

Threats to effectiveness

The NSG has continued to tighten nuclear trade controls – most recently in 2011 on enrichment and reprocessing – and it is currently adding to its commodity control lists. But it faces a number of challenges to its future **effectiveness**:

- **Growing volume of nuclear commerce:** After a quarter century when demand for nuclear technology for power generation lapsed, many countries are now considering building nuclear power reactors to meet future energy demand.
- **Globalization:** In response to competition pressure, nuclear industry firms are outsourcing more equipment supply beyond established advanced countries and are designing complex project procurement strategies.
- **Brokering and transit trade:** Nuclear exports in the past were point-to-point transactions. Today and in the future they will increasingly involve intermediaries in states that are outside the NSG and without infrastructure to control nuclear trade.
- **Emergence of new nuclear suppliers**: A number of developing countries with little historical commitment to nuclear export controls, including China and India, will be major nuclear supplier states in the years to come. Separately, nuclear knowledge is spreading, hand in hand with economic development worldwide. Perhaps 150 countries are now producing commodities that could be described as dual-use nuclear goods.
- **Intangible technology transfer:** In the future more nuclear technology will be transferred using computers and the Internet. There are no comprehensive multilateral understandings for controlling these transfers.

The NSG's participating governments are aware of the above challenges. In May 2011, the Carnegie Endowment conducted a workshop for the NSG's participating

governments, during which 60 specific recommendations to address these challenges were proposed and discussed.[2]

Legitimacy and political will

Separately, related to the NSG's above-described weakened relationship to the NPT, the multilateral export control system faces a separate challenge of **political will** and **legitimacy**.

During the Cold War, the superpowers functioned as dual enforcers of global nonproliferation norms and standards. The breakdown of the balance of terror led to an erosion of nonproliferation enforcement. The United States emerged at the end of the 1990s as a global hegemon but has encountered resistance from revisionist states, including in the nuclear arena, where the NPT continues to serve as the point of departure for most states.

The NSG founders' prediction that the NPT would not prevent the spread of the means to develop nuclear weapons proved correct. But with the passage of time, the casting adrift of the NSG from the NPT had a profound and divisive impact on international nuclear relations.

The end of the Cold War led to an erosion of bipolar nonproliferation enforcement and the emergence of a US hegemony, which is now being challenged by some developing countries that insist that the NPT's bargain on disarmament and access to nuclear technology be met. US credibility was severely damaged when, in 2003, it fought a war of nonproliferation with Iraq, after which no nuclear weapons were confirmed. Since 2003, when Iran framed the crisis over its nuclear program in terms of NPT Articles IV and VI, the Non-Aligned Movement – founded in reaction to the Cold War's bipolarity – now directly challenges US hegemony on nuclear nonproliferation issues. A majority of NPT parties are members of the Non-Aligned Movement.

Today, most non-nuclear weapon states in the NPT – and in particular developing nations – insist that their right under Article IV to exploit nuclear technology for peaceful uses be honored by advanced countries. Many of these states are unprepared to accept additional restrictions on their nuclear activities – including trade controls – unless advanced states demonstrate that they are fulfilling their obligations under both Article IV and Article VI. The NSG may be viewed as illegitimate so long as the «haves» do not disarm and do not share their technology.

Universalism versus incrementalism

The above challenges in effectiveness and political will leave us with two responses. One option is **global universalism**. In the realm of multilateral nuclear trade controls, this option implies that a comprehensive global nuclear trade treaty should be negotiated by all states to establish a truly legitimate basis for restraints. The NPT itself could not serve as the basis for such a treaty, since important countries in possession of

2 The recommendations are available here: http://carnegieendowment.org/files/future_nsg.pdf.

Cascade of gas centrifuges used to produce enriched uranium.

Source: United States Department of Energy (US Federal Government) – Wikimedia

nuclear weapons and nuclear fuel-cycle capabilities – India, Israel, North Korea, and Pakistan – are not parties to the NPT.

The recently successful negotiation of the global Arms Trade Treaty (ATT) covering conventional arms might renew interest in the negotiation of an export control treaty for nuclear commodities.

A decision to negotiate such an arrangement in the nuclear area would entail certain risks. These would include the possibility that the legitimacy of the existing fabric of NSG-based and other controls would diminish for as long as the pending treaty were under negotiation. That dilemma did not challenge negotiators of the ATT because there was no comprehensive global regime for controlling the export of conventional weapons. It is also doubtful that all states that are party to the negotiation of a nuclear export control treaty would agree on terms and conditions for trade. This would especially be the case should the ultimate source of conflict over nuclear trade controls prove to be programmatic North-South differences in principle among states about equity, development, and responsibility.

The alternative to the «treaty method» to address challenges to nuclear trade control legitimacy and credibility would be an **incremental** approach. In general, this would commit NSG participating governments to take the following actions:

- **Develop a consensus understanding on the NSG's relationship to the NPT:** The NSG's mission has never been based on the NPT. Since the 2008 decision on India, some participants favor the NSG establishing a relationship with the treaty, including making a formal commitment reflecting NPT Article IV.
- **Address lack of compliance with NSG guidelines:** First Russia, then China exported nuclear power reactors to India and Pakistan, respectively. China plans on more nuclear exports to Pakistan. Greater compliance means greater credibility. Members must be held accountable for not adhering to the guidelines.
- **Prepare for future expansion of membership:** Globalization, economic development, trade, and diffusion of knowledge will expand the number of nuclear supplier states. Which states will join the NSG? What will be the criteria for admitting future participants?
- **Ensure long-term survival of the export control mission:** Many future suppliers of nuclear equipment and materials will not be advanced, or Western countries with a track record of export control commitments. The NSG must make sure that, in the future, all participants share basic understandings. From the beginning, the United States has led the world in export-control rule-making. In the future, that may not be the case.
- **Intensification of outreach:** In the future, more countries will have capabilities and assets that can assist clandestine nuclear programs. The NSG must effectively reach out to persuade these countries to adhere to its guidelines. It must build on United Nations Security Council Resolution 1540, which calls on all states to establish effective export controls. The more credible, universal, and legitimate the NSG is, the more successful that efforts to enlist countries to adhere to its rules will be.

AGNIESZKA BRUGGER

Investments in Weaponry: When Profit Trumps Morality

Cluster munitions, anti-personnel landmines, and nuclear weapons are some of the most atrocious weapons of modern warfare. For both humanitarian as well as ecological reasons, there have been several international treaties targeting the proliferation of these weapons, albeit to various extents. Even those that go as far as banning both the production and use have one significant shortcoming: They do not ban investment in the production of these weapons and their components. The deaths of innocent men, women, and children should never be for someone else's profit. It is by far the most unethical way to make money.

Protecting mankind from some of the worst weapons of modern warfare

Cluster munitions have been used in more than 30 countries and have killed tens of thousands of people. In the 1970s, for instance, more than 380 millions bomblets were used in Cambodia, the Lao People's Democratic Republic, and Vietnam, where their dangerous remnants still cripple and kill people today. Anti-personnel landmines too have – and continue to cost – thousands of lives. As a result of the sedulous commitments of non-governmental organizations and political activists, there are now international treaties that ban the use, storage, production, and/or transfer of these weapons. The Ottawa Treaty (Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction) bans anti-personnel landmines; the Oslo Treaty (Convention on Cluster Munitions) bans cluster munitions. Germany has ratified both conventions and is, hence, bound to their norms. But while these treaties are important milestones for peace and security around the world, and despite having set new standards, they fail to recognize weapons as a commodity that is subject to financial speculation.

«Dirty profits» are not, however, limited to the aforementioned industries. Thirty years after the end of the Cold War, we still face a bitter reality – the hope of peace movements and many political activists for a world without nuclear weapons remains unfulfilled. Even though the number of nuclear warheads is unconfirmed, research institutes such as the Stockholm International Peace Research Institute assume that there are still more than 17,000 nuclear warheads, of which about 4,400 have been

deployed.[1] The United States and Russia own by far the largest share of these weapons of mass destruction, followed by the United Kingdom, France, China, India, Pakistan, Israel, and North Korea. Although the countries that possess nuclear weapons are making some laudable efforts to reduce their arsenals, such as the renewed 2010 New START Treaty between the United States and Russia, they also want to invest more than $1 trillion over the next 10 years, not only to maintain the weapons but also to modernize them. To date, the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is the only international agreement that commits the signatories «to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a Treaty on general and complete disarmament under strict and effective international control» (NPT, Article VI). Although Germany is a signatory, the government has made little effort to hinder German money from financing the production of nuclear weapons or their components.

Secret money wells: Investing in the defense industry

Recent reports, inter alia by Facing Finance, IKV Pax Christi, and ICAN, have shed light on this hitherto neglected – but all the more important – aspect. Investments in the production of these weapons and their components continue to be a huge business. This needs to be banned, as there are many countries that have not ratified the aforementioned treaties, namely those that have a vested interest in maintaining their stockpiles. Especially with the rapid decline of European defense industries, many European investors are looking elsewhere to generate profits. This highly profitable business also attracts German companies and financial institutions, such as private and state-owned businesses, banks, insurance companies, investment funds, investment banks, pension funds, export credit agencies, and many more. Many of these companies invest their capital around the globe, seeking floating assets for their own as well as their clients' profits. They invest their capital via credit, bonds, or shares in companies that produce or develop weapons and their components, regardless of the treaties signed by Germany prohibiting their production and use. Their customers are usually left in the dark. In many cases, the companies in question are headquartered – and have their own production facilities – outside of Germany. Due to a lack of transparency, it is very difficult for German consumers to fully understand portfolios and investment strategies. Subsequently, one's pension scheme might be funded by large-scale investments in cluster munitions; one's mortgage might depend on the revenue of producers of anti-personnel mines; one's bank might «bank on the bomb.» Ethical questions seldom have an impact on financial transactions. If indeed weapons that so cruelly violate humanitarian law are never to be used again, the signatories of these treaties must ban such investments. Unfortunately, however, the NPT does not go as far as the Anti-Personnel Mine Ban Convention or the Convention on Cluster Munitions. The treaty only stresses the need for further nuclear disarmament.

1 SIPRI Yearbook 2013, available at: www.sipri.org (accessed February 25, 2014).

If the German government were indeed serious about pursuing this goal, investing in nuclear weapons or their components would not be possible.

Consumers probably expect financial institutions to invest their money in shares or bonds that respect international humanitarian law or do not enhance the proliferation of the global nuclear arsenal. Put differently, it is reasonable to assume that few would agree to such terms if asked. Even more problematic are German state subsidies for retirement plans that indirectly finance the production of nuclear weapons or weapons that violate international humanitarian law. For instance, German consumers who have so-called Riester pensions (*Riester-Rente*) should be aware that their money might be invested in cluster munitions, anti-personnel landmines, and/or nuclear weapons, or their respective components or carrier systems.[2] Companies that obtain a certificate for the Riester pensions are not obliged to exclude these assets from their portfolios. Customers of Commerzbank – a recent beneficiary of millions in federal tax euros – deposit their money with a bank that, according to non-governmental organizations, invests in nuclear weapons, their components, and/or carrier systems.

Germany is hence clearly in violation of its legal obligations as defined by the aforementioned international treaties. For instance, according to the Convention on Cluster Munitions, which entered into force on August 1, 2010, «[e]ach State Party undertakes never under any circumstances to assist, encourage or induce anyone to engage in any activity prohibited to a State Party and this Convention» (Article 1(c)). Aiding the production of cluster munitions in a financial manner indisputably constitutes a form of «assistance» or «encouragement.» Interestingly, the Cluster Munition Coalition clearly states that «[t]he convention bans investment in the development or production of cluster munitions by foreign companies or entities in states not party» and that state parties «intend to make it explicit in national legislation that such investments are prohibited.»[3] By way of its unwillingness to introduce legally binding rules for the investment sector, the German government is in breach of these treaties. This is particularly condemnable, for the German public has been found to support such a prohibition.[4] In 2011, the German Green Party (Bündnis 90/Die Grünen) brought forward a motion to ban investments in anti-personnel landmines and cluster munitions,[5] which gained broad support from the German Social Democrats (SPD)

2 «DON'T BANK ON THE BOMB: Deutsche Finanzinstitute und ihre Investitionen in Atomwaffenhersteller»; available at: www.facing-finance.org/wp-content/blogs.dir/16/files/2013/10/Germany-Dont-Bank-on-the-Bomb_FacingFinance.pdf (accessed February 17, 2014).

3 Cluster Munition Coalition, «CMC Policy Papers on the Convention on Cluster Munitions,» May 2010, 6; available at: http://www.stopclustermunitions.org/wp/wp-content/uploads/2010/06/3a-cmc-policy-papers.pdf; Cluster Munition Coalition, «Briefing Paper on the Convention on Cluster Munitions,» September 2013, 4; available at: http://www.stopclustermunitions.org/wp/wp-content/uploads/2013/09/brief_eng13-september-2013_pdf (accessed February 12, 2014).

4 finanztest.de; available at: www.test.de/Streubomben-in-Riester-Vertraegen-Auf-vermintem-Gelaende-4180804-0 (accessed February 12, 2014).

5 Motion available at: http://dip21.bundestag.de/dip21/btd/17/073/1707339.pdf (accessed February 12, 2013).

and the Left Party (Die LINKE). Unfortunately, the incumbent government rejected this motion.

Taking a closer look at the NPT reveals that Germany has countered the proliferation of nuclear weapons half-heartedly at best. Article 2 states:

> *Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.*

The assistance in the manufacturing of nuclear weapons by non-nuclear-weapon states is unmistakably prohibited. Yet, upon consulting the portfolio strategies of German financial institutions, a number of interesting details come to the fore – with the case of Deutsche Bank being the most striking of all. According to a report from 2008, the bank made a clear commitment: «We explicitly do not want to be involved in any transactions that concerns anti-personnel landmines, cluster munitions or NBC [nuclear, biological, or chemical] weapons.»[6] However, Deutsche Bank keeps business relations with the top five producers of weaponry, amounting to at least 3 billion euros, namely to Lockheed Martin (US), BAE Systems (UK), Boeing (US), Northrop Grumman (US), and General Dynamics (US) – all of which are situated outside of Germany.

This example is telling. On the one hand, public discourse on nuclear weapons, anti-personnel landmines, and cluster munitions has undeniably had an impact on corporate behavior. A multitude of companies condemn these weapons in their corporate responsibility statements. On the other hand, profit seems to trump moral obligations every time. Deutsche Bank and its subsidiaries signed new bonds and credits with producers of cluster munitions totaling 126 million euros after renewing its declaration in 2011. In addition, the bank holds shares of these producers worth 7.5 million euros. Deutsche Bank is the only bank that currently supports producers of cluster munitions with credit.

Policy recommendations: What ought to be done

One can never put a price on human life. But despite a public consensus on disarmament and an array of treaties banning the production and use of some of the cruelest weapons, they are still a major source of profit.

Therefore, there is an urgent need for more transparency and legal obligations for companies regarding their investments. At the very least, consumers must be given the possibility to inform themselves about the investments of their banks and

6 Deutsche Bank, company report, 2008, 45; author's translation.

financial institutions. Consumers ought to be given the opportunity to make a conscious decision.

Secondly, changes to the German law that regulates the export of weapons – the War Weapons Control Act – is long overdue. Direct or indirect investments in the production of cluster munitions, anti-personnel landmines and/or nuclear weapons should be strictly prohibited. These legal regulations should apply to all companies that produce and develop weapons that violate international humanitarian law. Tax subsidies for investments in these weapons must be forbidden.

Much remains to be done on the international scene as well. Until now, the United States, Russia, and China have not signed the Convention on Cluster Munitions, and other signatories have yet to ratify the convention. According to a report by the Landmine and Cluster Munition Monitor, only 13 of 38 countries that are «contaminated» with cluster munitions receive financial aid for the victims and explosive ordnance clearance. Therefore, thirdly, all remaining states must sign this convention and, in a concerted effort, immediately raise the financial aid for victims of these extremely inhumane weapons.

Fourthly, and with regard to the upcoming NPT Review Conference in 2015, the international community should take bold steps toward a world that is free of nuclear weapons. Currently, the treaty contains far fewer obligations than the Anti-Personnel Mine Ban Convention or the Convention on Cluster Munitions. However difficult it is to achieve, there should be a convention that bans nuclear weapons. Otherwise, it will be impossible to rid this world of nuclear weapons. Therefore, the German government must take the necessary steps in order to stop the proliferation and development of nuclear weapons and their components. One such initiative would be a legally binding prohibition of investments in such weaponry.

Finally, the German government, and the German Social Democrats in particular, must take the necessary steps forward. During their years in opposition, they voiced similar aspirations about worldwide disarmament. Now they need to prove that they are genuinely interested in a world that is free of cluster munitions, anti-personnel landmines, and nuclear weapons.

DENNIS M. GORMLEY

Assessing the Need to Regulate US Conventional Prompt Global Strike Systems

The concept of «strategic stability» played a featured role in the administration of US President Barack Obama's 2010 Nuclear Posture Review.[1] It came on the heels of Obama's 2009 speech in Prague, in which the president declared that the United States had a moral responsibility to lead a global quest to eliminate all nuclear weapons. The posture review acknowledged that the United States could diminish its dependence on nuclear weapons because of the unrivaled growth in American conventional weapons superiority, along with its deployment of missile defenses. Of course, achieving the elimination of all nuclear weapons – no less deep reductions – hinges on the active cooperation of other nuclear-armed states, most notably the Russian Federation. The obvious but underappreciated dilemma that the United States faces is convincing and reassuring the Russian Federation that American advantages in conventional weapons capabilities represent a sufficiently stable future context within which Russia would be willing to eliminate its own nuclear weapons. For this reason, Russia has already expressed grave concern about US intentions to deploy new conventional prompt global strike (CPGS) delivery systems, coupled with its growing arsenal of missile defenses. This short paper assesses the chief challenges the United States faces in allaying Russia's concerns about CPGS deployments.

Status of CPGS programs

Three key service programs now are center stage under the consolidated CPGS program. The US Air Force began the Conventional Strike Missile (CSM) program in 2008, and, after the demise of the US Navy's attempt to offer the Trident missile as the quickest and most effective path to a CPGS option, the Air Force CSM now occupies the lead position instead. Based on land – probably either on the US west or east coast – the CSM would employ boost-glide technologies and follow a substantially lower depressed trajectory than existing nuclear-armed ballistic missiles. After separation, the payload would travel hypersonically to the target while having the capacity to execute substantial cross-range maneuvers. Two benefits flow from such

1 US Department of Defense, Nuclear Posture Review Report, Washington, DC (April 2010); available at: www.defense.gov/npr.

maneuverability: high accuracy and avoiding flight over hostile countries. The CSM launch vehicle would be the Orbital Sciences' Minotaur IV space launch vehicle, with a proven track record of more than 50 flights. The Air Force had hoped to reach an operational capability by 2012 (with one ready missile and two spares), but it now appears that the CSM might not be ready until well after the middle of this decade. This is due to the substantial testing that remains for reentry bodies that must undergo at least five demonstration flights. To date, the CSM has not undergone any successful hypersonic flight tests.[2]

The second CPGS contender is the Hypersonic Test Vehicle no. 2 (HTV-2), funded by the Defense Advanced Research Projects Agency (DARPA), the Pentagon defense organization charged with pushing the state of the art in new military technologies. The goal of the HTV-2 is to develop a vehicle that can ride along the earth's upper atmosphere at hypersonic speeds of more than 21,000 kilometers per hour. America's largest defense contractor, Lockheed Martin, is developing the vehicle, which will also serve as the payload delivery vehicle for the Air Force CSM program. However, after two flight test failures (2010, 2011), and the brief achievement of a speed of Mach 20, it is clear that the vehicle thus far cannot maintain aerodynamic control for a full flight test, no less the entire objective mission distance. Given the extraordinarily tight defense budget that is likely to prevail for some time, the Pentagon decided to allocate a mere $2 million in the FY2014 budget, which will not support further HTV-2 testing while the Pentagon seeks a cheaper, less risky CPGS alternative.[3]

The third option under the consolidated Pentagon CPGS program is the US Army's Advanced Hypersonic Weapon (AHW), which from the outset was seen as a way to reduce the risk associated with DARPA's HTV-2 endeavor. Indeed, the AHW's one flight test, in November 2011, was successful, allowing the hypersonic glide vehicle to achieve a range of 3,860 kilometers. Of course, the AHW's shorter range would mean that it has to be forward deployed to meet the needs of the CPGS mission. Nevertheless, unlike its more challenging DARPA cousin, the Army's AHW received Pentagon support for modest additional funding in FY2014 to permit one more test.[4]

Appraising the risks and benefits of CPGS

The dangers and risks of employing even a niche CPGS capability – consisting of 20 or so systems – no less hundreds or more, greatly exceed the benefits; moreover, more suitable, if less prompt, alternatives exist to deal with fleeting targets. The chief risks include creating strong preemption incentives, not only for states correctly perceiving

2 Ibid., 1, 16–17. For details on the Minotaur space launch vehicle, see the Orbital Sciences website; online at: www.orbital.com/spacelaunch/minotaur.

3 Ibid., 18–19. Also see Elaine M. Grossman, «Pentagon Unveils New Plan for Conventional Submarine-Based Ballistic Missiles,» *National Journal*, updated May 29, 2013; available at: www.nationaljournal.com/nationalsecurity/pentagon-unveils-new-plan-for-conventional-submarine-based-ballistic-missiles-20120127.

4 Amy F. Woolf, *Conventional Prompt Global Strike and Long-Range Ballistic Missiles: Background and Issues*, Congressional Research Service Report for Congress, R41464, April 26, 2013, 19–20.

they are in the gun sights of CPGS weapons, but also in nations considering emulating this American precedent to undertake their own form of prompt long-range strike capability. Japan's current contemplation of such an option – in a region rife with states brandishing new long-range strike systems – comes immediately to mind.[5] Strategic stability is also threatened by the inevitable ambiguity surrounding whether or not an incoming CPGS attack is conventional or nuclear. Compressed circumstances surrounding such a scenario could foster unwanted erratic behavior. But the true Achilles heel of the CPGS concept is the unprecedented demands placed on the intelligence community to provide decision-makers with «exquisite» intelligence,[6] all within an hour's timeframe. Such compressed conditions leave decision-makers with virtually no time to appraise the direct – and potentially unintended – consequences of their actions.

Compared with the shortcomings of CPGS, the two benefits specified by supporters of CPGS are at best paltry. The first is having a prompt-strike option in case of the possible detection of a fleeting terrorist target with a nuclear weapon located in a neutral country, or a rogue state appearing to ready a nuclear-armed missile. The second is the belief that CPGS reduces the possibility that the United States may have to use nuclear weapons instead to defend its interests. In case of the first presumed benefit – while even proponents will admit that such scenarios are highly improbable – the combination of a much higher probability of poor intelligence support and the inadvertent start, in the case of a state-based scenario, of an otherwise avoidable conventional, or worse, nuclear war, simply is too high a risk to bear. Fortunately, there are a plethora of alternative, if less prompt, attack means available to US decision-makers. As for CPGS reducing the need to employ a nuclear solution, it is rather America's unrivaled conventional superiority that has permitted the US military to possess a multitude of options vastly more sensible than employing a nuclear solution to deal with such low-probability scenarios.

Lastly, should the United States decide to pursue a niche CPGS capability or more – and still wish to maintain the strategic stability and deep nuclear reductions it argues are critical for global security – it must be willing to accept counting rules, not just for existing missiles that deliver conventional warheads along a ballistic trajectory, but also for new types of delivery systems, such as boost-glide vehicles launched along a depressed trajectory. This is particularly imperative for numbers exceeding a niche-like capability, which might begin to truly threaten Russia's arsenals as well as smaller ones.

5 On the spread of formal preemption doctrines not only in northeast Asia, but also South Asia and the Middle East, see Dennis M. Gormley, *Missile Contagion: Cruise Missile Proliferation and the Threat to International Security* (Annapolis: Naval Institute Press, 2008), 125–133, 136–145.

6 Secretary of Defense Donald Rumsfeld in 2001 Nuclear Posture Review coined the notion of «exquisite» intelligence.

Accommodating Russia's concerns

In considering to what extent the United States should accommodate Russia's concerns about counterforce capabilities of CPGS in future bilateral negotiations, it is important to review what the New START Treaty of 2010 concluded with respect to Russia's concerns. In negotiations, the United States reportedly told the Russian side that they did not plan to deploy enough CPGS systems to threaten Russia's strategic retaliatory capability.[7] The preamble to the treaty, however, does state that both countries are «mindful of the impact of conventionally armed ICBMs [intercontinental ballistic missiles] and SLBMs [submarine-launched ballistic missiles] on strategic stability.»[8] The US side was willing to count ballistic missiles armed with conventional warheads in the treaty's limits as if they were nuclear. Importantly, this was done not because the US side agreed with Russia's concerns about the counterforce potential of such conventional weapons; rather, should the United States proceed to arm previously nuclear ballistic missiles with conventional payloads, it would be virtually impossible to know the difference between a nuclear- and conventionally armed missile, rendering treaty compliance problematic.[9]

Should the United States proceed to deploy what is very likely to be a niche capability, extant New START counting rules would apply if the choice is a missile that delivers reentry vehicle(s) on a ballistic missile trajectory. On the other hand, were the United States to deploy a boost-glide CPGS weapon – launched along a depressed trajectory using a hypersonic glide vehicle to deliver its weapons to the target – this new type of system would not be subject to New START counting rules. This is because, unlike traditional ballistic missiles, the Russians could readily detect the difference, thus avoiding the threat of ambiguity. However, in the case of a US wish to deploy such a non-ballistic system, New START provides Russia with the right to question – in a Bilateral Consultation Commission – whether or not such a weapon should be subject to extant counting rules.[10] As long as the United States remains committed simply to a niche capability, consenting to counting rules for such a limited deployment of boost-glide systems seems eminently reasonable.[11] Should a future US administration wish to deploy larger numbers of CPGS weapons, they should still be subject to counting rules.

7 Woolf, *Conventional Prompt*, 37.

8 Cited in Ibid.

9 Ibid.

10 Under Article 5 of the treaty, the United States would still reserve the right to develop and test such a weapon.

11 Recalling the provenance of CPGS, Russia surely must assume that a future US administration might be prone to go down a more robust path than perhaps the current administration is willing to entertain.

GÖTZ NEUNECK

Can the Use of Unmanned Systems Be Regulated?

In the 20th century, three important science-based innovations led to significant technological progress, but also to new military options and new forms of warfare: nuclear energy, biotechnology, and information and communication technologies (ICTs). The nuclear age, as well as the rise of biotechnology, created new ethical, legal, military, and political challenges. The asymmetry between moral and technical expertise in the nuclear age was pointed out by General Omar Bradley in November 1948: «The world has achieved brilliance without wisdom, power without conscience. Ours is a world of nuclear giants and ethical infants. We know more about war than about peace, more about killing than we know about living.»[1] The application of ICTs also created new challenges and new dangers. The advancement of ICTs visibly led to new weapons systems and new kinds of warfare. The wars in Iraq (1991, 2003), Kosovo, and Afghanistan (2001–) have demonstrated the emergence of a wide spectrum of new weapons, such as unmanned systems (UMSs), cruise missiles, satellite guided bombs, and other precision-strike systems.

This paper first seeks to explore the conditions and driving forces of the current military-technical revolution. The second section outlines the characteristics, technology, proliferation, and current use of unmanned systems. The last section examines the obstacles to and challenges for arms control and international law.

The framework and driving forces of the current revolution in military affairs

At the heart of the current «revolution in military affairs,» a US term, is the exploitation of the revolutionary advances of the information age. The computational power and storage abilities of computers have been increasing by a factor of ten every five years. Moore's observation – one of the basic laws of the digital age – notes that microprocessors and storage elements have doubled their performance every 18 months. The main elements of the information age are computers, fast global audio, video and data communication, and the networking of many users. Laser and fiber optic communication, encryption technologies, and data fusion allow rapid routing and processing of data. In addition, automatic pattern recognition techniques, improved radar systems,

1 Quoted from Peter Singer, *Wired for War* (London: Penguin Group, 2009), 426.

and infrared sensors (for night vision or weather-independent surveillance) allow for highly detailed imaging of geographical situations.

The key to future developments is not so much a new wave of innovation in military technologies, but rather the integration of diverse technologies into a «system of systems,» and the permanent upgrading of this system via the constant modernization of its elements and connections. The US military is particularly enthusiastic about the ongoing revolution in military affairs, which it believes «[…] will give us dominant battle space knowledge and the ability to take full military advantage of it.»[2] The emergence of new networked sensors, data processing capabilities, and weapon platforms have led to new operational military concepts such as net-centric warfare and cyber operations. A «network-centric» system of systems consists of an observation (ISR – intelligence, surveillance and reconnaissance) system, a communication system, a system of data processing and analysis, a strike system to deliver munitions with pinpoint accuracy, and an evaluation system to ascertain the effectiveness of such attacks. The current military-technical developments utilize advanced ICT from the civilian sector, intensifying the dual-use dilemma.[3]

The end of the East-West confrontation and the demise of the former Soviet Union have brought a shift toward a more unipolar system, with the United States as the unchallenged, sole global military superpower. Combined with major advances in science and technology, the main characteristics of US security policy are new military concepts and the will to use military power. There is a widespread belief that the United States' military-technological advantage means that no antagonist can oppose US forces with conventional weapons. Consequently, current and future challenges for armed conflict are «asymmetric,» for example terrorism or low-intensity conflicts possibly involving the use of unconventional weapons, such as biological or even nuclear weapons. Compared to low-tech weapons, such as small arms and light weapons, high-tech weaponry requires an industrial basis, is expensive to produce, difficult to use, has long research and development cycles, and is usually less prone to proliferation. Low-tech weaponry, on the other hand, is universally available, easy to use, and can proliferate rapidly.

Unmanned systems: Not new but more striking

According to the Pentagon, «unmanned vehicles» are powered vehicles that do «not carry a human operator, can be operated autonomously or remotely, can be expendable or recoverable, and can carry a lethal or nonlethal payload.»[4] Ballistic and cruise missiles, torpedoes, satellites, and mines are not considered to be unmanned systems.

2 Gen. Ronald Fogleman, US Air Force Chief of Staff, cited after A. Thayer, «The Political Effects of Information Warfare: Why New Military Capabilities Cause Old Political Dangers,» in *Security Studies* 10(1) (2000): 43–85, 44.

3 Judith Reppy, «Managing Dual-Use Technology in an Age of Uncertainty,» in *The Forum* 4(1) (2006): Article 2; available at: www.bepress.com/forum/vol4/iss1/art2.

4 US Department of Defense, *Unmanned Aircraft Systems Roadmap 2005–2030*, Washington, DC, 2007, 97–102.

Unmanned air vehicles (UAVs) are reusable loitering systems primarily used today for ISR missions, but also for target acquisition, damage assessment, and communication relay. The operators of such remote-controlled UAVs can sit several thousand kilometers away from the target without risking their lives. These UAVs are paradigmatic for emerging net-centric warfare. They are generally unarmed systems, but some have been modified to carry weapons. They can fly autonomously or be piloted remotely at high or low altitude and are equipped to return home. They can be very large and heavy (Global Hawk) or very small in size, can use a range of propulsion systems, and can transport different payloads (from a few to 250 kg). The various systems range in cost from a few thousand to tens of millions of US dollars. Important characteristics are endurance time, weight, range, ceiling, etc.

Unmanned vehicles are usually divided into three sub-categories, depending on the environment in which they are moving: unmanned air vehicles (UAV); unmanned ground vehicles (UGVs); and unmanned naval vessels, which are subdivided into unmanned surface vehicles (USVs) and unmanned underwater vehicles (UUVs). The US Air Force calls UAVs remotely piloted aircraft (RPA) and is going to train more drone pilots than fighter or bomber pilots.

After more than a decade of R&D as well as testing and deployment of UAVs, the United States has the lead in the full spectrum of UMSs. Typical missions are ISR, target acquisition, or explosive ordnance disposal. The US arsenal of drones has experienced unprecedented growth over the past decade. It is estimated that the US has 8,000 UAVs, most of which are unarmed. It is estimated that the United States has around 12,000 ground UMSs. High altitude/long endurance (HALE) UAVs such the GLOBAL HAWK (payload 1,360 kg) have a flight time of 30 hours and provide all-weather performance packages on board for reconnaissance and target designation. Medium altitude/long endurance UAVs (MALE), such as the Predator or the Reaper, are armed and have precision-strike tasks. Tactical UAVs, such as the HUNTER or HERMES 450, have a range between 125 and 250 km and operate at low altitudes (5,000 m). Mini-UAVs, such as DESERT HAWK, are man-portable and hand-launched. They are used for beyond-line-of-sight scouting with one-hour flight time at a range of roughly 5 km. Hand-held micro-UAVs, such as the WASP or g-MAV, are electrically powered for about one hour.[5] Arming a UAV is an increasing trend, leading to a new category: unmanned combat aerial vehicles. In 2012, the US Air Force had 54 REAPERS and 161 PREDATORS in its arsenal. Today, it is estimated that the United States has an arsenal of 7,454 unmanned platforms.[6] In 2012 the Pentagon had asked for $3.9 billion in procurement and development for UMSs.[7]

5 Elizabeth Quintana, «The Ethics and Legal Implications of Military Unmanned Vehicles,» Occasional Paper, British Computer Society, 2008, 2.

6 Jeremiah Gertler, *US Unmanned Aerial Systems*, CRS Report for Congress, Congressional Research Service, Washington, DC, January 3, 2012, 7.

7 Ibid., 2.

The use of lethal drones

The use of armed drones by the United States is twofold: (a) in regular military conflicts, such as Iraq and Afghanistan, under full control of the airspace; and (b) as «extraterritorial killings» operated by the Central Intelligence Agency (CIA). According to officials, drone strikes in Pakistan have killed more than 2,000 militants. The number of innocent civilian casualties is controversial. One NGO estimated that the CIA conducted 370 drone strikes in Pakistan in the decade from 2004 to 2013, killing 2,548–3,549 people, among them 411 to 890 civilians.[8] US-led drone warfare in remote parts of Pakistan, in Yemen, and in Somalia is mainly justified by the US «war against terrorism» and has significantly increased under President Barack Obama, making drone warfare a centerpiece of his counterterrorism strategy. President George W. Bush ordered fewer than 50 drone strikes during his term, whereas President Obama has overseen more than 400 of them in the last four years.

Proponents claim that the drone strikes have killed key leaders of terrorist groups and associated anti-American militant groups, thereby denying terrorists sanctuaries in Pakistan, Yemen, and Somalia. «And they have done so at little financial cost, at no risk to US forces, and with fewer civilian casualties than many alternative methods would have caused.»[9] Opponents argue that drones have killed thousands of civilians and alienated allied countries by angering and traumatizing the public, and that they can create «sworn enemies out of a sea of local insurgents.»[10] Audrey K. Cronin has concluded that: «The problem for Washington today is that its drone program has taken on a life of its own, to the point where tactics are driving strategy rather the other way around.»

There are many justified doubts about whether this new method of targeted killings will be efficient. Capturing a terrorist leader, for example, is much more efficient because it avoids creating new martyrs and helps to get access to the rationale, contacts, and motivations of commanders of terror. The key problem with armed drone strikes is the intelligence needed to identify potential targets. This task is mostly left to secret services, which do not publish their sources, procedures, and criteria for these kinds of targeting operations. These extrajudicial killings are seen by many in Europe as illegal and politically unwise.

Until now only the United States, the United Kingdom, and Israel have used armed drones in Lebanon against Hezbollah and in Gaza against Hamas, but it obvious that other countries will start imitating the use of lethal drones against people they have identified as violent insurgents or terror group combatants in areas of conflict – at their borders or on their own territories. The United States, in particular, is obviously starting to create a new norm to strike preemptively against those who plan to attack outside or inside their territory.

8 Bureau of Investigative Journalism 2013.

9 Daniel Byman, «Why Drones Work,» in *Foreign Affairs* (July/August 2013); available at: www.foreignaffairs.com/articles/139453/daniel-byman/whydrones-work.

10 Audrey Kurth Cronin, «Why Drones Fail,» in *Foreign Affairs* (July/August 2013); available at: www.foreignaffairs.com/articles/139454/audreykurth-cronin/why-drones-fail.

Proliferation and autonomy

The United States has a huge advantage in the numbers and capability of UAVs, but the qualities of drones – especially a capacity for surveillance and precise strikes, and the fact that the operator might sit in safety thousands of kilometers from the target – is appealing for other countries, too.

It is estimated that 80 countries possess drones and 50 countries have R&D programs. The technology has already become widespread. Not many countries are developing strategic armed drones with long ranges and precision-strike capability. According to the Teal Company, it is believed that global spending on R&D for UMSs and procurement will total more than $94 billion over the next decade.[11]

Other countries, such as Israel and China, are aggressively developing and promoting UAVs, and countries such as Russia, Iran, India, and Pakistan are also not far behind, creating the environment for a «drone arms race.»[12] At their air shows, Chinese companies have displayed different models of UAVs, among them types capable of attacking aircraft carriers and armored vehicles. Non-state actors can also acquire simple UAVs and might use them for attacks on persons or groups. In 2011 and 2012, some individuals were arrested in the United States and in Germany, charged with plotting to load a UAV with explosives and crash it into a building.

In principle, there are three ways to acquire UAVs. (1) A state can simply purchase a military or civilian system legally or illegally from a producer. Such a system is not just one object, but includes a ground station and logistical support. (2) After buying a UAV package, a country can also try to modernize such a system or convert an existing manned aircraft to an unmanned system. (3) The third path is to develop a UAV indigenously by using components available on the world market. There is also growing concern that the proliferation of UAVs can pose a threat to the United States and other countries.[13] UAVs (as well as cruise missiles) can also be used for the delivery of bioweapons. UAVs, which can carry heavy payloads (250–500 kg), can, in principle, also deliver nuclear weapons, although the primary delivery system would still be a bomber or a ballistic missile. D. Gormley adds that «the spread of these systems globally will affect US military dominance, regional stability and homeland defense.»[14]

Future developments

The Pentagon's Unmanned Systems Roadmap 2007–2032 describes future developments and projects to improve the performance (lightweight, precise delivery, or lower-power), interoperability, and the operational spectrum of UMSs. Other countries such as the United Kingdom, Germany, France, Australia, Canada, Israel, and South

11 Scott Shane, «Coming Soon: The Drone Arms Race,» in *New York Times*, October 8, 2011.

12 Ibid.

13 US Department of Defense, *Unmanned Aircraft*.

14 See Chapter 12, «New Developments in Unmanned Air Vehicles and Land-Attack Cruise Missiles,» in *SIPRI Yearbook 2003: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2003), 409–432.

Korea have different programs for robotics and UGVs. The United States and Japan have a human-robot initiative (HRI) to develop future humanoid robotic technology. Future military development goals are to transform UAVs into joint unmanned combat aircraft systems for a wider spectrum of combat missions (Suppression of Enemy Air Defences, strike, electronic attack, etc.), with an improved data link and stealth capabilities (e.g., the planned Joint Unmanned Combat Air System). Other goals are to reduce weight, increase agility and integrate robotics. The current armed drones are remote-controlled, but some of them already have semi-autonomous functions, such as automatic takeoff and landing. Surveillance, identifying, tracking, targeting, and engaging are in the hands of the operator, but some or all of these functions might become more autonomous due to new developments in the field of microprocessors and mathematical algorithms.

On November 21, 2012, the Pentagon released a directive on «Autonomy in Weapon Systems» to establish guidelines and a national policy for the future development and use of autonomous and semi-autonomous functions in weapons systems. The directive is not a «moratorium,» but it says that «autonomous and semi-autonomous weapon systems shall be designed to allow commanders and operators to exercise appropriate levels of human judgment over the use of force.»[15] This weak criterion is interpretation-dependant and allows for «developing, testing, and using the technology, without delay.»[16] Nevertheless, the directive introduces human judgment and approval in this cycle, but does not restrict technology. It requires «hardware and software verification and validation.» Mark Gubrud describes the already existing «small autonomous missiles» such as the Low Cost Autonomous Attack System (LOCAAS), which is delivered by a fighter bomber powered by a turbo-jet engine for 30 minutes. In his UN Report, the Special Rapporteur on Extrajudicial Executions listed existing weapons systems, which have various degrees of autonomy, such as «fire-and-forget weapons,» object defense weapons (PHALANX), and sophisticated drones (US: X-47B; UK: TARANIS).[17] In March 2012, the Naval Research Laboratory introduced a new facility for autonomous systems research with an artificial combat environment including forests, a desert, and buildings for urban warfare. Fully autonomous combat systems must be capable of learning or adapting their missions in response to changing environments. Some authors are arguing that: «A fully autonomous capability, in which the unmanned vehicle will generate and perform multifaceted missions, is unattainable until true artificial intelligence (AI) technology becomes available.»[18] Some estimate that this situation is 10–15 years or more away. There is not much doubt that these developments are already under way.

15 US Department of Defense, «Autonomy in Weapon Systems,» Directive (3000.09), Item 4a, November 21, 2013.

16 Mark Gubrud, «US Killer Robot Policy: Full Speed Ahead,» in *Bulletin of the Atomic Scientists* (September 12, 2013).

17 Christof Heyns, *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions*, Human Rights Council, A/HRC/23/47, April 9, 2013, 9.

18 Quintana, «The Ethics and Legal Implications,» 5

Restrictions by arms control and the International Humanitarian Law?

Two main tools can be applied to the future development and employment of unmanned combat systems: the arms control approaches and International Humanitarian Law (IHL). The former is designed to prevent the introduction of weapons systems, whereas the latter applies to actions during an armed conflict.

The state of arms control and UMSs

Current developments in the way wars are fought certainly have consequences for the stability and potential extension of current legally binding arms-control regimes. Several modern accords and conventions – mostly negotiated and entered into force during the Cold War – limit or prohibit entire classes of weapons systems, such as biological weapons (Biological Weapon Convention, 1972), chemical weapons (Chemical Weapon Convention, 1983), and intermediate nuclear forces (Intermediate-Range Nuclear Forces Treaty, 1987), where specific delivery systems were banned from Europe. During the Cold War, it became clear that the effectiveness of arms-control regimes can be bypassed by technological innovation and proliferation. Hence, the entire sophisticated conventional-arms-control edifice, which was basically built on quantitative criteria, such as agreed ceilings of major weapons systems and sophisticated verification agreements, may start to crumble if the new elements of modern warfare are not taken into account.

Nevertheless, arms control has to reflect the profound changes of the post–Cold War, globalized world. It must, therefore, become more flexible and more comprehensive and include a wider range of criteria, options, and instruments. One approach would be to include UMSs in the region from the Atlantic to the Urals in the 1990 Conventional Forces in Europe (CFE) Treaty. The basic concept of the CFE Treaty was to achieve «a secure and stable balance» and to eliminate «the capability for launching surprise attack and for initiating large-scale offensive action in Europe.» The CFE Treaty is based on quantitative limits on five major weapons systems for different regional zones. Unfortunately, the CFE Treaty was suspended first in 2007 by Russia and later by NATO. The follow-up accord should also include new weapon technologies, which can alter the military balance or increase instabilities in a crisis. In the future, it will become more and more obvious that the density and effectiveness of military forces cannot be measured simply «in numbers of tanks and fighter aircraft,» but that other categories such as cruise missiles, UAVs, and perhaps other robotic systems or autonomous vehicles will also have to be included.

Another approach is to strengthen risk-reduction by using «transparency and confidence-building measures»: the politically binding 1999 Vienna document, which is part of the CFE Treaty regime, can be used to exchange data on the introduction of new types of weapons, such as UMSs, on an annual basis. A Consultative Commission on the level of the Organization for Security and Co-operation in Europe can meet annually to discuss military-relevant R&D, which have a significant effect on military stability. Other options would be to include the international registration of UMSs in the UN Weapons Register or the newly established Arms Trade Treaty (ATT).

Since 1991, the UN Register has organized reports on arms transfers as well as information on holdings, domestic purchases, and relevant policies from more than 170 states.[19] The ATT, which was approved on April 2, 2013, in the UN General Assembly, was created to regulate the international trade in conventional arms, combat aircraft, and warships. Including unmanned combat systems such as UAVs and UGVs in the ATT could also help to restrict the destabilizing flow of new weapons systems into conflict regions. Supply side arms-export regimes, such as the Missile Technology Control Regime (34 members), restrict the transfer of delivery systems, among them «complete unmanned aerial vehicle systems capable of delivering at least a 500 kg payload to a range of at least 300 km.» The Wassenaar Agreement (40 members) also restricts dual-use goods «to regions and states with situation/behavior representing serious concerns» to the 40 member states. These Western-oriented export regimes, which are linked to the national laws of the respective member states, can restrict the transfer into conflict regions and slow down indigenous developments of newcomers in the UMS field.

As the very concept of preventive arms control suggests, not only quantitative aspects of military forces, but also future technical developments should be taken into account. This broadens the scope of arms control into the area of military-related R&D. Preventive arms control aims to avoid costly and dangerous technology-driven arms races by preventing the deployment of new weapon technologies on the battlefield.[20] A prospective scientific assessment and military-operational analysis of the technologies in question are necessary under specific criteria such as (1) adherence to – and further development of – effective arms control, disarmament, and international law, (2) maintaining and improving stability, and (3) protecting humans, the environment, and societies. Based on such an assessment, a ban on – or limitations of – military-usable technologies or weapons systems before acquisition or deployment should be considered. A variety of complete bans on specific types of UMSs have been proposed by Jürgen Altmann 2013.[21]

Given the current state of existing arms control treaties and the asymmetric structure of world politics, it is doubtful that states will agree on total bans of UMSs, given the level of proliferated technologies and the challenges of verification.

International Humanitarian Law and unmanned systems

The regulations of new means of warfare have been developed by organizations such as the International Committee of the Red Cross and international lawyers in the last 150 years. The emerging use of armed UAVs and other unmanned systems can dramatically change warfare and needs further regulations. There is no doubt that IHL also applies to this new weaponry. IHL was designed as a result of the recognition that the «imperative of humanity» imposes limits on the choice of weapons in an

19 See: www.un.org/disarmament/convarms/Register.

20 Götz Neuneck, «The Revolution in Military Affairs. Its Driving Forces, Elements and Complexity,» in *Complexity* 50 (2008): 50–61.

21 Jürgen Altmann, «Arms Control for Armed Uninhabited Vehicles: An Ethical Issue,» in *Ethics Inf. Technol.* (March 21, 2013).

Source: US Federal Government – Wikimedia

The Hypersonic Test Vehicle (HTV-2) of the US Falcon Project.

armed conflict. One main principle is to protect civilians from war hostilities and «to protect combatants against weapons of a nature to cause superfluous or unnecessary suffering.»[22] The main principles and rules are enshrined in the four Geneva Conventions from 1949 and two Additional Protocols from 1977.

NGOs such as Human Rights Watch and the Pugwash Conferences on Science and World Affairs are engaged in international activities to address the future use of drone technology. Pugwash is working with the UNESCO World Commission on the Ethics of Scientific Knowledge and Technology[23] to develop a set of relevant principles. Human Rights Watch has started a «Campaign to Stop Killer Robots,» which tries «to ban lethal robot weapons that would be able to select and attack targets without any human intervention.»[24]

The main principles of IHL are to distinguish between combatants and civilians and proportionality, which must be observed by the soldiers and operators in an armed conflict situation. There is some concern about how – and by whom – these automated systems are operated. Are these soldiers trained in IHL regulations or are they civilians, including employees of private companies?

It can be argued that the distinction in a remote situation is complex and not error-free. There might be time delays in signal transmissions or insufficient data available. Flying a drone is like «flying a plane looking through a straw.» Another key question is whether a targeted combatant would have the chance to surrender to a combat robot. In addition, lethal autonomous systems do not have the capability of distinguishing between combatants and civilians. A lethal autonomous combat system also cannot distinguish between intentions and human behavior on the battlefield, for example whether a belligerent is wounded or is trying to surrender.[25] Other experts such as Ron Arkin, of the Georgia Institute of Technology, argue optimistically that the use of autonomous systems will lead to better ethical behavior on the battlefield because, inter alia, machines will have better capabilities in terms of observation, identification, and fast decision-making. In addition, ethical behavior could be programmed and included in the automatic decision process.[26]

The other main principle – the rule of proportionality – is a precaution to assess whether the expected harm to non-combatants will be measured against the anticipated military advantage to be gained. Machines do not have this contextual judgment capability. In his report, the Special Rapporteur on extrajudicial, summary, or arbitrary executions, Christopher Heyns, underlined that fully autonomous weapons raise multiple moral, legal, policy, and technical questions and other concerns.[27]

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22 ICRC: 1949 Conventions and Additional Protocols, and Their Commentaries; available at: www.icrc.org/eng/war-and-law/treaties-customary-law/geneva-conventions.

23 See: www.unesco.org/new/en/social-and-human-sciences/themes/global-environmental-change/comest.

24 Campaign to Stop Killer Robots; see: www.stopkillerrobots.org.

25 Noel Sharkey, «Saying ‹No!› to Lethal Autonomous Targeting,» in *Journal of Military Ethics, Special Issue: Ethics and Emerging Military Technologies* 9(4) (December 2010): 369–383.

26 Ronald Arkin, «The Case for Ethical Autonomy in Unmanned Systems,» in *Journal of Military Ethics, Special Issue: Ethics and Emerging Military Technologies* 9(4) (December 2010): 332–341.

27 Heyns, *Report of the Special Rapporteur*.

The second IHL approach consists of international agreements that prohibit or restrain the use of specific weapons such as cluster munitions, anti-personnel landmines, blinding lasers, and incendiary weapons under the Convention on Certain Conventional Weapons.

After informal consultations in the context of the Convention on Certain Conventional Weapons in Geneva, state parties adopted a mandate to hold a three-day informal meeting of experts to discuss «the questions related to emerging technologies in the area of lethal autonomous weapon systems» in May 2014.[28] There is hope that the complex ethical, legal, and technical questions can be solved, and that fully autonomous combat systems will be prohibited.

28 Daniel Horner, «Meeting Set to Discuss Autonomous Arms,» in *Arms Control Today* (December 2013); available at: www.armscontrol.org/print/6065.

Chapter Three

A Zone Free of Weapons of Mass Destruction in the Middle East

MOHAMED KADRY SAID

A Zone Free of Weapons of Mass Destruction – The Middle East: Next Steps

One of the major efforts to preserve international peace and security in the 21st century has been to «control» or «limit» the number of weapons and the ways in which weapons can be used. Two different means to achieve this goal have been disarmament and arms control.[1] Disarmament is the reduction of the number of weapons and troops maintained by a state, whereas arms control refers to treaties made between potential adversaries that reduce the likelihood and scope of war and usually impose limitations on military capabilities. Although disarmament always involves the reduction of military forces or weapons, arms control does not need to. In fact, arms control agreements sometimes allow for the increase of weapons by one or more parties to a treaty. One arms control agreement of major importance globally and in the Middle East is the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT). According to the NPT, countries that do not possess nuclear weapons give up their right to acquire them, whereas countries with nuclear weapons waive their rights to export nuclear weapons technology.

The 1995 NPT Review Conference called for the establishment of an effectively verifiable Middle East zone that was free of weapons of mass destruction (nuclear, chemical, and biological) and their delivery systems.[2] Following the September 11 terrorist attacks, great uncertainties began to cloud the future of arms control. The emergence of novel military technologies such as cyber warfare and drones further complicate cooperative approaches to arms control. Nobody doubts that the Middle East will experience growing problems in the future and will need a new diplomatic process to replace the one that has been stalled since the 1995 collapse of the Arms Control and Regional Security multilateral negotiations.[3]

1 Farlex Inc., *The Free Dictionary*, legal dictionary, «arms control and disarmament.»

2 Kelsey Davenport, «WMD-Free Middle East Proposal at a Glance,» Arms Control Association, July 2013.

3 Bilal Y. Saab, «The Future of Arms Control in the Middle East,» *Arms Control and Regional Security for The Middle East* (July 30, 2013).

A Middle East free of weapons of mass destruction

In 2010, the NPT Review Conference agreed to hold talks by 2012 on a Middle East zone free of weapons of mass destruction (WMD). In October 2011, the Finish diplomat Ambassador Jaakko Laajava was appointed by the UN as the facilitator for a planned International Conference on a Middle East WMD-free zone. On November 23, the United States issued a statement postponing the December 2012 conference. Russia called for the conference to be rescheduled and held before April 2013, citing that the preparations had already reached an «advanced stage.» At the time, Laajava had not yet secured Israel's attendance. On April 29, 2013, Egypt walked out of the NPT Preparatory Committee Meeting in Geneva in protest at the conference's postponement and called for it to be rescheduled as soon as possible.[4] The European Parliament called for the postponed event to take place in the Middle East as soon as possible in 2013.[5]

The meeting had been tentatively set to take place in Helsinki in December 2013, but was called off after it became clear that Israel would not attend. As Israel is widely presumed to possess the only nuclear arsenal in the region, its attendance was viewed as critical to the success of the conference. The European Union supports the ongoing preparations for the conference with the participation of all states in the region. Resolving the problem of chemical weapons in Syria will mark a big step toward implementing a long-standing goal of setting up a WMD-free zone in the Middle East.[6]

Iran, whose uranium-enrichment activities are feared to be a precursor to a drive toward developing nuclear weapons, was the other country whose attendance was critical for the conference. Late in 2012, Tehran agreed to participate, though some experts said they suspected that the Iranian government had by then concluded that Israel would not participate. However, the UN facilitator was unable to secure the participation of all Middle Eastern nations by the end of 2012. The Finnish facilitator employed the normal tools of diplomacy to solve these issues and create forward motion.

Despite extensive international support, practical progress has been stymied by strong disagreements between countries in the region over the terms and the sequence of steps leading to the establishment of the zone. Israel has closely linked discussions on the zone to its own security concerns. Arab states have said that no such linkages should exist and the establishment of the zone would

4 Elaine M. Grossman, «Q&A: US Envoy Derides Egyptian Theatrics on WMD-Free Zone Talks,» *Global Security Newswire*, July 26, 2013.

5 Gaukhar Mukhatzhanova, «Conference for a WMD-Free Zone in the Middle East,» *Arms Control and Regional Security for The Middle East*, Progress Report, April 23, 2013.

6 Vladimir Radyuhin, «Russia to Push for WMD-free Zone in Middle East,» *The Hindu*, September 14, 2013.

EU foreign policy chief Catherine Ashton and Saeed Jalili Iran's chief nuclear negotiator take their seats for negotiating Iran's nuclear programme that is possibly aimed at making atomic bombs.

Source: Anja Niedringhaus (Pool) – Reuters

contribute to peaceful relations. Discussions to date include proposals for banning all ballistic missiles with ranges in excess of 150 km.[7]

Series of conferences

Through parallel workshops and conferences addressing security and humanitarian concerns, the objectives and modalities for a zone free of nuclear and other WMD in the Middle East are on the political agenda in both regional and international terms. On May 28, 2012, a one-day Civil Society conference was held at the Scottish Parliament in preparation of the UN Meeting of States Parties in Helsinki in December 2012.[8] Conference participants discussed human rights; humanitarian concerns; the rule of law and democracy; the relationship between promoting human rights, civil society responsibility, and democratic institutions; and reducing the role of militarism (including the value attached to nuclear weapons and other WMD), not only in the region, but also globally.

At a symposium jointly held by the League of Arab States and the United Nations Institute for Disarmament Research in Cairo February 24–25, 2003, a number of presentations on next steps were given. A summary of the presentations can be found in a paper entitled «Middle East Weapons of Mass Destruction-Free Zone: Regional

7 Jerome Holton, Lora Lumpe, and Jeremy J. Stone, «Proposal for a Zero Ballistic Missile Regime,» in *1993 Science and International Security Anthology AAAS* (Washington, 1993), 379–396; available at: www.fas.org/asmp/library/articles/zerobal93.htm.

8 *A Middle East Free of Weapons of Mass Destruction: The Challenges*, a report of a conference held at the Scottish Parliament on Monday May 28, 2012, sponsored by Malcolm Chisholm MSP on behalf of the United Nations Association Edinburgh and United Nations Association Scotland.

Security and Non-Proliferation Issues.»[9] This paper concludes that the proposal of establishing a WMDFZ was stuck in the «pre-negotiation» stage, and no negotiation of an actual treaty had been carried out. To overcome the impasse that had been reached in 1995–1996 in the wake of the Egyptian-Israeli confrontation over the issue of the NPT extension, the paper proposes a three-phase approach, consistent with the requirement for transparency shared by all states in the region:

- Phase One: Confidence- and Security-Building Measures + «No First-Use»
- Phase Two: Capping of Weapons of Mass Destruction Stock
- Phase Three: Establishing the Middle East Weapons of Mass Destruction

Free zone

Recently, Laajava appealed for full cooperation and engagement between the countries of the «region,» invited more «concrete input» on what the relevant governments wanted to get out of the Helsinki Conference, and welcomed practical ideas for the creation of a regional dialogue structure. The substantive issues would include the elimination of chemical, biological, and nuclear weapons and their delivery systems, as well as consider the scope and the geographical parameters of the zone.

The verification of nuclear, chemical, and biological activities that are of a peaceful nature needs to be enhanced. The International Atomic Energy Agency (IAEA) and the Organisation for the Prohibition of Chemical Weapons should be given greater powers and more effective monitoring tools that will enable them to extend their activities to a maximum degree. The normalization of relations among the countries of the region will be an important factor in creating a climate conducive to the establishment of a WMD-free zone in the Middle East and, hence, to peace in the region. Facilitating such normalization will be an important task for the entire international community.

Future conference agenda

We should be seeking a safer atmosphere for all the powers and peoples of the region. We should also be determined to strengthen the global non-proliferation regime, including implementation of all relevant multilateral treaties and agreements that help to prevent proliferation. The NPT still remains the cornerstone of the nuclear non-proliferation regime and the essential foundation for the pursuit of disarmament and peaceful uses of nuclear energy.[10]

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9 Mohamed Kadry Said, «Middle East Weapons of Mass Destruction Free Zone: Regional Security and Non-Proliferation Issues,» in *On Building a Weapons of Mass Destruction Free Zone in the Middle East, Global Non-Proliferation Regimes and Regional Experiences* (United Nations Institute for Disarmament Research, 2004), 123–133.

10 Declaration on Non-Proliferation and Disarmament for 2013. This Declaration was issued in conjunction with the meeting of Foreign Ministers on April 11, 2013.

We should strongly support the work of Ambassador Jaakko Laajava as facilitator of the Conference and the commitment of the co-sponsors of the 1995 Resolution (the Russian Federation, the United Kingdom, and the United States). The IAEA – and, in particular, its safeguards system – remains an essential institution for the effective implementation of the nuclear non-proliferation regime. The IAEA must continue to have the necessary resources and legal authority.

The entry into force of the Comprehensive Nuclear-Test-Ban Treaty would lead to a complete and legally binding prohibition on nuclear weapons test explosions. This would build on the 1968 NPT prohibition on non-nuclear weapon states possessing, manufacturing, or acquiring nuclear weapons or other nuclear explosive devices.

In 2013, the IAEA reported that there are 437 operational nuclear power reactors in 31 countries, although not every reactor is producing electricity. There are approximately 140 naval vessels in operation using nuclear propulsion and that are powered by some 180 reactors.[11] There is an ongoing debate about nuclear power and its applications. Proponents such as the World Nuclear Association, the IAEA, and Environmentalists for Nuclear Energy contend that nuclear power is a safe, sustainable energy source that reduces carbon emissions. Opponents such as Greenpeace International and Nuclear Information and Resources Services contend that nuclear power poses many threats to people and the environment.

11 IAEA, 2013, *Nuclear Power Reactors in the World*, Vienna: IAEA, 2012, IAEA-RDS-2/31.

EMILY B. LANDAU

WMDFZ Conference Idea: What Isn't Working, Why, and What Might Have a Chance

Introduction: It's not working

It is no secret that the idea for convening a conference on a weapons of mass destruction-free zone (WMDFZ) for the Middle East is not working.[1]

It was originally intended to be convened by December 2012, but at the close of 2013, still no conference date had been set. The reasons why the idea is not congealing are also quite well-known in professional circles, even though some insist on playing a political «blame game» in this regard, which consists primarily of pointing accusing fingers at Israel alone for sabotaging the conference idea.

Reality is, of course, vastly more complex. The problem is not Israel, but rather the set-up and framework of the conference – which go to its problematic history – and more importantly, its underlying logic, and (as of yet) undefined agenda. Indeed, at the heart of the problem is the existence of two competing logics for how arms control discussions in the Middle East should proceed: immediate focus on the elimination of Israel's assumed nuclear weapons (Egypt's view); or dealing first with the very problematic context of inter-state relations in the Middle East, creating essential channels of communication and dialogue, and establishing a basis of mutual confidence and trust (Israel's view). The very different views in this regard have been apparent since the years in which the Arms Control and Regional Security (ACRS) talks were active, in the early 1990s. These talks were the only experience the Middle East had had with regional arms control dialogue, but they were plagued by the ongoing lack of agreement over what arms control really means for this region.

1 This article draws on ideas discussed in: Emily B. Landau and Shimon Stein, «The Decision to Call Off the 2012 WMDFZ Conference: An Outcome Destined from the Start?,» *INSS Insight*, no. 390 (December 5, 2012); Emily B. Landau, «Egypt, Israel and the WMDFZ Conference for the Middle East: Setting the Record Straight,» *Israel Journal of Foreign Affairs* 7(1) (2013): 13–16; Emily B. Landau and Shimon Stein, «Israel, Region Need Middle East Security Forum,» Al Monitor (May 20, 2013); Emily B. Landau, «Wanted: A Mideast Security Forum,» *Jerusalem Report* (June 6, 2013).

Polar conceptions of Arms Control and Regional Security

For its part, Egypt has been focused for decades on singling out Israel in the nuclear realm. Even today – and even as it finds itself embroiled in an ongoing crisis of national legitimacy and identity – Egypt maintains an uncompromising approach in this regard. It maintains focus on Israel even though across the Middle East there are very strong indications that the true cause for concern in the nuclear realm for many states is Iran's unchecked military nuclear aspirations. Over the decades, states in the region have actually come to recognize that Israel is not a danger in the nuclear realm because its assumed nuclear deterrent is for one purpose only: to ensure its continued survival in a very hostile region. Ironically, the fact that Israel has been engaged in so many conventional wars throughout the years is (unfortunate) testimony to the fact that the nuclear issue does not come into play in any scenario short of an existential threat. In fact, Egypt should be the first to recognize this: It had no qualms about attacking Israel in Sinai in 1973, although it assessed that Israel had crossed the nuclear threshold by that time. Of course, it is also telling that Egypt signed a peace agreement with Israel in 1979 without conditioning this on Israel joining the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

The very history of the WMDFZ idea does not auger well for its acceptance as a basis for dialogue by Israel – and in this regard as well, Egypt played a central role. The WMDFZ idea was forced onto the agenda of the NPT twice by Egypt: in 1995 and again in 2010. In both cases, Egypt threatened to upset a consensus document at a critical NPT Review Conference (RevCon) if the United States did not agree to carve out, and then support, a special Resolution on the Middle East that included the idea of pursuing a WMDFZ in the Middle East. President William J. Clinton succumbed to the pressure in 1995 at the critical NPT Review and Indefinite Extension RevCon, but at least ensured that the relevant clause in the Resolution linked the idea to the then still-active peace process. President Barack Obama succumbed to the pressure in 2010 because he had committed himself to a nuclear disarmament agenda the year before (Prague speech, April 2009) and desperately needed a consensus final document at the 2010 NPT RevCon as a central pillar of his agenda. But it is clear that the United States was (both times) anything but happy about having its arm diplomatically twisted in this manner by Egypt, and strategic assurances issued to Israel almost immediately upon closure of the 2010 meeting are testimony to this discomfort.

It should also be recalled that in 1995, the Egyptians forced the idea onto the NPT agenda at a time when the ACRS talks were ongoing. In contrast to common assumptions today that this idea was initiated in order to address a topic that was sorely lacking attention in the region, in reality, by pressing for a WMDFZ, Egypt was actually undermining an extremely important forum that had already been established to deal exactly with this issue, albeit on the basis of a competing arms control logic.

So what is the competing logic? The arms control logic that was incorporated into ACRS by the US and Russian gavel-holders – and that Israel subsequently adopted – was not, surprisingly, imported from the superpower experience of the Cold War.

It is an arms control logic that focuses on the *state* before the weapons, and that puts a premium on introducing stability into the relationship in order to lessen the dangers of miscalculation that could lead to nuclear war. The logic was very much in tune with Israel's view that arms control cannot be detached from the context of what transpires among states in the Middle East. For Israel it is impossible to discuss reductions of strategic capabilities before addressing the very difficult inter-state relations through dialogue, cooperation, and confidence-building. Significantly, at the time of ACRS, this was decidedly not a unique Israeli approach to arms control; rather, it was broadly embraced by participants across the Middle East – one of the strongest advocates was Jordan – leaving Egypt largely alone in its rejection of a confidence-building approach to regional security dialogue.

The point is not whether you have a «peace first» or «disarmament first» approach to arms control, but rather whether one believes that there is a pressing need to address what is going on within and among states in our region, or only the weapons, detached from context. The reason that it is imperative to have relations and context at the forefront is because the situation in the Middle East is horrendous – tensions and conflicts cut in all directions, with a heavy dose directed to Israel. At the rhetorical level, Israel is subjected on a regular basis to statements that reject its very place in the Middle East as a legitimate sovereign state, while blaming it for being behind all the ills of the region – from the internal civil war in Syria to the military takeover in Egypt.

Another major concern that Israel has is that regional states' commitments to international nonproliferation and disarmament treaties are not reliable. States such as Iran, Iraq, Libya, and Syria have joined these treaties and then proceeded to cheat on their commitments while deceiving the international community about their military intentions. This creates a crisis of compliance and trust that cannot be ignored. This is why efforts should be moved to the regional context, where the first order of business must be to create a context for improving confidence among states. Absent that, there is simply no way to proceed. The US statement of November 2012 that announced the delay of the WMDFZ conference recognized the importance of both inter-state relations and the centrality of compliance when it noted that stable peace and full compliance with arms control and nonproliferation commitments are essential precursors for the establishment of the WMDFZ.

A final issue goes to the question why WMD in the Middle East should be discussed within a purely nuclear setting – the NPT – in which Israel is absent. Although the idea is ostensibly geared to discussion of all WMD – and not to single out Israel and the nuclear realm – many in the region refuse to even call the conference by its name (WMDFZ) and insist on separating the nuclear from «other weapons of mass destruction.» The NPT RevCon final document of 2010 states clearly, however, that all arrangements must be «freely arrived at» by the parties that will attend. Therefore, nothing can be dictated, and this is all the more relevant to Israel, which, of course, was not a party to the deliberations or to the decision that was taken in 2010.

A possible way forward: Creating a regional security dialogue forum

In light of all of these problems, what could nevertheless work to break the deadlock? In the Arms Control program at the Institute for National Security Studies,[2] we have for over a year been discussing the pressing need to create a regional security dialogue forum for the Middle East. Although the Middle East is one of the most conflictual regions in the world, it stands out for its stark lack of an inclusive regional institution for discussing regional tensions and conflicts. We are sorely in need of a regional framework in which the full range of security issues can be discussed: from soft security issues to very hard ones, including WMD. We believe that this comprehensive approach – which includes, but is by no means limited to, WMD – is the best formula for moving forward in a win-win mode in the Middle East.

Setting up a forum for regional security dialogue draws on the same underlying rationale of the WMDFZ conference idea: namely, the pressing need to reduce regional tensions, and thereby lower the prospect of escalation that could lead to mass destruction in the Middle East. But it would equally address the problematic conditions that we face in this regard: poor relations, conflicts, and the debilitating lack of trust that has been engendered by years of states systematically cheating on international disarmament commitments.

The internal turmoil that is rocking a number of Arab states – and the transformations that the region is undergoing – only make this dialogue all the more essential, and ironically may even create some new opportunities. This could actually be an auspicious time to carve out a new approach to arms control in the Middle East, and to explore whether some new common security interests have emerged.

If regional states are truly serious about reducing tensions and threatening behavior in the Middle East, it is difficult to envision substantive – rather than political – grounds for objecting to setting up such a forum. It could be the best way to create a win-win forum for fostering better understanding, and hopefully new routes for cooperation on a full range of security issues that will make the Middle East a much safer place.

2 The institute is Israel's largest strategic think tank and affiliated with Tel Aviv University.

BERND W. KUBBIG

Missiles and Related CSBMs/ Reductions as Bridge-builders at the Helsinki Conference

The context: Missiles and the mandate of the Helsinki Conference on a WMD/DVs free zone[1]

In May 2010, the 189 members of the Review Conference to the Treaty on the Non-Proliferation of Nuclear Weapons endorsed holding a Middle East Conference in 2012 whose aim would be to create a zone in the Middle East «free of nuclear weapons and all other weapons of destruction.» Delivery systems – or vehicles (DVs) – were explicitly included in the Mandate in paragraph 7(d), which refers to the «full implementation» of the 1995 Resolution on the Middle East. Whereas «all other» weapons of mass destruction (WMD) comprise biological and chemical weapons, delivery systems usually consist of ballistic and cruise missiles, of aircraft, as well as of unmanned aerial vehicles. Missile defense systems could also be included in principle, since they are the «technological twins» of ballistic missiles.

International organizations were asked «to prepare background documentation» for the Middle East Conference «regarding modalities for a zone free of weapons of mass destruction and their delivery vehicles» (paragraph 7(d) of the Mandate). In my contribution, this task is understood as the effort of conceptualizing confidence- and security-building measures (CSBMs) properly as one element of a gradual reduction path toward the ambitious objective of a sustainable WMD/DVs-Free Zone.

The case for missiles

To be sure, the success of having the Bashar al-Assad regime join the Chemical Weapons Convention and the associated ongoing dismantlement of the chemical stockpiles in Syria after the catastrophic use of chemical weapons on August 21, 2013, suggests that missiles may become obsolete once the warheads are destroyed. The enforced Syrian membership in the Chemical Weapons Convention may even trigger new and positive dynamics. They might lead Israel to ratify the Chemical Weapons

1 This contribution draws heavily on policy brief nos. 18, 20, 21/22 and 23/24; available in the near future at: www.acedemicpeaceorchestra.com.

Convention, which it signed in 1993. But tackling the issue of Israel's nuclear capabilities will be rocky and cumbersome and require trust-building efforts regarding all three categories of WMD that carry them. Therefore, the rationale presented here for a prominent role for delivery vehicles in this long process is far from obsolete.

This contribution emphasizes the importance of DVs, and hence missiles, and makes the case, first, for the category of DVs as playing a constructive role in the Helsinki Conference and, second, that discussions about missiles and related CSBMs allow for a number of conceptual, political, and procedural advantages. Therefore, CSBMs will be defined first, whereas arms control, reductions, and disarmament will be neglected, simply for reasons of space. But it is important to note that both elements have to be seen as parts of an integrated and long-term concept. First, they make it possible to design a gradual reduction of delivery systems, leading toward the ambitious goal of a sustainable WMD/DVs-Free Zone, as envisaged by the international community in May 2010. Second, as with all other DVs or WMD, missiles have to be seen primarily in a regional context. This implies that, in principle, conflict formations are paramount to arms dynamics.

Confidence- and security-building measures are understood as being aimed at reducing tensions and the dangers of armed conflict, but also at reducing the misunderstandings associated with military activities. The dimension of lacking clear and timely information, especially in crisis situations, is of special relevance. Therefore, military openness/transparency is a central element of the concept of CSBMs. It will also be important to distinguish between two categories: First, non-demanding/modest CSBMs include declarations on the «no first-use» of missiles and the exchange of information on missile projects and activities (especially in times of crisis); second, far-reaching CSBMs include the de-targeting and de-alerting of missiles.

As to the potential advantages of missiles, which are part and parcel of the Mandate for the Helsinki Conference, this contribution would like to emphasize that they are a suitable starting point for serious and credible arms control discussions; they may, in politically explosive relationships, be an immediate de-escalatory tool to manage and decrease deep-rooted mistrust. Because discussions of missiles are less politically loaded than those about nuclear weapons, especially, this can help initiate dialogue at the Middle East Conference, and these can serve as trial balloons for exploring further negotiating options. In addition, missiles provide opportunities for initial norm-building in a virtually norm-free zone. Since missiles are indispensably linked to WMD and other DVs, a discussion on missiles can have a spillover effect into other areas of DVs and warheads. Finally, missiles increase opportunities for tradeoffs and bargaining: The Helsinki agenda, which has a focus that is broader than the nuclear issue, makes tradeoffs more likely and provides additional room for bargaining and compromise, based on the principle of «give a little, take a little.» At the same time, including all three categories of WMD and DVs reduces the danger of singling out countries with actual (Israel) or possibly emerging (near) nuclear weapons capabilities (Iran).

The challenges for missile-related CSBMs

Two questions need to be answered: First, what can CSBMs achieve and what can they not achieve with respect to the five *main* arms control/reduction-related and Middle East Conference-related challenges? Second, what is the constructive potential of CSBMs with respect to the political core challenges? Relevant in this respect is the important but limited role of missile-related trust-building measures in three contexts: the Israeli-Egyptian dyad; the relationship between Israel and the countries of the Gulf Cooperation Council; as well as the Israeli-Saudi-Iranian triangle. To be more concrete:

- As to the Israeli-Egyptian dyad, the question is: How can missile-related CSBMs contribute toward constructively tackling the core challenge, that is, the nuclear problem?
- As to the Israeli-Gulf Cooperation Council relationship, the question is: How can missile-related CSBMs contribute toward tackling constructively the core challenge in this constellation, that is, bringing the long-standing Israeli-Arab conflict – with its emphasis on the Palestinian dimension and the lack of a formal (diplomatic) relationship between Israel and the Gulf states – in line with their comparatively relaxed military situation?
- In the Israeli-Saudi-Iranian triangle, it is important to ask: How can missile-related CSBMs contribute toward tackling constructively the core challenges, that is, the highly adversarial relations that are lacking official dialogue – especially between Israel and Iran, but also between Saudi Arabia and Israel?

In addition, the following five *main* arms control/reduction-related and Middle East Conference-related challenges can be identified:

- Managing and reducing deep-rooted mistrust (and de-escalating crisis situations);
- Providing incentives for a flexible and serious arms control dialogue on the WMD/DVs-Free Zone at the Middle East Conference and at other forums;
- Generating potential spillover effects for talks on WMD and other DVs (such as aircraft) with transparency as the crucial element;
- Tackling norm-building challenges in the context of the two existing regimes: the Hague Code of Conduct Against the Proliferation of Ballistic Missiles and the Missile Technology Control Regime;
- Exploring opportunities for tradeoffs and bargaining on missiles and other delivery vehicles as well as nuclear, biological, and chemical warheads.

The results: Missile-related CSBMs are of (limited) importance

The discussion about missiles as part and parcel of the Middle East Conference Mandate has the potential ability to make a solid contribution to meeting all five

challenges. At the same time, trust-building steps cannot solve basic political problems among states. This is in accordance with one of our core assumptions that, in principle, conflict formations are paramount to arms dynamics. Nevertheless, confidence- and security-building measures concerning DVs and missiles can contribute toward mitigating those conflicts. As argued at the beginning of my contribution, a vital step is to develop mechanisms for reductions and zonal disarmament as well as to make the zone sustainable.

Ambassador Jaakko Laajava is a trustworthy person and his team at the Middle East Conference will select and propose the appropriate confidence-building steps at the right time.

Chapter Four
Proliferation in Asia and Africa

NOBUYASU ABE

Engaging North Korea and Promoting Disarmament and Non-Proliferation in Northeast Asia

The state of play now

The United States (and its allies) have engaged in efforts to stop North Korea's nuclear program at least three times – every time ending up with a sense of betrayal. Now it has become clear that North Korea never really had the intention of abandoning its nuclear program. The program has been its core national security goal, going back to the days of Kim Il-sung, the grandfather of the current leader, Kim Jong-un. It has now been written into the Preamble of its Constitution, and there is no indication that North Korea is prepared to negotiate it, even though it recently expressed its readiness to engage in dialogues with South Korea and the United States. The fact that North Korea is prepared to reengage in the Six-Party Talks should not be seen by the other parties that North Korea is willing to abandon its nuclear program as a precondition for negotiations.

The recent spate of missile tests, nuclear explosive tests, and virulent provocations has turned many away. The offer of a dialogue should always be welcomed. But for the United States, South Korea, and Japan, there has to be a reasonable certainty that they will not be betrayed once more after engaging in serious dialogue. In that sense, there is a credibility gap that needs to be filled.

Negative effects

Such developments have driven South Koreans to consider acquiring their own nuclear weapons or asking for the redeployment of American tactical nuclear weapons in South Korea – a prominent example being the series of statements made by the one-time chairman of the ruling Saenuri Party, Representative Chung

Mong-joon.[1] Public opinion polls indicate a majority of South Koreans favoring such options. For example, an opinion poll conducted by the Asan Institute for Policy Studies, which was conducted after the third North Korean nuclear test, found that 66.5 percent of the public supported a domestic nuclear weapons program. The support has been steadily increasing since 2010.[2]

A small minority of politicians and security experts in Japan have also sporadically advocated for a future nuclear option in Japan. Right after the first North Korean nuclear test in 2006, the late Shoichi Nakagawa, who at the time was Chairman of the Policy Research Council of the ruling Liberal-Democratic Party, stated that Japan should consider arming itself with nuclear weapons as an option, leading to severe rebukes from the media. The then Foreign Minister, Taro Aso (currently Deputy Prime Minister), tried to defend Nakagawa by saying it was important to consider various policy options when a neighbor has come to possess nuclear weapons, and that such freedom of expression should not be suppressed. This led to a call for a vote of no-confidence for the Foreign Minister by opposition parties.

Retired Air Self-Defense Force general Toshio Tamogami has gone even further and openly advocated the nuclear armament of Japan, most prominently at Hiroshima City on August 6, 2009.[3] His open advocacy of nuclear armament may have been prompted by North Korea's nuclear tests. But soon after the statement made at Hiroshima City, he made another, which seems to have been more concerned with China: «In order to establish a force to match China and let China recognize its existence, Japan may have to become a genuinely independent state and arm itself with nuclear weapons.»

The rapid economic growth of China, which has recently surpassed Japan in terms of the size of its economy; its fast-growing defense spending, acquisition of aircraft carriers, and other advanced weapons systems; as well as the increasingly assertive activities around the Senkaku Islands are alarming the Japanese public and encouraging reactive arguments for a more robust defense capability.

North Korea's actions and the reactions in South Korea, Japan, and the United States – in addition to the rapidly growing and increasingly assertive China – are certainly not conducive to the promotion of disarmament and arms control in the region. On the other hand, China has been critical of the following developments

1 For example, Representative Chung Mong-joon has stated, «North Korea's declaration as a nuclear power in its constitution means that the North no longer intends to consider the dismantlement of nuclear weapons as a subject for negotiations. We need a comprehensive re-examination of our security policy.» «Peace cannot be secured without the balance of fear or nuclear weapon for nuclear weapon.» «Even if [South Korea] doesn't possess its own nuclear weapons immediately, it should secure the capability to possess them.» «South Korea should get nuclear weapons.» *Dond-a Ilbo,* June 4, 2012, Seoul, Korea.

2 Kim Jiyoon, Karl Friedhof, and Kang Chungku, «The Fallout: South Korean Public Opinion Following North Korea's Third Nuclear Test,» Issue Brief No. 46, Asan Institute for Policy Studies, Seoul, Korea, 2013, 8–9; available at: http://asaninst.org/eng/03_publications/publications_detail.php?seq=100407.

3 The first of such statement was made in Hiroshima City on August 6, 2009, in an adjacent podium next to the place where the Hiroshima Bomb Memorial Service was conducted.

and finds them to be a threat: the American pivot to the Asia-Pacific region; Japanese nationalization of the Senkaku Islands; emerging nationalistic movements in Japan; and efforts to put the Japanese right to self-defense on a firmer and broader legal basis. North Korea, on the other hand, feels threatened by the joint military exercises between the United States and South Korea, the sending of strategic bombers and fighters from US carriers, and the buildup of South Korean defenses.

These events have the potential to prompt an arms race in East Asia. Each action seems to be reactive and defensive, but collectively they push the countries in the region toward a greater defense buildup rather than to concerted efforts to prevent nuclear proliferation and a movement toward realistic disarmament and arms control.

«No exit» but no way to give up

Ideally, North Korea should put itself on course to renounce its nuclear weapons program so that neither the United States, nor South Korea, or Japan feel the need to strengthen their military capacities in the region to counter the threat from North Korea. However, the reality seems to be, as Jonathan Pollack put it, that there is no easy way out of the North Korean nuclear issue.[4] Should we pay? And do we keep on paying an exorbitant price for North Korea's abandonment of its nuclear weapons program? Should the United States and its allies give up that attempt and instead concentrate on defense and deterrence options? Accepting North Korea's possession of nuclear weapons and legitimizing its program will give a strong boost to arguments in South Korea and Japan for a nuclear option. Unless one is planning on the demise of the nuclear non-proliferation regime in northeast Asia, this is not really a viable option.

Thus, even though the chance may be remote, the door for negotiating the denuclearization of North Korea should be kept open. Meanwhile, to keep defense and deterrence steps to a minimum, measured steps may have to be taken to keep North Korea sufficiently deterred from carrying out any more provocative actions, such as the shelling of Yeonpyeong Island or blandishing its nuclear weapons whenever it feels unhappy about something. These defensive steps have to be of measured strength so that they are not too threatening to North Korea and drive it further toward accelerating its nuclear weapons and other programs. The presumably defensive measures may also be taken by China as a potential threat to it, or may be used as a good excuse to justify its military modernization and buildup.[5]

Hopefully, another round of diplomatic efforts – perhaps within the framework of the Six-Party Talks – may take place with a serious commitment from North Korea that it is ready to submit the renunciation of its nuclear weapons program for negotiation. There are words of caution to be given as well as strong skepticism based on past failures. But the temptations are great to believe that «This time North Korea may

4 Jonathan D. Pollack, *No Exit: North Korea, Nuclear Weapons, and International Security* (Abindgon: Routledge/IISS Adelphi Paper, 2011).

5 As to the discussion of the ways to denuclearize North Korea and defense and deterrence measures as an interim step, refer to Nobuyasu Abe, «Denuclearization of the Korean Peninsula: A New Perspective,» *Korea Review* 1(2) (December 2011).

Source: Max Smith (Megapixie) – Wikimedia

Chinese nuclear bomb on display at exhibition «Our troops towards the Sky».

be serious.» There is much advice to be given to negotiators who may venture into another round.

- **Avoid a partial deal**. The 1994 agreed Framework only closed one path to building nuclear weapons – plutonium-producing graphite reactors – but did not explicitly close the other path, namely, uranium enrichment, which North Korea started working on soon after.
- **Secure robust verification**. Whatever deal is struck, it has to be verifiable so that compliance/fulfillment of the commitments are secured. Otherwise, one may just end up with North Korea walking away with all the benefits of the deal, including the lifting of sanctions; food and economic assistance; political recognition; and security guarantees.
- **Leave enough leverage to secure compliance and follow-up negotiations**. An important way to make North Korea keep its promises is to retain enough leverage. If all the rewards are given and no leverage remains, there will be no incentive to honor the commitments. This is particularly so when an agreement is made as a first step that leaves the main issues for future follow-up negotiations, or when agreement is to be implemented step by step.

Proper security perceptions for regional disarmament and non-proliferation

The North Korean nuclear issue is not the only hurdle to the promotion of regional disarmament and non-proliferation in northeast Asia – there also has to be an environment that can facilitate it. First, in order to avoid the escalation of alarming security perceptions that could feed into a regional arms race, the situation has to be seen from a perspective that gives an objective view of the respective military buildups. For example, the Chinese acquisition of its first aircraft carrier is being publicized as a threatening move. In turn, China counters by saying that Japan's new helicopter-carrying destroyer is an aircraft carrier in disguise.

Table 1 shows the fast economic growth of China in the past 10 years surpassing that of the Japanese. Concurrently, military spending in China has grown as fast during the same period, but its ratio as a percentage of GDP declined, even though the exact amount of Chinese military spending is unknown. The United States has been, by far, the largest spender in the world, spending 3 to 5 percent of GDP on defense annually. The implementation of the Budget Control Act means that there will be a $487 billion cut in defense spending over the next 10 years, that is, roughly a 0.7 percent reduction from the current spending trend, which will still be higher than that of the Chinese. Thus, even if China catches up with the United States in terms of economic size by 2030, as some economists predict, the United States will still be spending more on defense than China, unless China drastically changes its defense-spending pattern.

Japan strictly adheres to its self-imposed defense spending limit of 1 percent of GDP. This seems to be difficult to change, even for the conservative government of Prime Minister Shinzo Abe, who won a landslide election victory last December. Thus, as the Japanese economy may grow only modestly in coming years – and definitely a lot slower than the Chinese economy – its defense spending will lag behind the Chinese, and the gap will continue to widen. Ultimately, it will greatly depend on the willingness of the United States to maintain its military spending to sustain its military might. It is also important not to put China in a situation that encourages it to change its course toward a rapid military expansion with accelerated military spending.

Table 1: Economic growth and military spending in US $ (IISS Military Balance)

	US	Russia	China	Japan
2001 GDP	10,200 bn	1,027 bn	1,200 bn	4,200 bn
2001 Defense spending % of GDP	308.5 bn (3.0%)	46.1 bn (4.5%)	43.5 bn (3.6%)	40.8 bn (1.0%)
2010 GDP	14,500 bn	1,480 bn	5,870 bn	5,460 bn
2010 Defense spending % of GDP	693.6 bn (4.8%)	65.2 bn (4.4%)	111 bn (1.9%)	54.4 bn (1.0%)

Table 2 lists the «aircraft carriers» of the United States, China, and Japan. The United States far outpaces the other countries with regard to the numbers, displacements, and deck sizes. The new Chinese aircraft carrier is a little bigger than the American helicopter carriers for troop-landing purposes. The Japanese helicopter-carrying destroyer with landing deck is even smaller. It must be worrying if China rapidly increases and improves its carriers, because they can offer a great force-projection potential. The United States is planning to reduce the number of «super carriers,» but it will try to maintain an edge over any other power in the world.

Table 2: Aircraft carriers

	Number & type	Displacement	Deck length
US	10(+1) Nimitz CVNs 8 Wasp LHDs	102,000 tons 40,500 tons	332.9 m
China	1	55,000 tons	253.2 m
Japan	1(+2) Izumo DDHs	19,500 tons	248.0 m

Table 3 shows US and Japanese possession of Aegis warships. Japan concentrates more on acquiring Aegis destroyers that can be used for aerial and anti-ballistic missile defense. Not including the United States, Japan has the largest number of such ships, and it plans to acquire two more to counter the rising nuclear ballistic missile threat from North Korea. However, China apparently views this as a threat to its nuclear deterrence based on ballistic missiles.

Table 3: Aegis warships

	Number & type	Displacement
US	22 CGs 62 Arleigh-Burke DDGs	9,800 tons 8,300~9,200 tons
Japan	4 Kongo DDGs 2 Atago DDGs	9,500 tons 10,000 tons

Final considerations

North Korean denuclearization

Ways for achieving the denuclearization of North Korea and promoting nuclear disarmament and arms control in the region have been considered. Achieving the denuclearization of North Korea under the current tense and hostile environment is a tall order, if not impossible. Mutual distrust is deep and the security concerns

are high. Both sides are making demands that have to be accompanied by intensive verification mechanisms. The history of the Cold War shows that nuclear arms control and nuclear reduction agreements are still possible, despite immense pressures. Yet, it has to be remembered that the series of nuclear arms reduction agreements and arms control agreements started with an agreement on confidence-building measures. The Russian four horsemen once wrote that «the world without nuclear weapons is not our existing world minus nuclear weapons.»[6]

If the international environment is conducive to such disarmament and arms control attempts, the denuclearization of North Korea will be a lot easier. Or a change may come when the North Korean regime realizes the futility of maintaining a nuclear arsenal and makes a major policy change to renounce it. Other possibilities could occur if a regime-change were to take place in North Korea or if the regime were to collapse. There is no immediate prospect of any of these things happening anytime soon. But one cannot give up hope. Who could have predicted the collapse of the Soviet Union in 1991 or the Syrian agreement to abandon its chemical arsenal in 2013? Such major changes in policy tend to come all of a sudden.

Extended deterrence

For the foreseeable future, the United States will continue to maintain a much greater nuclear deterrence capability over China and North Korea. Therefore, China and North Korea will continue to be deterred on the nuclear front, as long as they continue to think rationally. There is an increasing awareness, however, that nuclear weapons are virtually unusable weapons and, therefore, cannot deter conventional provocations anyway. Therefore, there is no practical military need to emphasize the extended nuclear deterrence of the United States, for it takes only a 5 percent possibility that an extended nuclear deterrence may work to deter an adversary. However, it is also said that it takes 95 percent certainty to convince allies that the extended nuclear deterrence is credible. This will lead to strengthen the arguments in Washington for continuing to allocate a large share of military resources toward the maintenance of US nuclear deterrence capa-bility when the US military budget is placed under constraints due to financial difficulties. This, in turn, may reduce the available financial resources that the US administration has to maintain modernized, effective, conventional deterrence. Thus, de-emphasizing the dependence on extended nuclear deterrence will help in opening the way for nuclear disarmament and arms control in northeast Asia and maintaining reliable, conventional deterrence in the region.

6 Yevgeny Primakov, Igor Ivanov, Evgeny Velikhov, and Mikhail Moiseyev, «Nuclear Disarmament: The End of the Atomic Option,» Izvestia, December 8, 2010.

PERVEZ HOODBHOY

How Much Is Enough? Nuclear Expansions in South Asia

For three years, Pakistan has single-handedly – and successfully – blocked the Conference on Disarmament in Geneva from discussing an effort that would put a cap on fissile materials. Consequently, within diplomatic circles, Pakistan has acquired the reputation of an obstructionist that opposes all efforts toward this end. In defending itself, Pakistan cites the threat from an Indian invasion across the border, which is driving it toward its current preparations for fighting a tactical nuclear war. Sub-kiloton warheads are expensive: In spite of a yield that is 10–15 times lower than a «city-buster,» they consume 3–4 times more fissile material. This fact could be important for a country that has limited fissile stocks and explains Pakistan's opposition to the Fissile Material Cutoff Treaty. Pakistan also says that the US-India nuclear deal,[1] along with older issues related to verification problems and existing stocks, is its reason for opposing the Fissile Material Cutoff Treaty.

Pakistan's current arsenal – said to be the fastest-growing in the world – is believed to consist of around 100–120 warheads. The number that it «must have» is generally left open by defense analysts; explicit numbers are almost never found. It is therefore of some interest to consider the figures used by a retired Pakistani Air Force officer. His logic is reproduced here:

We assume that destruction of two enemy cities will meet our minimum deterrence needs and each city would need to be hit with five nuclear bombs, that our delivery means have a 50 percent probability of successfully penetrating the enemy defenses, and finally the enemy has the capability of destroying 50 percent of our nuclear assets in a pre-emptive first strike. Now with these sets of assumed determinants, the number of weapons needed to ensure minimum deterrence would be:

- Number of bombs required to take out two cities @ 5 per city: 10 bombs
- After factoring in enemy's 50 percent intercept capability: 20 bombs

1 «New Estimates Put Pakistan's Nuclear Arsenal at More Than 100,» *Washington Post*, January 31, 2011; Jayshree Bajoria and Esther Pan, «The US-India Nuclear Deal (backgrounder),» Conference on Foreign Relations, November 2010.

- Enemy can take out 50 percent of our force in a pre-emptive strike. So we would need 40 bombs to maintain our minimum deterrence under the given set of assumptions.[2]

This relatively modest figure of 40 bombs then jumps to a staggering 1,000 under a different set of assumptions made by the same writer:

Let us now assume that the enemy has enhanced his offensive and defensive capability. Now, he can intercept 90 percent of our nuclear weapons because of [a] better NMD [national missile defense] system. He also has increased his offensive potential through [a] greater number of nuclear weapons with enhanced accuracy and now can take out 90 percent of our nuclear arsenal in a pre-emptive strike. Now the fresh calculation would be:

- Number of bombs required to take out 2 cities @ 5 per city: 10 bombs
- After factoring in enemy's 90 percent intercept capabilities: 100 bombs
- After factoring in 90 percent of enemy's riposte capability: 1000 bombs.[3]

A degenerative logic is apparent above. Tweaking input parameters arbitrarily generates arbitrary outputs – you can get the result you want, and yet it can be made to appear as the end product of a logical process. Similar leaps of logic can be found on the Indian side.

As with Pakistan, India refuses to set an upper limit on its arsenal. Instead, it enhances Pakistani fears by advertising advances on its side. The Defence Research and Development Organisation's (DRDO) announcement[4] in 2012 that «Delhi and Mumbai, the two most vital metros of India, have been chosen for ballistic missile defense shield» feeds into Pakistani fears. But most technical experts will agree that missile defense is a technical impossibility because of 4–6 minute warning times, easily manufactured decoys, and various electronic countermeasures. To attack with missiles is relatively easy, but to defend specific targets against missiles in the mid-course and terminal phase is very hard. A report of the American Physical Society says that destroying missiles in even the (much easier) boost phase is dauntingly difficult.[5]

The China-India race

As India races to compete with China for overall influence and power, it is increasingly outdistancing its historical adversary – Pakistan. A minimal Indian deterrence against China naturally puts India far above Pakistan.

2 Retired Air Commodore Jamal Hussai, *Deterrence in a Nuclear Environment*, 2003; available at: www.defencejournal.com/2003/mar/deterrence.htm.

3 Ibid.

4 «Delhi, Mumbai Selected for Ballistic Defense Missile Shield,» *Times of India*, June 24, 2012.

5 American Physical Society Study Group, *Boost-Phase Intercept Systems for National Missile Defense: Scientific and Technical Issues 2004*, report, Rev. Mod. Phys. 76, S1–S424.

Marking a quantum escalation, India began sea trials in July 2009 of its 7,000-ton nuclear-powered submarine, the Arihant, with an underwater ballistic missile launch capability. The submarine, now operational, is the first in a planned fleet of five, and is to be supplemented by hunter-killer nuclear submarines. In 2012 India commissioned the nuclear-powered attack submarine INS Chakra. The launch in August 2013 of the indigenously developed aircraft carrier INS Vikrant, which is expected to be operational by 2018, gives India a blue-water navy with the ability to project power well across the oceans. India's DRDO has claimed some successes: After the maiden test of the Agni V, which has a range of 5,000 km, DRDO's head, V. K. Saraswat, noted that several Agni variants could eventually be mated with multiple, independently targetable reentry vehicles, or multiple nuclear warheads. On May 10, 2012, he explained: «Where I was using four missiles, I may use only one missile. So it becomes a force multiplier given the damage potential.»[6]

A booming Indian economy, which has only recently slowed down, has fed India's rapid militarization. With only a sixth of India's budget, Pakistan obviously cannot match India weapon for weapon. Nevertheless, historically, every Indian move is somehow met with a countermove. Predictably, news of India's new weapons systems has been received negatively in Pakistan. What should it do? Tariq Osman Hyder, a former diplomat who headed Pakistan's delegation talks from 2004 to 2007 with India on nuclear and conventional continental ballistic missiles, gave his answer:

> *What should Pakistan do? First of all develop its own second-strike nuclear submarine-based capability, on which it must have given some thought having been long aware of the Indian program. Secondly, equip its conventional submarines with nuclear-tipped cruise missiles. Thirdly, as the Russian assistance to India for this project, and the lack of any objection from the US or any other party has shown that both leasing of nuclear submarines and technology for their production are completely compatible with the global non-proliferation regime, Pakistan should explore such possibilities.*[7]

The long and short of it is that the Pakistan-India nuclear race is open-ended, with the sky as the limit. Of course, this is not particular to the subcontinent. Escalation is in the nature of the nuclear beast: The Cold War saw the US warhead count reach a peak of 31,255 in 1967.[8] Just one of these bombs – even one on the smaller side – dropped on a city could easily kill a 100,000 and the fallout would render the city uninhabitable for years.

Praful Bidwai, an astute observer of the Indian nuclear scene, sums up South Asia's current situation as follows:

6 «Agni-V May Be Equipped with Multiple Warheads: DRDO Chief,» *The Economic Times*, May 10, 2012.

7 Tariq Osman Hyder, «Strategic Stability in South Asia,» *The News*, August 1, 2009.

8 *Wikipedia*, «Nuclear Weapons and the US.»

> *Today, both countries refuse to restrict themselves to any specific number of weapons. Similarly, for delivery vehicles, and «flexible response» is kept undefined. Tactical nuclear war-fighting, once considered escalatory and way beyond minimal deterrence, is said to have been incorporated into current Indian military doctrine [...] Taken together, Indian military options and Pakistani planning would seem to ensure that any major India-Pakistan conflict would inexorably lead to the use of nuclear weapons.*[9]

Where the real danger lies

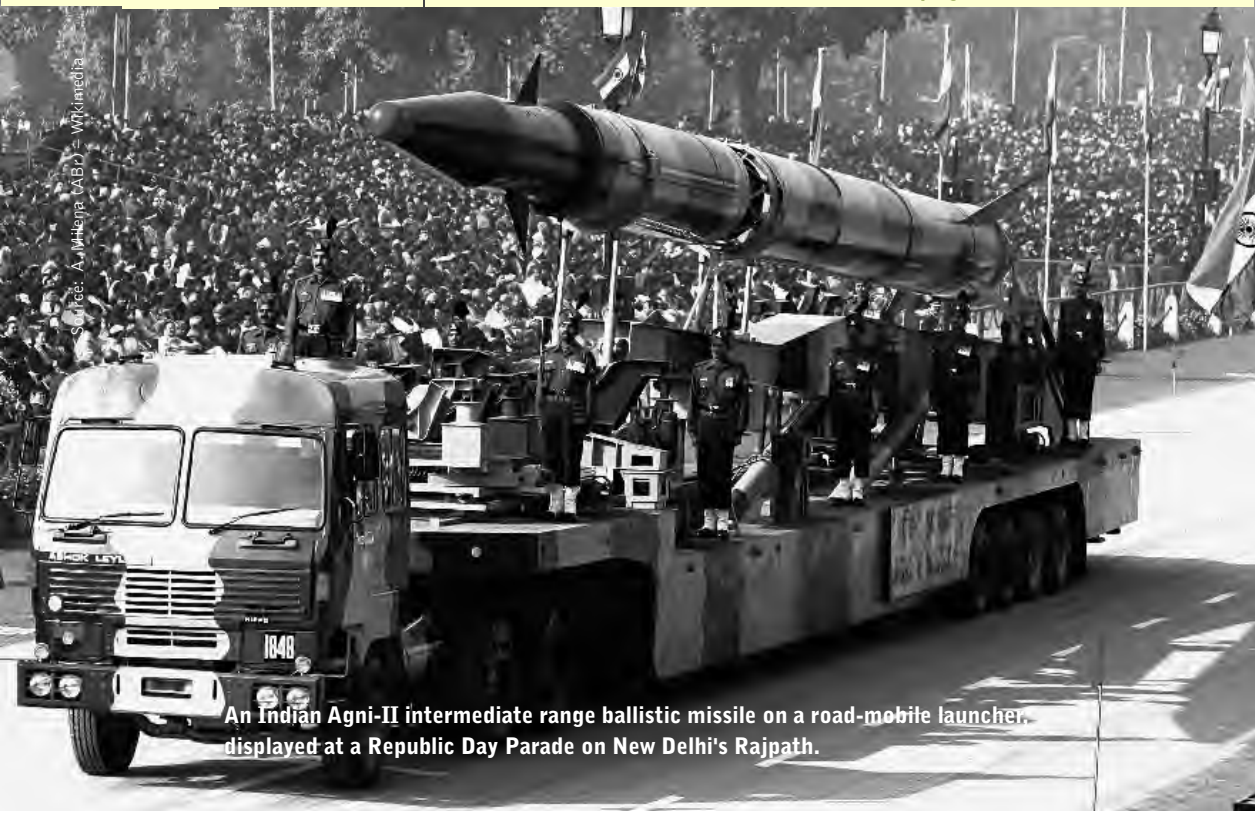
It is not the increasing number of nuclear weapons but certain specific strategic doctrines that pose the greatest nuclear danger. A new Indian paradigm for dealing with Pakistan – and punishing it for a future Mumbai-style attack from Pakistan-based jihadists – was invented and embodied into the Cold Start doctrine.[10] This calls for quick, salami-slicing thrusts into Pakistan while learning to fight a conventional war under a «nuclear over-hang» (itself an interesting new phrase, used by General Deepak Kapoor in January 2010).

WikiLeaks revealed that in a classified cable to Washington in February 2010, Tim Roemer, the US ambassador to India, described Cold Start as «not a plan for a comprehensive invasion and occupation of Pakistan» but «for a rapid, time- and distance-limited penetration into Pakistani territory.»[11] He wrote that «it is the collective judgment of the US Mission that India would encounter mixed results.» Warning India against Cold Start, he concluded that «Indian leaders no doubt realize that, although Cold Start is designed to punish Pakistan in a limited manner without triggering a nuclear response, they cannot be sure whether Pakistani leaders will in fact refrain from such a response.»

The Pakistani response to an Indian attack has been predictable: prepare for tactical nuclear war. Imagine that Mumbai-II were to happen and tensions were once again to rise to some dizzying level. What are possible Pakistani responses to an Operation Parakram, Cold Start, or whatever? One expects the following rungs of escalation, each leading to the one above, or perhaps, even skipping to the next one:

- Strong statements by Pakistani army and political leaders, similar to those made during previous crises, with open threats that a nuclear showdown is imminent.
- Mobilization of a few missiles and nuclear-capable aircraft. This would be detectable by India's Radar Imaging Satellite, which, while in a 540-mile-high orbit, uses a synthetic aperture that gives it day-night and all-weather reconnaissance capabilities.[12] Thereafter, one expects India to respond with a similar mobilization. But Pakistan would have to rely on China for intelligence information, as it does not have such satellite capability.

9 Praful Bidwai, «India: A Dangerous High,» *Frontline* 29(9) (May 2012): 5–18.
10 Harsh V. Pant, «India's Controversial New War Doctrine,» *ISN Security Watch*, January 25, 2010.
11 «India ‹Unlikely› to Deploy Cold Start against Pakistan,» *Dawn*, December 3, 2010.
12 «RISAT-1's Radar Can See through Clouds and Work in Darkness,» *The Hindu*, April 25, 2012.



An Indian Agni-II intermediate range ballistic missile on a road-mobile launcher, displayed at a Republic Day Parade on New Delhi's Rajpath.

- An underground nuclear test by Pakistan. This would be a powerful signal that nuclear temperatures have sharply increased. Such a test is certainly technically possible, and one presumes that Pakistan has already prepared an appropriate site (probably again in Balochistan). Since Pakistan has not signed the Comprehensive Nuclear-Test-Ban Treaty, this would not violate any international law. The Indian response could be tit-for-tat: Those Indian scientists long spoiling for a chance to fine-tune their thermonuclear weapons will get their wish.[13]
- Air-dropping a bomb on some uninhabited desert area within Pakistan. The psychological impact would be enormously larger than that of an underground test; the flash would be detected by aircraft and satellites, and the mushroom cloud would carry radioactivity long distances in directions determined by prevailing winds. The fact that even desert areas are not completely uninhabited would be a consideration, but it would not rule out this option. It is unlikely that India would follow through (although underground testing will remain an option). Pakistan's action would arguably not be a violation of any «no first-use» principle.[14] However, massive alarm would be created by this action, and Pakistan might be seen to have nuclearized the conflict. Thereupon, India would seek to have a total international boycott imposed upon Pakistan.

13 «No CTBT, India Needs More Nuclear Tests: Santhanam,» *Hindustan Times*, August 27, 2009.

14 China is apparently also taking the position that nuclear weapons exploding on its own territory does not constitute a first use.

- Use of tactical nuclear weapons against invading Indian troops. The development of short-range battlefield nuclear weapons such as Nasr and Abdali suggests that Pakistani planners have accepted this as a plausible scenario, and thus, making it worth preparing for. A Pakistani Inter-Services Public Relations press release in May 2012 stated: «Nasr, with a range of 60 km, carries nuclear warheads of appropriate yield with high accuracy, shoot and scoot attributes. This quick response system addresses the need to deter evolving threats.»[15] The Indian response to a tactical nuclear weapons attack could be: a) an all-out attack using conventional weapons and a sea-embargo of Pakistani ports, or b) a demonstrative nuclear attack on some military target within Pakistan. If the latter, then there would be a real question of whether further escalation could be limited.

Although much is made of tactical nuclear weapons, they may not be very effective militarily – invading front-line combat units can be expected to be sufficiently well-dispersed and mobile, thereby not making good nuclear targets.[16] But the very fact of nuclear weapons being used – even if on Pakistani soil rather than Indian – breaks a taboo and would bring the danger level to the very highest level; cities on both sides would be in mortal danger.

What should be done?

India, which is in competition with China, is unlikely to pay the slightest attention to Pakistani fears and slow down the speed with which it is acquiring new weaponry, both conventional and nuclear. But strong visceral feelings on both sides suggest that the chance of an Indian-Pakistani clash is far greater than that of an Indian-Chinese clash. Shelling across the Line of Control in Kashmir that started in January 2013 has continued, in spite of leaders from both countries promising that this would end. Pakistan, despite being under attack from Pakistani Taliban, continues to support jihadists who wage war against India.

In a situation where the Pakistani state is steadily weakening and the military's unity has been badly undermined, at the very least Indian leaders must refrain from aggressive statements that could inflame an already bad situation and lead to hardliners rising still further. It is being advocated by many in India that Pakistan could be punished and hurt, but not enough to start a nuclear confrontation. Some suggest that India should formally declare that a nuclear attack on Indian troops, even if inside Pakistani territory, should be treated as a signal that nuclear war has begun. By doing so, they hope to dissuade Pakistan from using its tactical nuclear weapons. But this is surely playing with fire. In the fog of war, and with the safe

15 «Hatf IX Nasr Missile Tested by Pakistan,» *ISPR*, May 29, 2012; available at: www.defense.pk/forums/pakistan-strategic-forces/183325-hatf-ix-nasr-missile-tested-pakistan-9.html#ixzz1y5f4umlA.

16 Zia Mian and Abdul H. Nayyar, *Confronting the Bomb – Pakistani and Indian Scientists Speak Out*, ed. Pervez Hoodbhoy (Oxford University Press, 2013).

command and control of mobile weapons being much more difficult than with fixed ones, there is much that can happen.

After the first weapon has been used, can anything be done to prevent catastrophe and keep all remaining ones from being used? Given the extreme passions that would then rage, it is difficult to be optimistic. But, anticipating that such a situation could arise, in these calmer times India and Pakistan would do well to give some thought to the management of a nuclear conflict, should it start for whatever reason.

At the very least, both countries need to declare a policy of proportionate response. Rather than deliberately cultivating a «madman image,» it is better to go for «an eye for an eye, a tooth for a tooth» policy. For this reason, nuclear crisis diplomacy must be kept alive. If India-Pakistan communication breaks down at some point in a crisis, third-party interlocution is going to be vital for averting a disaster. This is a complex issue: Until Musharraf's departure, Pakistan's nuclear program had been relatively transparent to the United States, although India's had been relatively opaque. Pakistan had an abiding faith in the United States to keep the Pakistan-India conflict from getting out of control, in spite of the fact that the United States did not come to its aid in the 1965 and 1971 wars. India, on the other hand, had long presumed that the United States would give primacy to Pakistan, and so they distrusted it. But events over the last two decades have moved India toward – and Pakistan away from – the United States. Although this has certainly reduced the importance of US diplomacy in mediating conflicts, this is still the most effective means available.

BEN COETZEE

Weapons Development and Harmful Arms Proliferation

[Small arms] … could well be described as ‹weapons of mass destruction.›

Kofi Annan[1]

Introduction

The number of people who are injured and killed by small arms and light weapons (SALWs) each year far exceeds deaths and injuries caused by chemical, nuclear, and biological weapons. This does not diminish the threat posed by the continued weaponization of chemical, nuclear, and biological components. It should, however, serve as a cautionary reminder of the fact that the proliferation of small arms and light weapons were left unchecked and unregulated until it reached a point where it began costing the world billions of dollars to mitigate the damage caused by these weapons.

The unregulated propagation of SALWs has impacted Africa in particular, on many different levels. The weapons have contributed to the erosion of the social fabric in communities and have played an instrumental role in plunging countries into civil wars. SALWs are used to commit violent crimes across the world, and the impact is felt in Africa as well as in developed countries – no one is exempt from the devastating effects of firearm-related crime.

Weapons of mass destruction (WMD) and SALWs are inextricably linked. The experiences gained from controlling SALWs should serve as a guide in the approach followed to maintain effective control over WMD. The continuous reminders along the path already traveled may be used as early indicators of threats and obstacles that might arise in the future.

It should also serve as a reminder that denying a country access to technology will not prevent it from acquiring the technology in the future. If countries without nuclear capability were to pursue the capability, they would eventually acquire it.

1 Kofi Annan, UN Secretary-General, *United Nations Conference to Review Progress Made in the Implementation of the Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects*, New York, June 26–July 7, 2006.

Source: gopal1035 – flickr

US-Soldier with rifle.

These countries may decide to fast-track their own research by acquiring the technology through mendacious means. This undermines the control process and contributes to mistrust and inherent instability.

The Southern African Development Community can serve as a topical case study for controlling SALWs and conventional weapons. The region was plagued by internal conflict for decades, and although currently there is a period of relative peace, tensions are still high between the winners and the losers of the wars in the respective countries. It is this tension that should concern the world. Should it happen, for example, that Angola and Mozambique regress into civil war, the factions in these countries may want to re-arm their supporters. This sudden demand for weaponry of all kinds may plunge the world into turmoil. Everyone will be affected – to a greater or a lesser degree – and the effects may range from the loss of oil production in Angola to the revitalized illicit trade in SALWs. These factors will directly and indirectly have a destabilizing effect worldwide, not to mention the disastrous impact it would have on the Southern African Development Community region.

These considerations should provide the necessary impetus for all responsible countries to work together to establish a world where armed violence is the exception rather than the rule.

Challenges

There are several obstacles that are in the way of effective global arms control. These hindrances vary from the need to protect national territory to global terrorism and criminal greed. The most concerning trend, however, is politically motivated manipulation for the sake of its own agenda. For example, a country might try and derail international beneficial initiatives, such as the Arms Trade Treaty, which would contribute to increased human safety and security, from being implemented for its own national interests.

There is also significant opposition to international arms control regulation from less-secure states. These states actively undermine the arms control process by preventing instruments from achieving agreement by consensus.

These states, mistakenly, assume that countries will not take a moral decision to prevent them from dealing with entities that threaten international human security. However, this is not the case – arms-manufacturing countries already scrutinize buyers, and many have set up committees that are tasked to approve sales to, and acquisitions of, all conventional weapons, including SALWs. These committees consist of several governmental departments that use their own resources to determine why a transaction should be permitted or not.

Although the current status of weapons is a serious concern and the effects of these weapons cannot be trivialized, it is the weapons of tomorrow that have the most potential to disrupt the existing status quo. Technological innovation is one of the most serious threats to global peace and security from an SALW- and conventional weapons-control perspective. In the last 100 years, few revolutionary advances have been made in the human effort to wage war. Warfare largely relies on human beings using some types of weapons to attack one another. The weapons evolved slowly and became more sophisticated over time, but most needed direct human intervention to be used effectively. In the instance of landmines and cluster munitions, which, once deployed, needed no further human intervention to be used, the world recognized the danger and agreed – with the exception of a few countries – not to use these types of weapons.

The basic principle of man-on-man warfare is at the brink of irrevocable change; weapons are at the point of becoming autonomous to such a degree that any human intervention will be the exception rather than the rule. The first clear indicator of this change is the advent of unmanned aerial vehicles and armed unmanned combat air vehicles, which are loaded with technology and, in some instances, can be programmed to remain in an area until a specific target is within range before firing missiles at it.[2] We are entering an era in which man will serve the machines we build for war, in stark contrast with the past, whereby machines (weapons) served man to wage war.

2 Neta C. Crawford, «Just War Theory and the US Counterterror War,» *Perspectives on Politics* 1 (March 2003): 5–25.

These developments are a reason for concern, however. Even more disturbing for countries and continents where fragile peace exists is how the – soon to be redundant – SALWs and conventional weapons in technologically advanced countries' arsenals will be disposed of. Developed countries spent millions of dollars to develop or acquire the best weaponry money could buy – at a particular moment in time. However, if a complete change in strategic warfare is imminent, would it not make sense – to these weaponized countries – to sell the redundant systems to countries with older systems in an effort to recover some of the original investment costs? That raises the following question: Will there be a flood of previous-generation arms entering the market when countries with modern weaponry make the transition from the current generation of weapons to the next generation?

It is critical that all countries realize the imminent threat posed by SALWs and conventional weapons – more specifically, the dangers posed by weapons systems that become redundant when countries acquires better and more-effective weapons systems.

Although arms-manufacturing countries may be of the opinion that it would do no real harm to assist countries in acquiring newer weaponry as they themselves upgrade, it needs to be understood that selling older technology to fragile states will perpetuate the cycle of armed violence across the world. The worst thing that arms-manufacturing countries can do is to sell machinery and technology to fragile states, enabling them to manufacture weapons and weapons systems on their own. Should this happen, the flood of arms and ammunition may overwhelm fledgling democracies across the world, contributing to the global threat of terrorism.

The main adjustment that can make a difference in the future is for arms-manufacturing countries to commit to a process of destroying old and redundant weapons systems when they upgrade to new weapons systems. The current practice of selling redundant and outdated weapons systems to the highest bidder should be stopped.

This is a significant commitment that is needed from manufacturing countries, and it would slow down the process of migrating from the older to the newest warfare systems. It will also need substantial support from states and the citizenry, if it is to be considered that working weapon systems will be destroyed and that the only capital return from these systems and the machinery used in their manufacture might be scrap metal. The pressure and temptation to sell the weapons systems and the manufacturing equipment will be immense.

The newest tool in the effort to stem the tide of illicit or unscrupulous arms trading is the Arms Trade Treaty, which was adopted by an overwhelming majority of countries and can contribute to a significant change in the roles played by all countries involved in any arms-transfer transactions.

Countries that are involved in any way in an arms transaction are required to «apply its mind» when considering an application by the importing or exporting entity in the transaction. The human security aspect of the trade becomes the guiding principle for countries, and it becomes extremely difficult to allow transactions for countries with known human rights abuses.

Recommendations

For the safety of the people across the world, and in particular Africa, it is critical that countries incorporate arms and ammunition disposal plans in their defense planning over the next half century.

Weapons and ammunition should be destroyed in the country where it has become redundant, and it should, in principle, not be sold to other countries.

The policy of all the countries that are in the process of developing next-generation weapons systems must be that the systems being phased out will be destroyed without exception, and that the moral issue will win out over financial considerations of recouping development and acquisition costs.

JOHN POKOO

Arms Control in Peacebuilding Activities in Africa: A Perspective

Introduction

In separate remarks by the former UN Secretary-General Mr. Kofi Annan and the former president of the Commission of the Economic Community of West African States (ECOWAS) Dr. Mohammed Ibn Chambas, small arms and light weapons (SALWs) were referred to as West Africa's weapons of mass destruction. Almost every conflict in Africa has been anchored by the use of small arms, and millions of people have been killed or maimed by the abuse and misuse of small arms since the decolonization period in the 1950s.

Security is about the preservation of the existence of something, and human security is inclusive of the need to protect fundamental human rights, which has as its basic threats killings, executions, genocides, and deaths as a result of war and conflicts. In recent times, these threats to human security are transnational and inter-connected in nature and, therefore, require a response strategy that is integrated and also transnational.

One of the international response strategies for preserving human security is underlined by the concept of peacebuilding, which is defined as «an action to identify and support structures which will tend to strengthen and solidify peace in order to avoid a relapse into conflict.»[1] Thus, peacebuilding connects issues of security and development. It is often implemented in the context of post-conflict peace-support operations. The concept of peacebuilding, therefore, calls for coordination of the contributions of the various actors in the peace operations theater as well as national-level institution-building and sustainability.

The UN has recently established the UN Peacebuilding Commission to fill the institutional gap between peacekeeping and development activities, and thus strengthen the UN's capacity for peacebuilding. The thrust of the mandate of the UN Peacebuilding Commission relates to inter-institutional coordination, support for the reconstruction and institution-building of affected states, and sustainability.

Particularly with sub-Sahara Africa, there are two dimensions for dealing with threats to human security in the context of peacebuilding. On one hand, there are the social, political, and economic factors that generate the tensions that escalate into

1 Boutros Boutros-Ghali, *An Agenda for Peace* (New York: United Nations, 1992), 11.

violent conflicts and, by extension, the demand for small arms. On the other hand, there is a set of factors regarding the regulation of international acquisitions, distribution, and possession of arms – these constitute the supply-side factors that drive the arms-flow phenomena in a way that draws international interests and tends to compound the effectiveness of particular sub-regional and regional measures against arms flows or proliferation on the African continent. The above factors may appear distinct, but they reinforce each other in compounding security challenges in Africa.

Arms control

Two of the broad global strategies deployed to mitigate the disastrous effects of arms are «disarmament» and «arms control.»

Among many other issues, disarmament programs tend to focus on weapons-collection initiatives; weapons destruction and disposal programs; decommissioning of weapons systems; arms embargoes; and weapons moratoriums and prohibitions, with a view toward reducing the destructive and destabilizing impacts of arms on the state and society as well as the environment. Operationally, disarmament programs have also focused on the demobilization of armed groups as well as the restoration of armed combatants and vulnerable groups associated with conflicts back into society. The later often occur in post-conflict contexts and are informed by the particular peace operation mandates emanating from specific UN Security Council Resolutions.

On the other hand, arms control initiatives tend to focus on agreements designed to regulate arms levels, either by limiting their growth or by restricting how arms may be used. The focus is to mitigate an arms race by restraining arms acquisition and deployment as well as use of military capabilities. It provokes the exploration of other means for managing crises. Arms control is, therefore, approached through internationally negotiated instruments, including international treaties, agreements, and also regional and sub-regional agreements and protocols. National commitments to such sub-regional, regional, and international norms emanating from the above protocols are as important as the desired impacts that such norms and regimes are expected to make. The implication is that the extent of compliance to national arms control policy guidelines, legislation, and institutional measures by particular international regimes is relevant to the attainment of the goals of international arms control initiatives.

Peacebuilding and arms control in Africa

At the turn of the century, global attention was focused on transnational organized crime, with particular emphasis on the illicit movement of firearms, human trafficking (emphasis on the plight of women and children in conflict situations), and smuggling of migrants. One of the three supplementary protocols of the UN Convention against Transnational Organized Crime relates to the regulation of the manufacture, distribution, and use of firearms around the world. Since 2001, there has been a subsequent Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small

Arms and Light Weapons in All Its Aspects and an implementation mechanism[2] that spells out guidelines for the implementation of this Programme of Action (PoA).

In all the above issues, there are policy, legislative, and institutional obligations on state parties – including national obligations – to report on the status of the implementation of the PoA. Regional arrangements such as the African Union (AU) already have a policy document, namely the New Partnership for Africa's Development, which effectively recognizes security as the basis for development. In 2012, the AU developed a program on SALWs as well as on border security with the various regional economic communities and member states as core implementing partners. In collaboration with the European Union, the AU is assisting some member states to mark weapons initially held by security-sector agencies. The program is expected to be extended to weapons in civilian hands.

Thus, incorporation of arms control measures in peacebuilding activities in Africa could be viewed from the perspective of the extent to which (a) host countries of UN-mandated peace operations incorporate their commitment to international arms control protocols to which they are state parties for their respective development programs; and (b) the extent to which the UN Security Council Resolutions mandating various peace-support operations reflect already existing international arms control protocols of the UN, AU, and the particular sub-regional protocol that applies.

The issues with regard to the above are: (a) national-level small arms legislative reforms; (b) creation of relevant institutional structures and technical capacities; and (c) allocation of national resources to match international efforts toward arms control.

Across the continent, commitment to legislative reforms is certainly improving, though the progress unfolds in different directions, depending on the regional economic community involved. Indeed, every regional economic community has a specific protocol on small arms that reflects the supplementary protocol of the UN Convention Against Transnational Organized Crime relating to firearms. For example, some of the countries in the Horn of Africa and the Great Lakes Region are working to harmonize their respective national legislation on small arms. National laws are enforceable domestically, and therefore it is important to create opportunities for local law enforcement officers to apply international legal regimes domestically. Additionally, ECOWAS member states have ratified the Convention on Small Arms and Light Weapons, Their Ammunition and Other Related Materials, which was adopted on June 14, 2006 and entered into force on September 29, 2009. Among other measures, ECOWAS member states have committed to an exemption certification regime aimed at ensuring that arms are imported into the sub-region to support noble causes. Furthermore, each ECOWAS member state has established a national commission for small arms, which also reflects provisions in the UN PoA, to act as a national focal agency for reporting on the implementation of the PoA and also to coordinate national responses to small arms control.

However, apart from Sierra Leone, which recently passed a new small arms act that repealed the previous legislation on firearms (Cape Verde is also finalizing a new

2 See UN Document A/CONF.192/15.

legislation on small arms), none of the other ECOWAS members have done any significant work on the revision of the substantive national legislation on firearms, which was largely passed in the 1960s. It means that issues such as the regulation of the activities of arms brokers, which is not covered by national legislation in the majority of the ECOWAS countries, remains unregulated. The weak standards for stockpile management remains, leading to unexpected explosions at armory sites in some countries. As a point of interest, Guinea-Bissau, which has recorded a series of assassinations of its political leaders and senior military officers in recent times, lacks a functioning armory, let alone adequate training of personnel for the maintenance of a functioning armory.

The national commissions for small arms also require technical and financial resources to function as expected. Thus, the question remains as to whether the UN Security Council Resolutions that prompted the operations in Sierra Leone, Liberia, La Cote d'Ivoire, and recently in Mali, adequately address arms control issues. The reality is that many of the mission mandates rather focus on the pacification of the warring factions at the expense of the real small arms challenges on the ground. Thus, disarmament of the warring factions and the demobilization and reintegration of the ex-combatants with very limited budgets tend to become a regular feature of peace agreements that are implemented in the post-conflict phase. The problems of arms control and small arms proliferation are hardly tackled.

KAIPTC and SALW control

The Kofi Annan International Peacekeeping Training Centre (KAIPTC) is a sub-regional peace- and security-training research center of excellence with an official memorandum of understanding with ECOWAS. Through the memorandum of understanding, KAIPTC – together with the peacekeeping school in Bamako, Mali, and the National Defense College in Nigeria – provide the official peace- and security-support training-needs of ECOWAS. Furthermore, as a sub-regional training and research center of excellence, KAIPTC delivers a range of 25 peace- and security-related training courses annually, and since 2003 it has trained up to 9,000 practitioners, mainly from West Africa, but also from the rest of Africa and the world. At the Faculty of Academic Affairs and Research, the center has some frontline researchers in peace and security, including piracy and maritime security, counter-terrorism, transnational organized crime, narcotics trafficking, small arms and light weapons control, gender in peacekeeping, disarmament demobilization and reintegration, among many other issues. The Faculty also provides technical support to countries in the sub-region as well as strategic-level briefings to regional organizations such as ECOWAS, the AU, the EU and the UN.

Additionally, KAIPTC – in collaboration with the United Nations Development Programme Bureau for Crisis Prevention and Recovery, the Government of Japan, and the ECOWAS Commission – has been implementing a sub-regional training program on small arms and light weapons control since March 2008.

Through the above collaboration, the technical capacities of more than 600 West Africans have been enhanced in the area of small arms and light weapons control, border-security management, stockpile management, as well as record-keeping and tracing. The regular field-monitoring component of the above program shows that trainees continue to gain promotion to commanding positions in the security sectors of their respective countries. For example, one of the trainees is now the Director of Police Operations in Cape Verde, whereas another trainee is the deputy head of the Gendarmerie in Senegal. Furthermore, several of the trainees are heading teams at border posts all over the sub-region.

An evaluation of the program in March 2010 also revealed that it has significantly contributed to the promotion of small arms and light weapons non-proliferation issues among operational and policy-level actors in the sub-region. As a contribution to other sub-regional initiatives, in the last four years the national assemblies of more than 10 of the 15 ECOWAS member states have ratified the ECOWAS Convention on Small Arms. The advocacy work of trainees from the program significantly influenced the increased ratification rate of the ECOWAS Convention.

The success of the program has contributed to an increased commitment by the government of Japan, which approved an additional project focusing on the emergency human-capacity development needs in the Sahel region of West Africa in 2013. The new project now focuses on capacity-building training – with training courses in border-security management; small arms and light weapons trafficking; maritime piracy and transnational organized crime; security-sector governance; and collaborative policing – research, and policy dialogue and advocacy. Eight in-country trainings have been done already in Niger, Senegal, Burkina Faso, Mali, and Nigeria, and the response has been overwhelmingly positive. For example, some of the trainees of the border-security management courses in the various countries mentioned above openly confessed that they were working with their counterparts from the other border-security agencies for the first time in their careers. The trainees have supervisory functions with career experience spanning a period of 5 to 30 years.

The Small Arms Programme at KAIPTC is also conducting a small arms baseline survey on behalf of the Ghana National Commission for Small Arms. The findings of the baseline survey are expected to inform national policy on arms control in subsequent years. From the perspective of the program, the baseline survey was conceived as a pilot project that could eventually cover the entire sub-region; partners for the grander project are welcome.

Conclusion

Opportunities exist for peacebuilding initiatives to incorporate arms control measures. However, most peacebuilding mandates tend to focus on the pacification of the warring factions and also security-sector reforms. The larger question of how to deal with the huge number of small arms in circulation in civil society is often ignored by peace-support operation mandates, which constitutes a threat to the sustainability of peacebuilding activities.

MARC KÖSLING

Approaches to Arms Control with Armed Non-State Actors

Objectives

In order to control the arms of non-state armed groups (NSAGs), points of entry need to be identified. This means having a «theory» – or at least a concept – of NSAGs that is useful for dealing with the arms issue. There are several theoretical approaches to NSAGs, but this paper will concentrate on an analytical structure that addresses them as military actors.

It will first provide a background from the arms perspective, including physical security and stockpile management (PSSM) and arms used among NSAGs, and then briefly analyze some relevant NSAG characteristics. Furthermore, this paper will provide an overview of arms sources for non-state actors and consequently identify some intervention points.

The background

Many African countries have to deal with one or more NSAGs operating within their borders, mainly armed with small arms and light weapons (SALWs). There are, for example, Boko Haram around northern Nigeria region, Al Quaida in the Maghreb, and the Lord's Resistance Army in Uganda and the border region of South Sudan.

Three significant weapons are in use: the AK (47 pattern and AKM), the so-called Technicals (pickup trucks or four-wheel drives mounting 12.7/14.5/23 mm machine guns), and Man-Portable Air Defense Systems, also known as MANPADS.[1] Generally, PSSM practices in African armed forces are poor, in particular among NSAGs.[2] Additionally, NSAG fighters are, compared to regular armed forces, often poorly trained, resulting in low fire-discipline, which means that ammunition is in very high demand, as it is often expended with little control.

1 For an extensive elaboration on the MANPADS issue, see BICC, «MANPADS – A Threat to Civilian Aviation?,» Brief 47, 2013; available at: www.bicc.de/publications/publicationpage/publication/manpads-a-terrorist-threat-to-civilian-aviation-382.

2 Benjamin King, Brian McQuinn, Claudia Navas Caputo, and Alonso Tobon, «Ad Hoc Arsenals – PSSM Practices of Selected Non-state Actors,» Armed Actors Issue, Brief no. 2, Small Arms Survey Geneva, May 2013.

Some qualitative aspects of African NSAGs with arms control implications

Three characteristics of NSAGs can be used to identify points of entry for SALW control. Of course, these do not cover all dimensions of NSAGs, nor are they necessarily the ones political analysts would concern themselves with. However, they suggest different entry points worth considering.

NSAG objectives: diffuse ↔ specific

Diffuse objectives imply the NSAG has little, if any, defined objective. The Seleka (rebels, now governing) in the Central African Republic are an example.[3] On the other side of the spectrum, with more specific objectives, there is Al Quaida in the Maghreb, an Islamist group covering much of the western Sahel, who have clear ambitions for creation of an Islamic state in the area.[4]

NSAG methods: rule-bound ↔ not rule-bound

This relates to the issue of dealing with civilian and NSAG discipline in general: Does the NSAG operate on the basis of limits to its activities and use of force? The Lord's Resistance Army in Uganda is notorious for not being bound by rules. In contrast, village militia groups, such as the Arrow Boys (South Sudan), feel very much bound by rules relating to their local ideology of community protection.[5]

NSAG structure: disciplined ↔ undisciplined

This relates to the degree to which individual fighters are under the command of a central authority, follow orders, or, in contrast, act as individual predators. This aspect also touches upon an important consideration: Less-disciplined forces are likely to be short of ammunition – a critical measure and entry point. Differences between the components of the Sudan People's Liberation Army in South Sudan illustrate this principle. Some elements that make up the Sudan People's Liberation Army are notorious for their indiscriminate usage of ammunition, their lack of command discipline, and for operating virtually as local militias.

NSAG arms and ammunition sources

There are several sources of both arms and ammunition for NSAGs throughout Africa. Greater reliance on one or the other has to do with whether the group has specific goals, discipline and structure (in which case it might find an external patron, as the

3 See, for example, Lewis Mudge, «The Forgotten Crisis in the Central African Republic,» *The Independent*, September 18, 2013; available at: www.independent.co.uk/voices/comment/the-forgotten-crisis-in-the-central-african-republic-8823919.html (accessed November 6, 2013).

4 Stephen Harmon, «From GSPC to AQIM: The Evolution of an Algerian Islamist Terrorist Group into an Al-Qa'ida Affiliate and Its Implications for the Sahara-Sahel Region,» *Concerned Africa Scholars Bulletin* 85 (2010): 12–29.

5 Kizito Oketa Modest, *Arrow Boys Hit Back at LRA*, Institute for War and Peace Reporting, 2009; available at: http://iwpr.net/report-news/arrow-boys-hit-back-lra (accessed November 6, 2013).

Lord's Resistance Army did in the government of Sudan)[6]; whether it has or controls resources for ammunition purchase, such as Charles Taylor's forces in Liberia[7]; or whether it benefits from state collapse, such as the Azawad in Mali from state dissolution in Libya.[8]

Figure 1: Sources of arms and ammunition

Intervention points

Intervention points for the international community will differ depending on several variables. The key is to identify specific intervention points relating to the specifics of the NSAG in question. It is crucial to identify the sources of matériel and whether the sources are internal or external, as the approaches would differ significantly.

Where weapons and ammunition reach NSAGs from external sources, there are a number of activities that can be undertaken. Most of these however require pre-crisis intervention. The case of Libya illustrates how important it is to ensure the stocks in collapsed states are secured physically, perhaps by a regional organization such as the African Union. Buried stocks left over from a previous conflict are not a major issue, largely because buried ammunition can deteriorate and such stocks are typically small.

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6 Mareike Schomerus, «The Lord's Resistance Army in Sudan: A History and Overview,» HSBA Working Paper no. 8, Human Security Baseline Assessment for Sudan and South Sudan, 2007, 18; available at: www.smallarmssurveysudan.org/fileadmin/docs/working-papers/HSBA-WP-08-LRA.pdf (accessed November 6, 2013).

7 Michael L. Ross, «What Do We Know about Natural Resources and Civil War?,» *Journal of Peace Research*, no. 41 (2004): 337–356.

8 Alex de Waal, «‹My Fears, Alas, Were Not Unfounded›: Africa's Responses to the Libya Conflict,» in *Libya, The Responsibility to Protect and the Future of Humanitarian Intervention*, ed. Aidan Hehir and Robert Murray (Hampshire: Palgrave MacMillan, 2013), 58–82.

Table 1: Intervening on external sources

Source of arms/ammunition	Intervention point
State collapse	Intervene physically to secure state stockpiles
Buried stocks	Often a minor problem: guns and ammunition rot
State stocks	Assist states in PSSM
Battlefield losses	Electronic control over weapons («SmartGuns»?)
State support	Diplomatic and UN activities
Commercial	Tighten control on brokers, explore electronic control

It is crucial to assist states with NSAG problems by securing their stockpiles. There is some evidence demonstrating that some 30 percent of all ammunition fired by NSAGs comes from government stocks.[9]

Smart technologies such as electronic stockpile management, access limited arms, GPS tracking, radio frequency identification, and many more technologies may assist state armed forces with reducing both battlefield and stockpile losses. Diplomatic pressure on states that support NSAGs can be another crucial entry point. This is notably true in the case of the Horn of Africa, where states use proxy forces as a matter of course.[10]

The ability of the international community to control brokers and illegal transfers has increased markedly in recent years due to both legal considerations and enforcement measures.[11] This can help ensure limiting the transfer of arms to NSAGs via brokers and the black market.

9 See, for example, James Bevan, «Conventional Ammunition Diversion, Conventional Ammunition in Surplus,» *Small Arms Survey* (2007); available at: www.smallarmssurvey.org/fileadmin/docs/D-Book-series/book-05-Conventional-Ammo/SAS-Conventional-Ammunition-in-Surplus-Book-17-Chapter-15.pdf (accessed November 6, 2013).

10 See, for example, Gerard A. Prunier, «Rebel Movements and Proxy Warfare: Uganda, Sudan and the Congo (1986–99),» *African Affairs* 103(412) (2004): 359–383.

11 See, for example, Guy Lamb, «Beyond ‹Shadow-Boxing› and ‹Lip Service.› The Enforcement of Arms Embargoes in Africa,» ISS Paper 135, April 2007; available at: http://dspace.cigilibrary.org/jspui/bitstream/123456789/31120/1/PAPER135.pdf?1 (accessed November 7, 2013); Denise Garcia, «Arms Restraint and Regional International Law Making: The Case of the Economic Community of West African States,» *African Security Studies* 18(2) (2009): 78–92; Ilhan Berkol, «Analysis of the ECOWAS Convention on Small Arms and Light Weapons and Recommendations for the Development of an Action Plan,» *Note d'Analyze du GRIP* (April 2007): 1; available at http://archive.grip.org/en/siteweb/images/NOTES_ANALYSE/2007/NA_2007-04-01_EN_I-BERKOL.PDF (accessed November 7, 2013).

Internal factors

What type of NSAG are we dealing with?

First, the three dimensions of NSAGs mentioned above – objectives, methods, and the degree of discipline – need to be integrated. As a rule, the more specific the objectives – and the more rule-bound and disciplined the NSAG – the easier it is to discuss issues such as PSSM with them.

National governments will generally object publicly to any kind of discussion with NSAGs. This negatively affects the ability of the international community to control NSAG arms. Strengthening diplomatic channels to find grounds for discussions could be a first step in approaching the NSAG and the national government.

Intervening on the basis of internal factors

If possible, addressing the leadership should be the first step. Consequently, rewards in the form of honest brokership and/or political/diplomatic training can be offered. Further approaches could be the use of media exposure as a bargaining chip and to negotiate humanitarian access and to suggest rules-of-the-game on arms use.

The objective of these approaches is to ensure that arms are used while adhering to international humanitarian standards.

Conclusions

Trying to control NSAGs use and abuse of arms is a difficult problem because it unavoidably seems like taking sides, and national and regional governments are likely to object. Controlling SALWs of NSAGs in Africa requires a careful analysis of the sources of arms and ammunition, and of the type of NSAG. This kind of analysis will highlight entry points for control, of which some are external and some internal. Intervening with external suppliers of arms and ammunition seems somewhat easier than dealing with the NSAGs directly. Among other reasons, this is because it would likely be deeply opposed by national governments.

Apart from the entry points suggested above, this paper is intended to stress the importance of donor states strengthening their policies toward physical security and stockpile management. Weak PSSM has major implications, including the threat of unplanned explosions[12] and looting. Additionally, strong PSSM practices have a positive influence on the approaches to – and the perceptions of – the dangers constituted by arms and ammunition.

12 See, for example, «Unplanned Explosions at Munitions Sites,» Small Arms Survey 2013, March 26, 2013; available at: www.smallarmssurvey.org/?uems (accessed November 7, 2013).

ANNEX

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ABBREVIATIONS

ACRS	arms control and regional security
AHW	advanced hypersonic weapon
ATT	Arms Trade Treaty
AU	African Union
CFE	Treaty on Conventional Armed Forces in Europe
CIA	Central Intelligence Agency
CPGS	conventional prompt global strike
CSBM	confidence- and security-building measure
CSM	conventional strike missile
CWC	Chemical Weapons Convention
DARPA	Defense Advanced Research Projects Agency
DRDO	Defence Research and Development Organisation
DV	delivery vehicle
ECOWAS	Commission of the Economic Community of West African States
HTV-2	Hypersonic Test Vehicle no. 2
IAEA	International Atomic Energy Agency
ICBM	intercontinental ballistic missile
ICT	information and communication technology
IHL	international humanitarian law
ISR	intelligence, surveillance, and reconnaissance
KAIPTC	Kofi Annan International Peacekeeping Training Centre
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NSAG	non-state armed group
NSG	Nuclear Suppliers Group
NSNW	non-strategic nuclear weapon
PoA	Programme of Action
PSSM	physical security and stockpile management
RevCon	NPT Review Conference
SALWs	small arms and light weapons
SLBM	submarine-launched ballistic missile
START	Strategic Arms Reduction Treaty
TLE	treaty-limited equipment
UAV	unmanned air vehicle
UGV	unmanned ground vehicle
UMS	unmanned system
WMD	weapons of mass destruction
WMDFZ	weapons of mass destruction-free zone

The escalation of the armed conflict in Syria has been a painful reminder of the need to strengthen arms control and non-proliferation efforts. The European perspective on arms control is still shaped by the experiences of the Cold War. In other regions, different experiences and priorities shape existing arms control approaches: For example, the rise of China and the ambitions of old-new powers such as India, Iran, and Brazil are changing the global security equilibrium. The emergence of a multipolar world order is another strong argument in favor of a multilateral architecture of arms control and collective security.

This publication is an opportunity to figure out what steps should be taken to strengthen cooperative efforts in controlling and reducing military capabilities.

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