

Globalizing Nuclear Zero: Is a World without Nuclear Weapons Really Attainable?

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Introduction

After years in the doldrums, there is once more wind in the sails of nuclear arms control. Important aims and proposals of the arms control community, which in recent decades have been worked out by non-governmental organizations, think tanks, and commissions (Palme 1982, Canberra 1996 and the Blix Commission 2006), are once again an integral part of world politics. During the eight years of the George W. Bush administration the arms control and disarmament process, which was launched after the Cold War ended, was systematically neutered, enfeebled, and reversed. A UN commission warned in 2004 that »we are approaching a point at which the erosion of the non-proliferation regime could become irreversible and result in a cascade of proliferation« (UN 2004). US President Obama, in his Prague speech of April 5, 2009, declared – to widespread astonishment – that America was committed »to seek the peace and security of a world without nuclear weapons« (Obama 2009). He laid particular emphasis on the USA's great moral responsibility: »As a nuclear power, as the only nuclear power to have used a nuclear weapon, the United States has a moral responsibility to act. We cannot succeed in this endeavor alone, but we can lead it, we can start it.« Concrete proposals were pledged. In June 2009, President Obama's Republican opponent for the US presidency, John McCain, recalled Ronald Reagan's dream of a world free of nuclear weapons and he too demanded a dramatic reduction of nuclear arsenals across the world. Strategic dialog with the Russian Federation is once more under way and on September 24, President Obama will deliver a speech at the United Nations and chair the Security Council summit on nuclear non-proliferation. It now remains to be seen whether the principles and aims of arms control, disarmament, and conflict prevention can be converted into concrete steps towards a world which is more secure, more just, and more peaceful. Beyond question, the challenges of the twenty-first century are quite

different from the grotesque and belligerent phantasms of the Cold War. The goal of a world free of nuclear weapons is once more on the horizon. If this opportunity for an everything-must-go clear-out of nuclear doctrines and arsenals is botched, further progress in disarmament is highly unlikely. In December 2008, a World Public Opinion Survey conducted in 20 countries indicated that the overwhelming majority strongly supported an agreement on the abolition of all nuclear weapons. Furthermore, numerous civil organizations point to the need for a nuclear weapons convention banning not only the deployment, but also the production and possession of nuclear weapons.

The debate was triggered by two op-eds written by former US Secretaries of State George Shultz and Henry Kissinger, former Defense Secretary William J. Perry, and former Senator Sam Nunn. At the beginning of 2007 and in 2008, these men who had done much to shape US foreign and security policy garnered worldwide attention with their non-partisan call for a world without nuclear weapons and the concrete steps they proposed. The American quartet was supported and bolstered by the declarations of high-ranking politicians from Great Britain, Italy, Germany, and Norway. Some governments – one might mention the interventions by British Prime Minister Gordon Brown and German Foreign Minister Frank-Walter Steinmeier – welcomed the proposals. The »Global Zero« initiative was launched in Paris in December 2008, within the framework of which over 100 prominent figures – including former statesmen such as Jimmy Carter and Mikhail Gorbachev – from the political, economic, military, and civil spheres will work on a step-by-step policy plan for the complete elimination of nuclear weapons by 2030.

In the meantime, the debate on whether and to what extent a nuclear weapons-free world is desirable, feasible, or realistic is proceeding all over the world in newspapers, blogs, and conferences. Sam Nunn has compared the desirable aim of a nuclear weapons-free world to a mountain peak which is shrouded in clouds but has to be reached. There are many ways to the summit, but the precise route has not yet been established. Needless to say, there will be bumpy stretches, precarious abysses, and insurmountable slopes along the way, but strength and will must be brought to bear in order to reach the goal. Nuclear weapons are unusable tools of war; they destroy cities and countries and are the only weapon which could obliterate modern civilization in short order. In his Prague speech, President Obama also warned against raising our hopes too high,

however: »I'm not naive. This goal will not be reached quickly – perhaps not in my lifetime. It will take patience and persistence.« In this article, current proposals will be presented (Section 1), the opportunities and obstacles bound up with them cited (Section 2), and further routes suggested (Section 3).

Resuscitation of the Goal of a Nuclear Weapons-Free World

The first article by the American »gang of four« – George Shultz (Secretary of State under Ronald Reagan 1982–89), Henry Kissinger (Secretary of State under Richard Nixon 1973–77), William J. Perry (Defense Minister under Bill Clinton 1994–97), and Sam Nunn (Senator 1972–97) – appeared on January 4, 2007, in the »Wall Street Journal« as a so-called »op-ed« under the title »A World Free of Nuclear Weapons« (Shultz et al. 2007), taking up President Reagan's dream of the elimination of all nuclear weapons. The former President regarded nuclear weapons as »totally irrational, totally inhumane, good for nothing but killing, possibly destructive of life on earth and civilization.« Mikhail Gorbachev and Ronald Reagan almost reached agreement on the total abolition of all super-power nuclear weapons at the Reykjavik Summit in 1986. The proposal foundered, however, among other reasons because Reagan was unwilling to give up the Strategic Defense Initiative (SDI) program and his advisers persuaded him against it. The reason why the vision of a nuclear weapons-free world is once more in play is that the world is now confronted by a »new and dangerous nuclear era.« The article goes on: »Apart from the terrorist threat, unless urgent new actions are taken, the US soon will be compelled to enter a new nuclear era that will be more precarious, psychologically disorienting, and economically even more costly than was Cold War deterrence.« In advocating this approach, they call into question any resort to the old deterrence strategies: »It is far from certain that we can successfully replicate the old Soviet–American ›mutually assured destruction‹ with an increasing number of potential nuclear enemies world-wide without dramatically increasing the risk that nuclear weapons will be used.« The risk that nuclear weapons might fall into the hands of terrorists is increasing, as are the ambitions of a whole new set of countries to acquire nuclear weapons of their own. North Korea and Iran are the most notorious examples. In 2007, the USA – in other words, the Bush administration – was called on to assume a leader-

ship role and to take concrete steps, among other things the substantial reduction of nuclear arsenals, the withdrawal of nuclear weapons already deployed, and the ratification of the Comprehensive Test Ban Treaty (CTBT). Former Soviet President Gorbachev had his say a few days later in the »Wall Street Journal« (Gorbachev 2007). In his article, he regretted the downgrading of global arms control treaties, drew attention to the still enormous nuclear weapons stocks of the superpowers, and declared that the current situation was due to a failure of political leadership in the wake of the end of the East–West conflict: »This glaring failure has allowed nuclear weapons and their proliferation to pose a continuing, growing threat to mankind.« The second contribution by the »gang of four« – »Toward a Nuclear-Free World«, January 15, 2008 – was far more comprehensive and specific. It was based on a conference held by the Hoover Institution at Stanford University in October 2007, in which other Secretaries of State and experts from former administrations participated (Shultz et al. 2009). The comprehensive proposals for a »dramatic reduction of nuclear dangers« take up almost two-thirds of the op-ed and specify in eight steps the proposals already made, among other things the strengthening of the Non-Proliferation Treaty (NPT) and the improvement of security standards for the storage of nuclear weapons and nuclear materials. A new demand is the commencement of negotiations with Russia on a cooperative solution to Missile Defense. Another important proposal is the scrapping of the operational and strategic planning of massive nuclear strikes as redolent of approaches based on »mutually assured destruction« (MAD), because the USA and Russia are allies in the war on terrorism. Also remarkable is the fact that the project has been backed by several other former US Secretaries of State and Defense Ministers, such as Madeleine Albright, James Baker, Zbigniew Brzezinski, William Christopher, and Colin Powell. The two documents not only exerted considerable influence on both presidential candidates, Barack Obama and John McCain, but also triggered various new disarmament proposals by international organizations and institutions.

European Responses: Start Worrying...

The first reaction from other former politicians came on June 30, 2008, in Great Britain, one of the established smaller nuclear weapons states. Under the title »Start Worrying and Learn to Ditch the Bomb« three former British foreign ministers – Douglas Hurd, Malcolm Rifkind, and

David Owen – and former NATO General Secretary George Robertson identified themselves with the US articles (Hurd et al. 2008). The USA and Russia, which have the largest nuclear arsenals, should begin the disarmament process, but »if we are able to enter into a period of significant multilateral disarmament Britain, along with France and other existing nuclear powers, will need to consider what further contribution it might be able to make to help to achieve the common objective.« The aims are similar to those of the US politicians, calling, above all, for the renunciation of new nuclear weapon developments, as discussed in the USA.

One month later, on July 24, 2008, an article appeared in the »Corriere della Sera« written by former Italian foreign ministers Massimo D'Alema and Gianfranco Fini, together with Giorgia La Malfa, Arturo Parisi, and physicist Francesco Calogero (D'Alema et al. 2008). The authors called for the swift entry into force of the CTBT and the commencement of negotiations on a Fissile Material Cut-off Treaty at the Geneva Conference on Disarmament. The USA and Russia would have to improve relations and »Italy and Europe can and must do what they can to smooth the way to the total elimination of nuclear weapons.« The remarks are of a very general nature, however: an explicit reference to the withdrawal of tactical nuclear weapons from Europe or Italy would be sought in vain. On January 9, 2009 in the *Frankfurter Allgemeine Zeitung*, another cross-party quartet of famous former politicians spoke out. Former Chancellor Helmut Schmidt, former President of Germany Richard von Weizsäcker, retired Minister of State Egon Bahr, and former Foreign Minister Hans-Dietrich Genscher, under the title »Toward a Nuclear-Free World: A German View,« nailed their colors to the mast of a nuclear weapons-free world and called for drastic reductions in nuclear arsenals (Schmidt et al. 2009). They wrote: »All short-range nuclear weapons must be destroyed« and called explicitly for withdrawal of »all remaining U.S. nuclear warheads (...) from German territory,« as well as a renunciation of the »first-use« option by NATO and Russia (»no first-use«): »Relics of the age of confrontation are no longer adequate for our new century. Partnership fits badly with the still-active NATO and Russian doctrine of nuclear first-use of nuclear weapons, even if neither side is being attacked with such arms. A general non-first-use treaty between the nuclear-weapons states would be an urgently-needed step.« The basing of missile defense facilities in Poland and the Czech Republic is regarded as a »return to the era of confrontation.« In this connection, reference is

also made to the failure to adapt the Treaty on Conventional Armed Forces in Europe (CFE). The Adapted Treaty on Conventional Armed Forces in Europe (ACFE), made necessary by NATO enlargement, which was seen as a central component of European security, has so far not been ratified by the NATO countries and CFE has been suspended by Russia. Many proposals have been presented but a solution to this problem is still not in sight (Zellner et al. 2009). Furthermore, only the German op-ed points to the need to include conventional disarmament, too, and is the only one to mention Russian President Medvedev's proposal to establish a comprehensive security system in Europe. The politicians emphasize that German reunification was achieved through détente and cooperation between the former opposing blocs, which made possible »historic progress in disarmament and arms control for the whole of Europe.«

The most recent article – dated June 4, 2009 – was by five former politicians in Norway: four former prime ministers – Odvar Nordli, Gro Harlem Brundtland, Kåre Willoch, and Kjell Magne Bondevik – and former foreign minister Thorvald Stoltenberg (Nordli et al. 2009). They emphasize the need to combine vision and action, quoting from the US article from 2007: »Without the bold vision, the actions will not be perceived as fair or urgent. Without the actions, the vision will not be perceived as realistic or possible.« The relatively brief declaration stresses that not only nuclear weapons, but also production facilities for weapons-grade nuclear materials must be eliminated. New negotiations on reducing nuclear arsenals between the USA and Russia are supported and the inclusion of tactical nuclear weapons called for. Existing arms control agreements, such as the INF Treaty, the CFE Treaty, and the NPT, must be maintained and strengthened. Missile defense, in contrast, would only trigger further rearmament.

The various declarations have given rise to global debates, which, in fact, should have been held by decision-makers and policy planners after the end of the Cold War, but are now unavoidable due to the undermining of the arms control architecture and the incipient dangers of proliferation. Most of the proposals are on the pragmatic side and call for the revival of arms control dialog. A nuclear weapons-free world is regarded as desirable, but only as a distant goal on the horizon. The path taken is decisive, since it determines the goal. The precise conditions of a nuclear weapons-free world require further discussion. Nevertheless, it is remarkable that former nuclear pragmatists, such as Henry Kissinger and

William J. Perry, regard a nuclear weapons-free world as desirable and feasible, and the strategy of deterrence as inadequate and outdated. This has kindled renewed interest among the public, politicians, and government officials, which is long overdue, given the growing nuclear threat.

A number of governments, non-governmental organizations, and political parties responded positively to the former politicians' interventions. US presidential candidates Barack Obama and John McCain largely adopted the »agenda« of the »gang of four.« The new Obama administration will be measured by the extent to which it is able to implement the proposals. Other nuclear weapons states have begun to come about to take up the course which has been laid. The French government, for example, has promised a reduction of its nuclear arsenal. British Prime Minister Gordon Brown, in a speech delivered in New Delhi in January 2008, emphasized the need »to accelerate disarmament amongst possessor states, to prevent proliferation to new states, and to ultimately achieve a world that is free from nuclear weapons« (Brown 2008; Cabinet Office 2009). The British government has proposed a conference of experts from the nuclear-weapons states to examine the challenge of verifying nuclear disarmament. Then British Foreign Minister Margaret Becket as early as 2007 suggested that Great Britain might serve as a »disarmament laboratory.« Defense Minister Des Browne stated on March 4, 2008, before the Geneva Conference on Disarmament, that »the UK [will become] a role model and testing ground for measures that we and others can take on key aspects of disarmament« (Browne 2008). Indian Prime Minister Manmohan Singh declared, at the opening of the conference »Towards a World Free of Nuclear Weapons« in New Delhi in June 2008, that »India is fully committed to nuclear disarmament that is global, universal and non-discriminatory in nature« (Singh 2008). Russian Prime Minister Vladimir Putin remarked, at a meeting with German Foreign Minister F.-W. Steinmeier in June 2009, that the Kremlin would consider giving up its nuclear arsenal if other countries did the same. But a clear commitment to action by these countries would bring the debate decisively forward.

UN Secretary General Ban Ki-Moon, in a speech given on October 24, 2008 – the first speech addressing nuclear disarmament by a UN Secretary General for a long time – presented a Five-Point Plan, which, among other things, called for heightened research and development efforts by governments in relation to verification, as well as greater transparency, provisions of international law, security measures, and the prospect of

commencing negotiations on a nuclear weapons convention (Ban 2008). Various international coalitions of non-governmental organizations have, for decades, proposed concrete steps towards a nuclear weapons-free world. The Pugwash Conferences on Science and World Affairs, awarded the Nobel Peace Prize in 1995, issued an Eleven-Point Program on their 50th Anniversary in 2007 (Pugwash 2007). The Middle-Power Initiative and its Article VI Forum, as well as other groups, such as the International Campaign to Abolish Nuclear Weapons (ICAN), the International Physicians for the Prevention of Nuclear War (IPPNW), Mayors for Peace, Abolition 2000, and International Engineers and Scientists against Proliferation (INESAP), have developed extensive proposals and materials at the level of civil society. Center-stage in this context stands the establishment of a nuclear weapons convention which, similar to the conventions banning biological and chemical weapons, would globally ban the production, testing, possession, and deployment of nuclear weapons, covering all states.

In the current general election campaign in Germany, however, the topic is not particularly prominent. This is probably because the German public no longer regards the nuclear threat as a direct concern, in contrast to the controversies of the 1980s. All the opposition parties and the Social Democrats favor withdrawal of American nuclear weapons. NATO's 1999 doctrine, which is currently under review, retains a reference to nuclear deterrence. There are around 240 B-61 airborne nuclear weapons at eight bases in five NATO countries (besides Germany, Belgium, Italy, the Netherlands, and Turkey).

Naturally, criticism, skepticism, and disapproval of the various op-eds were not lacking. Democrat defense experts Harold Brown and John Deutch wrote that »the goal, even the aspirational goal, of eliminating all nuclear weapons is counterproductive« (Brown and Deutch 2007). US Senator Kyl said that »the national security of the USA – and that of all our friends and allies – will not permit a nuclear weapons-free world in the foreseeable future« (Perkovich 2008). These assertions broach some of the fundamental arguments of opponents of Global Zero. On the one hand, one might mention keeping nuclear weapons in readiness in order to protect friendly nations (»extended deterrence«), and on the other hand, the ambiguity of nuclear weapons as a resort against all possible threats, including from states and groups which do not possess nuclear weapons themselves. In many non-nuclear weapons states these initiatives are regarded with some skepticism and, to some extent, as propa-

ganda or mere rhetoric. However, one may assume that the goal of bringing into being a nuclear weapons-free world is generally regarded as desirable. The exact route and prevailing constraints for a nuclear weapons-free world have barely been outlined so far, however. Only the first phase, namely the clearing out of horrendous nuclear arsenals and deployment doctrines, could be embarked upon at present. However, the hope remains that an enhanced debate will bring humanity closer to this goal.

Opportunities and Obstacles in Today's Nuclear World

A brief look at the current situation clearly shows the need for a far-reaching reduction of nuclear arms. More than 20 years after the end of the East–West conflict there are still around 23,000 nuclear weapons in the arsenals of the nuclear weapons states, more than 90 percent of them in the USA and Russia alone. Around 9,000 are operational and several thousand American and Russian warheads are on high alert. Furthermore, the number of so-called tactical nuclear weapons on both sides is not precisely known. NATO continues to insist on the deployment of around 150–240 American warheads in Europe, while Russia justifies its 2,000 or so tactical warheads – albeit in storage facilities – on the basis of NATO's conventional superiority. The nuclear doctrines of both sides are based on first-use of nuclear weapons in a political environment in which the deployment of such weapons for military purposes is now inconceivable. The appallingly large arsenals of the two nuclear powers are the result of the Cold War's first- and second-strike scenarios. The huge number and the deployment spectrum of American and Russian nuclear arms can be explained only on the basis of mutual deployment scenarios. A study by the CISAC Committee of the US National Academy of Science in 1997 proposed a »core deterrence« capacity of a few hundred nuclear warheads (CISAC 1997).

Modernization Efforts of the Two Superpowers

Both major nuclear powers are continuing to modernize their nuclear arms and Russia is on a higher state of alert. For example, in 2008, patrol flights by nuclear bombers were resumed and in August 2009, two modern Russian nuclear submarines were sighted off the East Coast of the USA, after a 15-year absence. In the USA, the conversion of strategic mis-

siles, such as the seaborne Trident, into precision-guided munitions is in the offing. In this way, within the framework of the »Prompt Global Strike« program, it would be possible to destroy extremely distant targets with pinpoint accuracy, including Russian missile silos. Russian and Chinese forces are becoming increasingly concerned about the USA's extensive use of space for reconnaissance and early warning purposes. The debate about the development of new nuclear warheads has flared up again in Washington. A revival of the »Reliable Replacement Warhead« program (RRW) could lead to the development and testing of new »more reliable and safer« warheads with new features (»bunker busters«) (Young 2009). Experts, such as the JASON Group, in contrast, have pointed out that current warheads will be safe and reliable for a long time yet. While the USA has a modern arsenal at its disposal on land and sea, as well as in the air, the Russian armed forces are working on new strategic delivery systems, such as the intercontinental Topol-M missile, the R-27 missile with multiple warheads and the submarine-launched Bulava missile. The Russian missile arsenal is aging and in need of new investment. Despite the planned modernization, Russia's strategic arsenal will continue to shrink over the next few years. From the Russian standpoint, the strategic stability of nuclear arsenals is being called into question by a number of developments in the USA. The multi-tiered global missile defense program announced by then President George W. Bush can, from the viewpoint of Russian planners, undermine the Russian arsenal's second-strike capability over the long term. The strategic »balance of terror« between the USA and Russia rests on the mutual capability for a nuclear second strike. It is emphatically not based on a mutual capability for defense against a nuclear strike. Russian planners must assume, based on the limited functionality of the planned defense system, that the missile defense system will be widely spread geographically and that the interceptor missiles will be continually updated. Other missile defense programs are under discussion, for example, a defense system in space. Two anti-satellite tests by China (2007) and the USA (2008), in which missiles destroyed their own satellites, show that in a crisis military conflict in space is now possible. Experience shows that armament programs costing billions tend towards longer-term expansion, both quantitative and qualitative. Over the longer term, this casts the credibility of the – for the foreseeable future – shrinking Russian missile arsenal into doubt. US experts have drawn attention to the fact that US nuclear forces, due to their technological superiority, could wipe out the opposing arsenal in a

first strike and establish a state of »nuclear primacy« (Lieber/Press 2006). In this way, fears concerning the feasibility of nuclear war re-enter strategic planning.

»Minor« Nuclear Powers and Declared Nuclear Weapons States

Great Britain, France, and the People's Republic of China have much smaller strategic arsenals. France has 300 strategic warheads. In March 2008, President Sarkozy announced that this number was to be reduced even further. Great Britain has 160 operational strategic warheads and China has around 180 nuclear warheads. The two Western nuclear powers have four nuclear submarines with seaborne missiles, of which one submarine is always at sea. France also has airborne standoff weapons. China's nuclear modernization program can be described as modest. The development of seaborne missile defense in the Pacific, however, also poses a problem for Chinese planners. China has around 20 ICBM capable of reaching the USA. The USA would like to deploy around 150 seaborne defense missiles on Aegis class ships within five years. The development of the system's interception capabilities against long-range missiles is very likely and could undermine the Chinese second strike potential.

India and Pakistan – both, like Israel, emerging nuclear states – have been engaged in a nuclear armament and missile race for years. According to Western estimates, the two enemy states each have sixty warheads, are testing longer range missiles, and are building up their navies. In August 2009, India unveiled its first nuclear submarine and plans to build others. Pakistan regards the strategic balance as having been massively disturbed and has been increasing its defense budget for years. Both countries are developing cruise missiles which can be fitted with nuclear warheads and are interested in purchasing conventional, diesel-powered submarines from France and Germany. Since, according to experts, India's nuclear tests were not entirely successful, a number of voices in India are advising against signing the CTBT so that further tests can be conducted. The boost given to India as a nuclear power by the US-India deal is putting a strain on the calls for »universal proliferation norms« (Meier 2006). There is a real danger that a distinction between »good« and »bad« nuclear powers will become established. The West has willingly acquiesced in Israel's »opaque« nuclear arsenal without a serious attempt at an arms control solution. So far, the international com-

munity has not been able to integrate these »nuclear outsiders« in a limitation regime or to extract a disarmament roadmap from them.

North Korea, which has withdrawn from the NPT, has become isolated and is subject to UN sanctions. In 2006 and 2009, it conducted underground nuclear tests and maintains an aggressive missile program. It is responsible, according to A.Q. Khan, the »father of the Pakistani nuclear program,« for the spread of missile and nuclear production technology in particular to Libya, Iran, and Syria. Recently, North Korea announced that it is now in the final stages of a uranium enrichment program. The six-party talks between North Korea, the USA, China, Japan, Russia, and South Korea have been put on ice. The disagreement about the Iranian nuclear program has so far not been resolved, despite the Obama administration's declared willingness to engage in dialog. Uranium enrichment is continuing, UN sanctions seem to have had no effect, and the calls for a military solution are getting louder. A military solution to the conflict could destabilize the Middle East just as much as the unrestrained proliferation of nuclear technology in the region. Political solutions, backed by technical models for the disputed fuel production are still possible, given the political will to bridge a thirty year standstill between the US and the Islamic Republic of Iran.

Weapons-Grade Fissile Material and the Future of Nuclear Energy

Focusing on the reduction of strategic weapons tends to overshadow the problem of the security of the production, storage, and disposal of weapons-grade materials. These fissile materials – such as enriched uranium or plutonium – can be found in both the military and civil spheres of various states which engage in civil nuclear power generation. With regard to large-scale, partly unsecured stocks of fissile material, the question of how secure the storage and production sites really are recurs constantly. Stocks of highly enriched uranium worldwide amount to around 1,670 tonnes and those of separated weapons-grade plutonium to 500 tonnes (IPFM 2008: 7). Half of the latter derives from the civil sphere and is growing at an alarming rate. Eight kilograms of plutonium are enough to build a nuclear bomb. IAEA Director General El Baradei talks of 30 »virtual nuclear weapons states,« which have the knowledge and the means to enrich uranium or reprocess plutonium. These include not only the nuclear powers, but also non-nuclear weapons states, such as Brazil, Egypt, Turkey, and South Africa. The anticipated »renaissance of

nuclear energy« will serve only to intensify the proliferation problem, especially because the non-nuclear weapons states are entitled to engage in civil nuclear energy generation, including, of course, Iran. The International Energy Agency has come out in favor of 1,400 new nuclear reactors by 2050. It cannot be merely by chance that, besides Iran, 13 other Middle Eastern states have declared an interest in civil nuclear power generation (IISS 2008). Quite apart from the security of fissile materials, an ending of the production of weapons-grade materials within the framework of an FMCT is a central aim of arms control efforts (Meerburg/von Hippel 2009). Given the many security, accounting, and diversion problems, a universal verification regime for fissile materials is now necessary (Daalder/Lodal 2008). Clear regulations on the control of enrichment and reprocessing technologies are as urgent as the development of proliferation-resistant technologies.

The central aims of the Obama administration include the conclusion of a START successor agreement, a Fissile Material Cut-off Treaty (FMCT), and the ratification of the CTBT, as well as other treaties by Congress.

START: Resetting Bilateral Strategic Disarmament

The bilateral START I treaty of 1991 between the USA and Russia will expire on December 5, 2009, to be replaced by a successor agreement. Talks on possible reductions and their verification are ongoing and are beginning to bear fruit. According to the rather cursory SORT Treaty, signed in Moscow in 2002, active strategic warheads should be restricted to 1,700–2,200 for each side, but in any case the agreement expires in 2012. A framework agreement was reached at the summit between Presidents Medvedev and Obama in July 2009, according which there would be a reduction to 1,500–1,675 warheads and 500–1,100 strategic launch systems, which largely corresponds to Russian targets. Given the unresolved disagreement about strategic missile defense, NATO's conventional superiority, and the USA's superior military technology capabilities (Prompt Global Strike), Russia, for the time being, is showing little interest in further cuts. Important technical questions and issues of definition, such as the calculation of the number of warheads and launch systems, still have to be clarified. However, the current cuts cannot be regarded as so significant that they will exert a positive influence on the NPT Review Conference in 2010. A successor agreement, which set the number of warheads below 1,000 on each side and included non-strategic and re-

serve arsenals, on the other hand, would be of major importance. An important role will be played in this by the review of US nuclear strategy now taking place under the title »Nuclear Posture Review,« expected by the end of 2009. In Prague, President Obama declared: »To put an end to Cold War thinking, we will reduce the role of nuclear weapons in our national security strategy.« The new administration must now make good on this promise. There are a number of proposals on the table (Kristensen 2009).

The End of Vertical Proliferation: CTBT

All of the op-eds we have mentioned are at one in calling for the rapid coming into force of the CTBT. US President Obama has described the ratification of the Comprehensive Test Ban Treaty by the US Congress as an important goal of his foreign and arms control policy. The Treaty, already ratified by 149 states, can come into force only if nine hold-out states – USA, China, India, Pakistan, Iran, Israel, Egypt, Indonesia, and North Korea – also ratify it. The USA has the key role here. In the US Senate, the majority of 67 Senators required for ratification is not ensured. Recently, the Perry/Schlesinger Commission gave an account of the lack of unanimity in the Congress and the arguments of both advocates and opponents (Perry/Schlesinger 2009). There is a danger that ratification will be submerged in a confused tangle of technical and political counterarguments or that the administration will strike a compromise in relation to a new »Reliable Replacement Warhead« (RRW) program – in other words, new, reliable nuclear warheads could be developed in order to maintain weapons expertise and an operational nuclear arsenal in the USA over the long term. The RRW program was, at first, rejected by the Congress, since it gave rise to fears of new nuclear tests and the stepping up of horizontal proliferation. However, the development of new nuclear warheads would be a fatal signal to the world: the USA could be reproached with seeking to keep on modernizing its arsenal indefinitely and making new technical developments for new nuclear weapon options more attractive.

Verifiable Treaty on Ending Production of Fissile Materials (FMCT)

An FMCT is called for in virtually all the op-eds. The established nuclear weapons states have ceased the production of fissile material for bomb production, since for the time being they have enough. De facto nuclear weapons states Israel and, especially, India and Pakistan, on the other hand, continue to produce fissile material for bomb production undeterred. Issues of definition, notification, and verification, as well as the inclusion of the civil nuclear fuel cycle, are important in this regard. A reasonable balance can be attained in this respect only when the existing stocks are included and inspected. The Geneva Conference on Disarmament agreed in May 2009 on a program of work in this area, but, despite the tabling of specific proposals (IPFM 2009), concrete work on the FMCT, as well as on the weaponization of space, has not yet begun and is blocked again by Pakistan.

NPT Review Conference 2010

The conclusion of a START successor treaty, the prospects of further deep cuts in the nuclear arsenals of the two major nuclear powers, and the initiation of CTBT ratification could exert a positive influence on the NPT Review Conference in May 2010. With regard to the Global Zero debate, expectations are high concerning the successful conclusion of the five-year NPT Conference. After the passing of a 13-Point Program in 2000 which, however, never came close to implementation and the lack of progress in 2005, another failure in 2010 might be fatal for the future of the NPT. Multilateral consensus, cooperation, and agreement is necessary if the Conference is to be at least a partial success. For the longer term, however, the future of the nuclear world order is still up for debate. George Perkovich has expressed this in the following terms: »A nuclear order based on a double standard – a handful of states determined to keep nuclear weapons and also trying to prevent 185 from getting them – is inherently unstable« (Perkovich 2008).

The aims of the Obama administration are ambitious. The extent to which it proves possible to bring round the nuclear bureaucracy and the – currently regrouping – Republicans to a reduction in the role of nuclear weapons in the twenty-first century and a ban on first-use will be decisive. The enormous cost of maintaining nuclear weapons – in the USA the nuclear security budget in 2008 was 33 billion dollars – the threat

of nuclear terrorism, and the fact that nuclear weapons are the only tools of war which over the long term can pose a danger to the US military, should go a long way towards fostering the view that current arsenals must be drastically reduced. If the future planning of nuclear arsenals is determined solely by the core function of nuclear weapons – namely deterrence – reductions well below 1,000 warheads on either side are possible and achievable, if the two nuclear superpowers manage to overcome their Cold War mentality.

The Next Steps: What Other Ways Are Possible towards a Nuclear Weapons-Free World?

If the two major nuclear powers were each to achieve a target figure of 500 to 1,000 warheads, the three other established nuclear powers could be brought on board to make further reductions and disarm proportionately. Multilateral negotiations – which also settle such important issues as procedures for disposing of warheads, improved safeguards, and the inspection of treaty implementation – should be included. Finally, the third step would involve striving towards and working out an agreement between all nuclear weapons states aiming at Global Zero – in other words, the complete renunciation of the production, possession, and deployment of nuclear weapons. The smaller arsenals become, the more urgently will important questions arise which have to be worked out on the basis of international cooperation. Have all warheads really been eliminated? Has weapons-grade material been disposed of irreversibly? Is it certain that no state is conducting a secret production program? Can it be ascertained whether civil nuclear sites are being used for weapons programs? Will it be possible for states to break ranks and engage in nuclear rearmament? What role will missile defense play in a Global Zero world? Certainly, many of these questions will be difficult to answer. However, the op-eds and President Obama's speech constitute a challenge to surmount the attitudes, instruments, and doctrines of the Cold War once and for all, and to proscribe the use of nuclear weapons. The USA, as still the strongest military power on earth, has taken the lead in setting out towards a nuclear weapons-free world. This cannot be done without the cooperation of friendly states, organizations, and experts, not to mention patience, time, and scientific and security-policy expertise. A global effort is needed to overcome the hurdles, but if a beginning

is now made in all earnestness it can help to ensure that nuclear weapons will never be used again.

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