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A Second Nuclear Revolution: From Nuclear Primacy to Post-Existential Deterrence

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ABSTRACT This article predicts that the nuclear weapon states may opt sooner for nuclear elimination than generally expected. This delegitimation of nuclear weapons is due to five factors whose importance has grown since the mid-1990s: nuclear proliferation, the risk of nuclear terrorism, the nuclear taboo, missile defence, and the increased importance of international law. The article starts with categorizing nuclear weapons policies: nuclear primacy, maximum deterrence, minimum deterrence, existential deterrence, and post-existential deterrence. The nuclear weapon states will probably shift their policies from nuclear primacy (US), maximum deterrence (Russia), minimum or existential deterrence (UK, France, Israel, China, India, Pakistan, North Korea) to post-existential deterrence (or elimination), taking one step at a time.

KEY WORDS: Nuclear Weapons, Nuclear Deterrence, Nuclear Proliferation

In contrast to the upheaval concerning US nuclear primacy,[1] the underlying trend in international politics tends towards an accelerated downgrading of the role of nuclear weapons. While nuclear weapons may (or may not) have made a substantial difference in the past, the Cold War conception of deterrence is of limited value in the post-Cold War period. This paper outlines five variables that undermine the so-called nuclear revolution: nuclear proliferation, the risk of nuclear terrorism, the nuclear taboo, missile defence, and the increased

[1]Keir Lieber and Daryl Press, 'The Rise of US Nuclear Primacy', *Foreign Affairs* 85/2 (March/April 2006), 42–54. For a longer version, see: Keir Lieber and Daryl Press, 'The End of MAD? The Nuclear Dimension of US Primacy', *International Security* 30/4 (Spring 2006), 7–44. For a reaction, see: Jeffrey Lantis, Tom Sauer, James Wirtz, Keir Lieber, and Daryl Press, 'The Short Shadow of US Primacy?', *International Security* 31/3 (Winter 2006/2007), 174–93.

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importance of international law. Although most of these variables already existed before, their importance has grown since the mid-1990s, and there is every reason to assume that their role will be strengthened further in the foreseeable future.

The aim of this paper is to enrich the understaffed academic debate about post-Cold War nuclear deterrence. At the same time, the model that is put forward here may be helpful for guiding political decision-makers in the nuclear weapon states. They are under pressure to adapt their nuclear weapons policies to the changed circumstances, as in, for instance, the request by the US Congress for the Obama administration to conduct a nuclear posture review before the end of 2009. But to what framework should the political decision-makers themselves turn? And which options are currently available?

Before describing the causal mechanisms that undermine nuclear deterrence, we will clarify the conceptual confusion about nuclear deterrence policies. More in particular, a distinction will be made between nuclear primacy, maximum deterrence, minimum deterrence, existential deterrence and post-existential deterrence.

Categorizing Nuclear Weapons Policies

Obtaining nuclear weapons is a first step only, no matter how difficult it may seem to be for some states. Once a nuclear weapon has been tested and top-level politicians have decided to start with weaponization, the new nuclear weapon state has to come up with an agreed nuclear weapons policy. Second-strike capabilities,[2] for instance, are not an automatic by-product of a nuclear weapon capability. Difficult policy choices have to be made. Making these trade-offs is thus hardly a theoretical exercise, for the choices made have concrete consequences in the realm of diplomatic, financial, industrial and intelligence policy.

Choices have to be made in the three major sub-domains of nuclear weapons policy: force structure, operational, and declaratory policy. *Force structure* policy, as the name implies, tries to shape the structure of the nuclear weapons force: how large should the nuclear arsenal be? Is parity – having more or less an equal number of nuclear weapons than the opponent – useful, or even necessary? Is there a need for having more weapons than (e.g. superiority over) the enemy? How large should the second-strike capability be? How sufficient should a 'sufficient destructive capacity' be? Which delivery-vehicles are needed

[2]A *second-strike* capacity corresponds to a nuclear weapons capability that is able to launch a nuclear counterattack with sufficient destructive capacity after a first-strike by the opponent. A *first-strike* corresponds to a nuclear weapons capability that aims to eliminate all the nuclear weapons of the opponent in one (preventive) single blow.

(bombers, Intercontinental Ballistic Missiles (ICBMs), Sea-Launched Ballistic Missiles (SLBMs))? Are sub-strategic (or tactical) nuclear weapons also desirable? Is there a need for a prompt launch capability?

Operational policy encompasses both alert-level policy and targeting policy. How to balance the ability to prevent accidental and/or unauthorized use of nuclear weapons in times of peace (negative control) with the ability to use nuclear weapons effectively and possibly very quickly in times of war (positive control)? Is there a need for having high alert-levels that allow a launch-on-warning[3] or a launch-under-attack posture?[4] Or shall one 'ride-out' – waiting to retaliate until the attack is over – and use nuclear weapons in a delayed fashion?

Targeting policy defines the nature and number of the enemy targets. Should the nuclear war plan include counterforce (against the enemy's forces) or countervalue (against the enemy's cities) targets? Should the plan include massive attack options or only limited options?

Finally, how will nuclear weapons policy be communicated to the outside world, including one's own public? This corresponds to the so-called *declaratory* nuclear weapons policy. What kinds of attacks have to be deterred and declared? Attacks threatening the survival of the state or less vital interests? Will nuclear deterrence be limited to deterring nuclear weapon attacks or will it also deter conventional, chemical and biological weapons attacks? What about a so-called extended deterrent, providing a nuclear umbrella to other states? What about a no-first-use policy?

Force structure, operational and declaratory policy are also intimately linked: for instance, the targeting requirements – also called 'deterrence' requirements – determine the quantity of nuclear weapons, which in turn might exclude some declaratory doctrines.

On the basis of the answers to this panoply of questions, five different nuclear weapons policies can be distinguished (in order of diminishing importance of nuclear weapons): nuclear primacy, maximum deterrence, minimum deterrence, existential deterrence, and post-existential deterrence. *Nuclear primacy* means having the capability to eliminate the nuclear weapons force of the enemy with a first strike. Acquiring a first-strike capability basically takes away any chance that the enemy will attack you. In the eyes of its advocates, nuclear primacy provides a large level of national security. Critics of nuclear primacy point out that a first-strike capability may also be used for offensive reasons, and can be perceived as such. In that case, the

[3]*Launch-on-warning* means launching nuclear weapons in case of a so-called tactical warning (satellite and/or radar warning) that an enemy attack is under way.

[4]*Launch-under-attack* means launching nuclear weapons after the first enemy missiles have exploded on one's territory.

enemy will try to undo this imbalance by building more weapons, and an arms race will subsequently follow.

The US, for instance, enjoyed nuclear primacy in the late 1940s. Each time a new nuclear weapon state was born, the existing nuclear weapon states had the opportunity to attack the nuclear infant with a preventive first strike. When China succeeded in testing atomic weapons in 1964, for instance, the option of a preventive nuclear strike was shortly envisaged by the US.[5]

Currently, there is an on-going debate as to whether the US is again on the verge of obtaining a nuclear primacy capability – due to the deterioration of the Russian nuclear weapons arsenal after the Cold War, the modernization of the US nuclear weapons arsenal in the last few decades, and the introduction of US missile defence – and what its implications for world stability may be.[6]

Under *maximum deterrence* the role of nuclear weapons in the defence posture is emphasized – literally maximized – in order to squeeze as much benefit as possible out of deterrence.[7] According to its advocates, the main characteristic of maximum deterrence is that the nuclear force structure, operational, and declaratory postures compensate for the so-called lack of credibility of minimum, let alone existential, deterrence. Maximum deterrence strategists believe that they themselves are able to add the necessary 'touch of credibility' in order to make nuclear deterrence work.

Under maximum deterrence, a large quantity of nuclear weapons based on different kinds of delivery vehicles is desirable. Parity is a key principle: one should at least have the same number of nuclear weapons as the enemy, and preferably a bit more.[8] Maximum deterrence also requires that one should give the impression of, and plan according to, using nuclear weapons against the opponent's nuclear weapons forces (counterforce) preemptively, or at least the appearance of being able to launch them promptly in case of tactical warning or if under attack. The underlying objective is thus to limit the damage of a follow-up nuclear

[5]William Burr and Jeffrey Richelson, 'Whether to "Strangle the Baby in the Cradle": the US and the Chinese Nuclear Program, 1960–64', *International Security* 25/3 (Winter 2000/2001), 54–99.

[6]See footnote 1.

[7]The concepts 'maximum deterrence' and 'minimum deterrence' have been used before in the literature in a slightly different meaning by Barry Buzan in his book *An Introduction to Strategic Studies* (London: Macmillan 1987). Earlier, Glenn Snyder introduced the concepts of 'deterrence by punishment' and 'deterrence by denial' in his book *Deterrence and Defence* (Princeton: Princeton UP 1961).

[8]Note that the notion of superiority is even more dominating within the option of nuclear primacy. The difference between nuclear primacy and maximum deterrence has to do with the availability of a first-strike capability.

attack by the enemy by destroying as many nuclear weapons of the opponent as possible (damage limitation). Hence, declaratory policy should be ambiguous. Saying clearly in advance under what circumstances nuclear weapons will be used is not recommended. One should, in this sense, keep the opponent guessing. In case nuclear weapons have to be used, the impression should be given that they will be used on a massive scale, especially if the survival of the state is at stake. Limited nuclear options should also be available, either for less-than-survival-of-the-state interests, or for bolstering deterrence in general. The message to the opponent should be that one is prepared and able to win at every level of escalating violence.

The best examples of maximum deterrence postures are of course the nuclear postures of the superpowers during the Cold War. Even the nuclear postures of the UK and France resembled a maximum deterrence doctrine during the Cold War, although at much lower levels than the US and the former USSR. Surprisingly, despite the implosion of the USSR 18 years ago, the current nuclear weapons policies of both the US and Russia *still* correspond to maximum deterrence.

Minimum deterrence tries to minimize the emphasis on nuclear weapons. According to minimum (and existential) deterrence, in contrast to maximum deterrence, a secure second-strike force does not require a very large arsenal, as long as a small number of nuclear weapons are invulnerable. As long as the opponent believes that he can be attacked with tens of nuclear weapons in a retaliatory strike, the fear of assured destruction will prevail. Parity, let alone superiority, is therefore not a requirement. Because of the relatively small nuclear forces, counterforce targeting and massive attack options are excluded. To the same extent, high alert rates are not needed, except maybe for the invulnerable part of the arsenal. A no-first-use declaratory policy then also becomes an option, at least for states that cannot be easily overrun by non-nuclear means.

The current nuclear weapons postures of Israel, France, and especially the UK can to a certain extent be regarded as examples of minimum deterrence, especially in the sub-domain of force structure. If arms reductions go forward as planned, the US and Russia will at a certain point in time – maybe already in 15 or 20 years – reach this minimum deterrence level as well.

Existential deterrence means that nuclear weapons are able to deter thanks simply to their existence, regardless of the nature of the nuclear posture. An important underlying assumption of existential (and even more of post-existential) deterrence is that a retaliatory strike should not follow immediately after the original attack as the possibility to attack later on always remains. A 'ride out' operational policy thus prevails. The fear of a first strike is absent, or at least does not

determine the general nuclear weapons policy. As a result, the nuclear force structure can go further down.

China always had, and still has, an existential deterrent as it has no more than 20 nuclear weapons that can be delivered on an intercontinental scale. India and Pakistan still fall into this category for the moment, although both aim to have at least a minimum deterrent. North Korea also fits into this category as it tested nuclear weapons in October 2006 and May 2009.

Last, *post-existential deterrence* means nuclear deterrence without the existence of nuclear weapons. Post-existential deterrence takes the concept of existential deterrence one step further. As nuclear weapons can be rebuilt rather quickly in former nuclear weapon states, there is no need to keep the weapons themselves on hand. The logical implication is that if all nuclear weapon states – only eight or nine for the moment – follow this path, the world would reach the stage of a nuclear-weapons free world. Hence, though the weapons themselves would be eliminated, nuclear deterrence will survive, albeit virtually. Post-existential deterrence corresponds with what Michael Mazarr has called 'virtual deterrence', and to what Jonathan Schell has termed 'weaponless deterrence'.[9] Schell, for his part, proposed to replace the existing logic of 'missile deters missile, bomber deters bomber, submarine deters submarine' with the logic 'factory would deter factory, blueprint would deter blueprint, equation would deter equation'.[10]

One could argue that many states already possess virtual nuclear weapons arsenals. States like Japan and Germany that have extensive civilian nuclear programmes are able to produce nuclear weapons in a couple of months.

From Nuclear Primacy to Post-Existential Deterrence in Practice

The nuclear revolution is sometimes regarded as the major explanation for the absence of World War III. Some of its advocates go so far as to claim that nuclear weapons will prevent further interstate wars in the future.[11] Explaining non-events, however, is extremely difficult. There are many other potential causal variables which could also explain the

[9]Michael Mazarr, 'Virtual Nuclear Arsenals', *Survival* 37/3 (Autumn 1995), 7–26; Jonathan Schell, *The Abolition* (London: Picador 1984).
[10]Schell, *The Abolition*, 119.
[11]Kenneth Waltz, 'More May Be Better', in Kenneth Waltz and Scott Sagan, *The Spread of Nuclear Weapons* (New York: W.W. Norton 1995); Robert Jervis, *The Meaning of Nuclear Revolution* (Ithaca, NY: Cornell UP 1989).

Table 1. Five Categories of Nuclear Weapons Policy

	Force Structure Policy	Operational Policy I: Alert Levels	Operational Policy II: Targeting Policy	Declaratory Policy
Nuclear Primacy	First-strike capability. Very large number of nuclear weapons. Superiority	High alert	Counterforce. Massive attack options	Ambiguous
Maximum Deterrence	Second-strike capability. Large number of nuclear weapons. Balancing (or superiority)	High alert	Counterforce. Massive attack options	Ambiguous
Minimum Deterrence	Second-strike capability. Small number of nuclear weapons (but invulnerable). No balancing	Low alert (except some invulnerable nuclear weapons)	Countervalue	To deter nuclear weapons attacks only. No first use
Existential Deterrence	Very small number of nuclear weapons. No balancing	Very low alert. Ride-out policy	Countervalue	To deter nuclear weapons attacks only. No first use
Post-Existential Deterrence	No nuclear weapons	No alert	Countervalue	No first use

non-occurrence of another World War after 1945: democratic peace; economic growth; the moral abhorrence caused by the first two World Wars; and the growing importance of international criminal law (Nuremberg Tribunal; International Criminal Court).[12] Therefore, nuclear deterrence may or may not be (part of) the answer. We simply do not know and it is unlikely that we will ever get a definitive answer to this question.

Whatever the benefits of nuclear deterrence have been in the past, five current trends undermine the potentially stabilizing effect of nuclear deterrence: horizontal proliferation; the nuclear taboo; international law; the risk of nuclear terrorism; and missile defence. Making a rational cost-benefit analysis between the uncertain advantages of nuclear weapons and the rapidly growing costs related to nuclear weapons, the odds are that the nuclear weapon states will take their obligation to eliminate their nuclear weapons in the future more seriously, maybe even sooner than generally expected. Instead of nuclear primacy, the nuclear weapon states may indeed opt for post-existential deterrence.

If this prognosis is correct, the world will experience a second nuclear revolution, in exactly the opposite sense of the first one. This outcome would stand completely in contrast with what many experts and political decision-makers have believed up till now. Mainstream thinking maintains that a nuclear weapons-free world is, at best, the ultimate goal, and, in all likelihood, utopian. On the basis of the analysis that follows, we argue that this dominant line of thinking may alter in the foreseeable future.

Accordingly, the five trends that are slowly strangling nuclear deterrence are the following: First, the further spread of nuclear weapons to more and more countries – the so-called horizontal *proliferation* – is the main factor as to why nuclear weapon states may change their mind. A case, indeed, can be made that nuclear deterrence is the victim of its own (perceived) success. Paradoxically, while more and more people in the nuclear weapon states are rethinking the value of nuclear weapons, the perception that nuclear deterrence works is taking hold in the developing world. Developing states that possess nuclear weapons are not attacked by the international community (like North Korea and Pakistan), whereas developing states that do not possess nuclear weapons (yet) are (like Iraq, Afghanistan, and possibly Iran in the immediate future). Also in proliferating states, nuclear weapons are

[12]John Mueller, 'The Essential Irrelevance of Nuclear Weapons', *International Security* 13/2 (Fall 1988), 55–79; John Vazquez, 'The Deterrence Myth: Nuclear Weapons and the Prevention of Nuclear War', in Charles Kegley (ed.), *The Long Postwar Peace* (New York: HarperCollins 1991).

regarded as the crown jewels of national defence; they yield prestige, both internally and externally.

The end result is a constant pressure towards more proliferation. In practice, every six to seven years a new nuclear weapon state has emerged since 1945, and there is no indication that that trend will be reversed in the foreseeable future.

As more and more states acquire nuclear weapons, the chances that nuclear weapons will be used again, in either an authorized or unauthorized way, increase every day. In addition, as the list of nuclear weapon states begins to contain states that are politically unstable, and that at the same time are not generally accepted as good 'citizens' by the international community (like Pakistan, North Korea, and possibly Iran in the future), the nature of the threat alters dramatically.

It is therefore not abnormal that nuclear weapon states start rethinking the costs and benefits of nuclear weapons. As Les Aspin stated in 1992, a couple of months before he became President Bill Clinton's Secretary of Defense:

> But now the Soviet Union has collapsed. The US is the biggest conventional power in the world. There is no longer any need for the US to have nuclear weapons as an equalizer against other powers ... a world without nuclear weapons would not be disadvantageous to the US. In fact, a world without nuclear weapons would actually be better. Nuclear weapons are still the big equalizer but now the US is not the equalizer but the equalizee.[13]

When Aspin became Secretary of Defense, he initiated the Nuclear Posture Review, aiming to adapt US nuclear weapons policy to the radically changed circumstances after the Cold War.[14]

The spread of nuclear weapons to politically unstable states entails the following specific risks: authorized use of nuclear weapons out of revenge (perhaps religiously inspired); unauthorized use; accidents; and nuclear terrorism. Such states may indeed help non-state actors (read terrorists) or other states to acquire nuclear weapons by selling fissile materials and/or delivery vehicles (like Pakistan and North Korea). In addition, there is the problem of the so-called loose nukes and loose fissile materials.

Though the threat of nuclear proliferation was already signalled by President John F. Kennedy in the beginning of the 1960s, the

[13]Les Aspin's MIT commencement speech, 3 June 1992.

[14]Janne Nolan, *An Elusive Consensus: Nuclear Weapons and American Security After the Cold War* (Washington DC: Brookings Institution Press 1999); Tom Sauer, *Nuclear Inertia: US Nuclear Weapons Policy After the Cold War* (London: I.B. Tauris 2005).

breakthrough on the ground only occurred at the end of the 1990s with the nuclear tests of India and Pakistan, along with North Korea in 2006. Beforehand, the nuclear non-proliferation regime was rather successful in curtailing their increase. Between the mid-1960s and the end of the 1990s only Israel obtained nuclear weapons, though without publicly claiming to have done so.[15]

The growth from six to nine nuclear weapons states during the last decade, two of which with politically unstable reputations, and the prospect of more to follow (like Iran, Saudi Arabia, Egypt, Syria, and Turkey) stimulates new thinking in the nuclear weapon states. It is abundantly clear that maximum deterrence postures do not deter other states from going nuclear. Even minimum or existential deterrents would not prevent others from nuclear pursuit. On the contrary, as long as there are nuclear weapon states, non-nuclear weapon states will try to imitate them. As long as the nuclear weapon states claim that nuclear weapons are 'essential' for their security, and keep nuclear weapons in their arsenals, we should not be surprised to see the arrival of new nuclear weapon states. As Graham Allison (Harvard University), a former Assistant Secretary of Defense in the Clinton administration, honestly remarked: 'Well, the American posture currently says we need to develop a few more additional nuclear weapons, but everyone else needs zero ... I remember in government trying to explain that position without smiling, and I could never manage to do it.'[16]

Those who claim that nuclear disarmament or changes in nuclear weapons policy in general will not prevent further proliferation are to a certain extent correct. Linton Brooks, the former head of the US National Nuclear Security Administration, stated in 2004: 'Over the past decade, we have seen very significant reductions in the numbers of US (and Russian) nuclear weapons, reductions in the alert levels of nuclear forces, and the abandonment of US nuclear testing ... There is absolutely no evidence that these developments have caused North Korea or Iran to slow down covert programs to acquire capabilities to produce nuclear weapons.'[17]

[15]South Africa also acquired nuclear weapons, but eliminated its arsenal already in the meantime, something unique. At the same time, the South African case demonstrates that nuclear weapon states can and do get rid of their nuclear weapons, contrary to what nuclear deterrence advocates (and Realists in general) would predict.

[16]Graham Allison, Transcript of interview by Allison of Mohamed El-Baradei at the Council on Foreign Relations, 'The Challenges Facing Non-Proliferation', 14 May 2004.

[17]Linton Brooks, 'US Nuclear Weapons Policies and Programs', speech at the Heritage Foundation Conference 'US Strategic Command: Beyond the War on Terrorism', 12 May 2004.

The point, however, is that to prevent proliferation stronger steps are needed than regular nuclear arms reductions. The 1996 Canberra Commission, an international commission of 'wise men' appointed by the Australian government after the resumption of the French nuclear tests, drew similar conclusions: 'Nuclear weapons are held by a handful of states which insist that these weapons provide unique security benefits, and yet reserve uniquely to themselves the right to own them. This situation is highly discriminatory and thus unstable; it cannot be sustained. The possession of nuclear weapons by any state is a constant stimulus to other states to acquire them.'[18]

The only way to prevent states to go nuclear is to create a moral-political climate in which nuclear weapons are *completely* delegitimized, where rules are set for how to deal with potential cheaters, and a highly intrusive verification-system is set up. In other words, the best solution against proliferation can only be provided by a post-existential deterrence scenario. Or as the Ministers of Foreign Affairs of Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa and Sweden wrote in an op-ed: 'what does not exist cannot proliferate'.[19]

Second, after having experienced a couple of terrorist attacks with chemical and biological weapons in Japan in the 1990s, *nuclear terrorism* is now seen as the only taboo left.[20] But for how long will this be the case?

Nuclear deterrence against non-state actors does not make sense, especially if these non-state actors are religiously motivated. First of all, it is by definition impossible to target non-visible terrorists. Second, religiously motivated terrorists do not care about dying for their cause. Therefore, nuclear deterrence does not make any difference in preventing terrorists acquiring and using nuclear weapons.

The biggest hurdle for terrorists 'to go nuclear' is acquiring enough fissile material, either highly enriched uranium or (less likely) plutonium. In this regard, tens of kilograms are sufficient. While a lot of unsafe nuclear facilities in Russia have been secured by the US since the beginning of the 1990s, an estimated 30–40 per cent of these facilities, containing tons of fissile materials, are still insecure.[21]

[18]Canberra Commission Report, 1996.

[19]Celso Amorim and others, 'What Does Not Exist Cannot Proliferate', *International Herald Tribune*, 2 May 2005.

[20]Ashton Carter, John Deutch, and Philip Zelikow, 'Catastrophic Terrorism', *Foreign Affairs* 77/6 (Winter 1998/1999), 78–94; Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (New York: Times Books 2004).

[21]Matthew Bunn, *Securing the Bomb 2008* (Cambridge, MA: Project on Managing the Atom, Harvard Univ. and Nuclear Threat Initiative Nov. 2008).

Another potential source for acquiring fissile materials are states like North Korea and Pakistan – or individuals inside these countries (such as Dr A. Q. Khan) – that seem willing to sell anything to the highest bidder. As Al-Qa'eda can be categorized as an extremist Muslim organization, particular Muslim countries like Pakistan and Iran should be carefully watched.

But, again, as long as the nuclear weapon states hang on to their nuclear weapons, it will be extremely difficult to convince countries like Iran not to obtain nuclear weapons. As a result, the policy option that minimizes the risk of nuclear terrorism is post-existential deterrence, at least on the condition that the fissile materials which come out of the disarmament process are handled safely, preferably by an international organization like the International Atomic Energy Agency (IAEA).

Notice that while the risk of nuclear terrorism is nearly as old as nuclear weapons, the focus (again) became much sharper in the second half of the 1990s, with the rise of Al- Qa'eda, and even more after 9/11.

Third, each day that nuclear weapons are not used, *the moral taboo* against the use of nuclear weapons – the so-called nuclear taboo – is further strengthened.[22] In effect, this is to ask which political decision-maker, especially if democratically elected, would be willing to use nuclear weapons again, considering that they have not been used since 9 August 1945? Despite massive losses, the US did not use nuclear weapons in Korea, Vietnam or Iraq. The same applies to the USSR in Afghanistan in the 1980s. What would it take for an American president to even consider using nuclear weapons again? Some decision-makers have publicly admitted that they cannot foresee an American president ever using nuclear weapons again. Former Secretary of Defense Robert McNamara stated in the 1980s, while out of office: 'In long private conversations with successive Presidents – Kennedy and Johnson – I recommended, without qualifications, that they never initiate, under any circumstances, the use of nuclear weapons ... I believe they accepted my recommendation.'[23] Similarly, when US Vice President Dan Quayle was asked in early February 1991 – at a press conference during the Gulf War – as to whether President George H. W. Bush had considered introducing nuclear weapons, he

[22]Nina Tannenwald, 'The Nuclear Taboo: The US and the Normative Basis of Nuclear Non-Use', *International Organization* 53/3 (Summer 1999), 433–68; Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons since 1945* (Cambridge: Cambridge UP 2007).

[23]Robert McNamara, 'The Military Role of Nuclear Weapons: Perceptions and Misperceptions', *Foreign Affairs* 62/1 (Fall 1983), 79.

answered: 'I just can't imagine President Bush making the decision to use chemical or nuclear weapons under any circumstances.'[24]

A major consequence of the nuclear taboo is that it undermines nuclear deterrence, whether it be maximum, minimum, existential or even post-existential deterrence. If nobody believes that nuclear weapons may still be used anymore, then the deterring effect is rapidly eroding.

A fourth factor that undermines nuclear deterrence is *missile defence*. While some claim that missile defence strengthens nuclear deterrence because it complicates the calculus of the enemy,[25] it is safer to argue the other way around: missile defence undermines nuclear deterrence. Missile defence may weaken nuclear deterrence due to the fact that by installing missile defence the impression is given that nuclear deterrence seems not to be able to do the job anymore. Most (non-governmental) experts believe that the US is not able to shoot down intercontinental missiles in-flight in real-world circumstances. It is, for instance, relatively easy for opponents to blind mid-course missile defence systems with decoys.[26] And this assessment is not going to change soon.

In the likely case that missile defence systems do not work effectively and the enemy is aware of this fact, the end result is the equivalent of two handicapped instruments: weakened nuclear deterrence and ineffective missile defence. Can a rationally constructed defence policy be based on such a flawed combination? That is also the reason why the US and the USSR in the beginning of the 1970s restricted missile defence through the Anti-Ballistic Missile (ABM) Treaty (1972), and two years later even abolished the remaining missile defence systems.

Nevertheless, the Bush administration unilaterally cancelled the ABM Treaty in December 2001, installed missile defence interceptors in Alaska and California in 2004 and concluded agreements with Poland and the Czech Republic in 2008 to install respectively interceptors and a radar, despite the fact that these weapon systems have not gone through the regular operational testing procedures.

[24]Quayle quickly corrected himself by saying that no option would be ruled out. Quoted in William Arkin, 'Calculated Ambiguity: Nuclear Weapons in the Gulf War', *Washington Quarterly* 19/4 (Autumn 1996), 6.

[25]William Martel, 'The End of Nonproliferation', *Strategic Review* 28/4 (Fall 2000), 16–21.

[26]George Lewis and Ted Postol, 'Future Challenges to Ballistic Missile Defence', *IEEE Spectrum* 34/9 (September 1997), 60–8; George Lewis, Ted Postol, and John Pike, 'Why National Missile Defence Won't Work', *Scientific American* 281/1 (Aug. 1999), 36–41; Richard Garwin, 'The Wrong Plan', *Bulletin of the Atomic Scientists* 56/2 (March/April 2000), 36–41.

One should make a distinction between missile defence systems that are (perceived as) effective, and would-be missile defence systems. In the case where missile defence systems do not work, but the enemy believes that they work (or acts as if they believe that they work, for instance, for bureaucratic reasons), the enemy will simply produce more nuclear weapons and delivery vehicles. A costly and dangerous defensive-offensive arms race will likely ensue.

Nuclear arms reductions will become more difficult. Proliferation will continue, and nuclear terrorism may become a reality. State and non-state proliferators that would like to detonate a nuclear bomb in the US do not necessarily need intercontinental missiles. A rough atomic bomb hidden in a truck, ship, container, or small plane may do the trick and these unconventional delivery vehicles cannot be stopped by any missile defence system.

Only in the case where missile defence systems do work effectively, which is extremely unlikely, will nuclear deterrence to a certain extent be strengthened. On the other hand, the enemy will still wonder whether the instalment of missile defence is not an indication of a weak nuclear deterrent. Furthermore, the opponent will continue to produce more nuclear weapons. As in the previous scenario, a defensive-offensive arms race will follow, nuclear arms reductions will become more difficult; proliferation will continue; and nuclear terrorism may become a reality.

In short, the odds are that missile defence will lead to a new arms race and will make the road toward nuclear elimination longer, unless it becomes a global system, for example, if all the states in the world – or at least the major powers – work together and are covered by missile defence.

Fifth, and last, there is a growing role for *international law* in international politics. With respect to nuclear deterrence, two juridical texts are relevant in this context: the Non-Proliferation Treaty (NPT) (1968) and the 1996 ruling of the International Court of Justice in The Hague. The NPT – the cornerstone of the non-proliferation regime – is both a non-proliferation and disarmament treaty. Article 6 of the NPT states that the nuclear weapons states may not hang on to their nuclear arsenals forever. At the 1995 NPT Conference, when the treaty was extended indefinitely, the nuclear weapon states reconfirmed their commitment to eliminate all nuclear weapons. Paragraph 4 of the Principles and Objectives document at the 1995 NPT Review and Extension Conference states:

> The achievement of the following measures is important in the full realization and effective implementation of article 6, including the program of action as reflected below: ... (c) the determined pursuit by the nuclear-weapon states of systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of

> *eliminating* those weapons, and by all states of general and complete disarmament under strict and effective international control.[27]

While the latter can still be interpreted as linking nuclear disarmament to conventional disarmament, this was not the case anymore for the Action Plan of the next five-yearly NPT Review Conference in 2000, which contains 13 disarmament steps. Paragraph 6 of the Action Plan reads: 'An unequivocal undertaking by the nuclear weapon states to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all states parties are committed under article 6.'[28] In other words, all parties to the treaty in 2000 – including the nuclear weapon states – explicitly acknowledged that nuclear weapons had to be eliminated, *regardless* of the level of conventional disarmament.

While the nuclear weapon states are reducing their nuclear arsenals step by step, clear signals of a commitment towards elimination are still lacking. Consequently, the non-nuclear weapon states are becoming impatient. It is not by chance that the 2005 NPT Review Conference was a complete disaster. The United Nations Conference on Disarmament in Geneva has also suffered for a decade from the same kind of paralysis. In both instances, diplomats were not able to negotiate because they could not agree on an agenda ... Essentially, the whole arms control and non-proliferation machinery is in a shambles.[29]

One can easily predict that this diplomatic ritual will repeat itself at the next NPT Review Conference in 2010, *unless* the nuclear weapons states succeed in convincing the rest of the world that they take this obligation to get rid of nuclear weapons seriously. Two things are essential in this regard: first, the nuclear weapon states that still cling to a maximum deterrence posture should move as soon as possible toward minimum deterrence. The promise of gradual arms reductions (like the preliminary Obama-Medvedev START Agreement of July 2009) or the ratification of the Comprehensive Test Ban Treaty (CTBT) alone will not help this time. Fundamental changes in the operational and declaratory policies are needed as well. Second, minimum deterrence or existential deterrence will only be accepted as a transition phase towards post-existential deterrence. Ideally, multilateral negotiations for a Nuclear Weapons Convention should be started soon. The nuclear weapons states have to regain their credibility, a credibility which can only be realized by a new commitment to eliminate their nuclear weapons.

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[27]NPT/CONF.1995/32/DEC.2. My emphasis. See <www.fas.org/nuke/control/npt/text/prin_obj.htm>.

[28]The whole document can be found in *Disarmament Diplomacy* (May 2000), 20–1.

[29]Tom Sauer, 'The Nuclear Non-Proliferation Regime in Crisis', *Peace Review* 18/3 (Fall 2006), 333–40.

There are other, more down-to-earth arguments as to why the nuclear weapon states should change their nuclear weapons policies. Nowadays, it is politically extremely difficult, if not impossible, to convince public opinion and allies to take substantial economic sanctions, let alone military action against non-nuclear weapon states which seem to be in contradiction with the NPT (like Iran for instance), since it remains public knowledge that the nuclear weapon states themselves do not fulfil their obligations under the same NPT. This two-standards approach has its limits. Former US Deputy Secretary of Defense John Deutch claims that: 'The United States relies on the cooperation of many nations to achieve its non-proliferation objectives, and in this regard the US nuclear posture has important consequences.'[30] Ashton Carter, currently Under Secretary of Defense for Acquisition, Technology and Logistics, and Assistant Secretary of Defense in the Clinton administration, stated similarly: 'A growing reliance by Washington on nuclear weapons for its security would complicate its efforts to marshal international cooperation against weapons of mass destruction terrorism and overhaul nuclear arms control regimes.'[31] Mutatis mutandis, imagine a world without nuclear weapon states. How easy would it be to convince public opinion and other states to take military action against a break-out state.

The International Court of Justice, in a remarkable ruling with respect to the legality of the (threat of) use of nuclear weapons, declared on 6 July 1996 that 'the threat or use of nuclear weapons [would] generally be contrary to the rules of international law'. The most striking feature of the Court's ruling was that it highlighted the obligation for the nuclear weapon states not only to start, but also 'to bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control'. If nuclear elimination does not happen, the Court warned:

> In the long run, international law, and with it the stability of the international order which it is intended to govern, are bound to suffer from the continuing difference of views with regard to the legal status of weapons as deadly as nuclear weapons. It is consequently important to put an end to this debate of affairs: the long-promised complete nuclear disarmament appears to be the most appropriate means of achieving that result.[32]

[30]John Deutch, 'A Nuclear Posture for Today', *Foreign Affairs* 84/1 (Jan./Feb. 2005).
[31]Ashton Carter, 'How to Counter Weapons of Mass Destruction', *Foreign Affairs* 83/5 (Sept./Oct. 2004), 72–85.
[32]<www.icj-cij.org/docket/index.php?p1=3&p2=4&k=e1&case=95&code=unan&p3=4>.

Notice that in this case also, just as with proliferation, the breakthrough in thinking arose in the second half of the 1990s.

A Growing Interest in the Foreign Policy Community

Due to these five structural factors, the odds are that nuclear weapons will become even more low-key in future defence postures than is already the case today. More and more experts are changing their minds. Apart from the peace movement (like the Campaign for Nuclear Disarmament in the UK, and the Freeze Movement in the US), there were only a couple of nuclear scientists (like Albert Einstein, Joseph Rotblat, Andrei Sakharov), journalists (like Jonathan Schell), former diplomats (like George Kennan), and former politicians (like Robert McNamara) that spoke out against nuclear weapons *during* the Cold War.

Both President Mikhail Gorbachev and President Ronald Reagan (at least during his second term) embraced the idea of nuclear disarmament, both in theory and in practice. During the Reykjavik summit in 1986, they came very close toward agreeing to eliminate all nuclear weapons. One year later, they signed the Intermediate Nuclear Forces Treaty, abolishing for the first time a whole category of nuclear weapons. Gorbachev was, for his part, influenced by the ideas of the peace movement in the first half of the 1980s.[33]

After the fall of the Berlin Wall,[34] many former nuclear 'hawks' joined the anti-nuclear weapons chorus. Examples in the US are Paul Nitze (former architect of National Security Council-68), Andrew Goodpaster (former General), Lee Butler (former General and C-in-C Strategic Air Command), Stansfield Turner (former Admiral and Central Intelligence Agency Director), Henry Kissinger (former National Security Advisor and Secretary of State), George Schultz (former Secretary of State), and William Perry (former Secretary of Defense).[35] The op-ed of the US 'gang of four' has been more or less copied by a similar group in the UK (Lord Hurd, Sir Malcolm Rifkind,

[33]Daniel Deudney and John Ikenberry, 'The International Sources of Soviet Change', *International Security* 16/3 (Winter 1991/92), 74–118.

[34]It is better to state that the Berlin Wall was *knocked* down (instead of 'fell'), according to Ken Booth. See Ken Booth, *Theory of World Security* (Cambridge: Cambridge UP 2007) 28.

[35]George Schultz, William Perry, Henry Kissinger, and Sam Nunn, 'A World Free of Nuclear Weapons', *Wall Street Journal*, 4 Jan. 2007. This publication of the so-called gang of four was followed up by conferences at Harvard University (Dec. 2007) and Oslo (Feb. 2008).

Lords Owen and Robertson),[36] Italy (Massimo d'Alema, Gianfranco Fini, Giorgio LaMalfa, Arturo Parisi, and Francesco Calogero),[37] and Germany (Helmut Schmidt, Richard von Weizäcker, Egon Bahr, and Hans-Dietrich Genscher).[38] In the Netherlands, former prime ministers, ministers of foreign affairs, and ministers of defence spoke out in favour of nuclear elimination in interviews in *Vrij Nederland*, 9 February 2008; in Belgium, former Prime Minister Jean-Luc Dehaene joined the Mayors for Peace initiative in 2007 and spoke out against nuclear weapons.

Earlier, a whole series of non-governmental reports, most dating back to the 1990s, made the case for nuclear elimination or 'nuclear prohibition', for example, the Henry Stimson Center, International Network of Engineers and Scientists Against Proliferation (INESAP), the Canberra Commission, Abolition 2000, the US National Academy of Sciences (CISAC), the Middle Powers Initiative, the New Agenda Coalition, Pugwash, the Blix Commission, and the Schultz-Kissinger-Perry-Nunn initiative.[39] Also the International Institute for Strategic Studies, that was established in 1958 at the height of the Cold War, published an Adelphi Paper entitled *Abolishing Nuclear Weapons*.[40] In 2008, a new Commission on Nuclear Non-Proliferation and Disarmament chaired by Gareth Evans and Yoriko Kawaguchi was set up by Australia and Japan. Also in December 2008, the Global Zero initiative was launched by more than 100 civilian leaders.[41]

[36]Douglas Hurd, Malcolm Rifkind, David Owen, and George Robertson, 'Start worrying and learn to ditch the Bomb', *The Times*, 30 June 2008. Three former generals wrote a similar op-ed: Lord Bramall, Lord Ramsbotham, and Sir Hugh Beach, 'UK does not need a nuclear deterrent', *The Times*, 16 Jan. 2009.

[37]Massimo d'Alema, Gianfranco Fini, Giorgio LaMalfa, Arturo Parisi, and Francesco Calogero, 'Per un mondo senza armi nucleari', *Corriera della Sera*, 24 July 2008.

[38]Helmut Schmidt, Richard von Weizäcker, Egon Bahr, and Hans-Dietrich Genscher, 'Toward a Nuclear-Free World: a German View', *International Herald Tribune*, 9 Jan. 2009.

[39]*Beyond the NPT: a Nuclear Weapons Free World* (INESAP 1995); *Report of the Canberra Commission on the Elimination of Nuclear Weapons* (1996); Gen. (ret.) Andrew Goodpaster (ed.), *An American Legacy. Building a Nuclear Weapons Free World* (Washington DC: Henry Stimson Center 1997); Gen (ret.) Burns, *The Future of US Nuclear Weapons Policy* (Washington DC: National Academy of Sciences CISAC 1997); Middle Powers Initiative, established in 1998; New Agenda Coalition, established in 1998; Joseph Rotblat (eds.), *The Road to Zero* (Boulder, CO: Westview Press 1998); Hans Blix (ed.), *Report of the International Commission on Weapons of Mass Destruction* (2006).

[40]George Perkovich and James Acton, 'Abolishing Nuclear Weapons', *Adelphi Paper* 396 (August 2008).

[41]See <www.globalzero.org/>.

Remarkably, some high-level people even spoke out while they were still in office. Director-General of the IAEA Mohamed El Baradei pushed for thinking out of the box vis-à-vis nuclear deterrence and nuclear disarmament. El Baradei argued on many occasions in favour of a world without nuclear weapons. Not by chance he received the Nobel Peace Prize in 2005.

But also high-level officials in two established nuclear weapon states – the US and the UK – seem to be convinced of the need of a radical overhaul. General Charles Horner (US C-in-C of Space Command) stated the following before the Senate Armed Service Committee on 22 April 1993:

> I want to get rid of nuclear weapons ... Nuclear weapons are expensive and lack utility other than for strategic deterrence. Strategic deterrence works only against rational actors. Nuclear weapons are unlikely to deter potential adversaries driven by ethnic, religious, or economic imperatives. Also, as weapons for theatre warfare, they are difficult to employ effectively and can be justified only as weapons of terror. A strategy of terror does not fit well in the successful conduct of modern warfare which puts an emphasis on low casualties, especially nonmilitary casualties ... It should also reduce other nation's aspirations to acquire nuclear weapons of mass destruction ... as a nuclear free nation, we could seize the moral high ground. In concert with other non-nuclear nations, we could demand suspected nuclear weapons sites be opened for inspection with conventional military forces to back up our demands.[42]

Not much later, US Secretary of Defence Les Aspin initiated the Nuclear Posture Review (see before). The Clinton administration could not and the George W. Bush administration refused to adapt US nuclear weapons policy in the direction of nuclear elimination. President Barack Obama in contrast seems to be willing to carry out his far-reaching arms control pledges that he made during his campaign.[43]

On 5 April 2009 in Prague, President Obama dedicated a whole speech to nuclear elimination. He declared:

> Some argue that the spread of these weapons cannot be stopped, cannot be checked – that we are destined to live in a world where

[42]Gen. Charles Horner USAF in a hearing before the Senate Armed Services Committee on 22 April 1993.

[43]Two of Obama's campaign advisers – Ivo Daalder and Jan Lodal – published an article in *Foreign Affairs* in Nov.–Dec. 2008 that was titled 'The Logic of Zero: Towards a World Without Nuclear Weapons'.

> more nations and more people possess the ultimate tools of destruction. Such fatalism is a deadly adversary, for if we believe that the spread of nuclear weapons is inevitable, then in some way we are admitting to ourselves that the use of nuclear weapons is inevitable... So today, I state clearly and with conviction America's commitment to seek the peace and security of a world without nuclear weapons.[44]

British Foreign Secretary Margaret Beckett, referring to the Schultz-Kissinger-Perry-Nunn article, stated the following in June 2007: 'What we need is both vision – a scenario for a world free of nuclear weapons. And action – progressive steps to reduce warhead numbers and to limit the role of nuclear weapons in security policy ... I want the UK to be at the forefront of both the thinking and the practical work. To be, as it were, a "disarmament laboratory."'[45] In February 2008, the UK proposed 'to host a conference for technical experts from all five recognized nuclear states, to develop technologies for nuclear disarmament'.[46] The current UK Foreign Secretary David Milliband did not only publish an op-ed titled 'A World without Nuclear Weapons', but also a 60-page long report with the title 'Lifting the Nuclear Shadow: Creating the Conditions for Abolishing Nuclear Weapons'.[47]

With regard to the prospect move towards post-existential deterrence, there is one big caveat: bureaucratic resistance and lack of political leadership. For instance, the major explanation for the current maximum deterrent posture – or, according to some, even nuclear primacy – in the US is bureaucratic pressure in favour of modernization of the American nuclear weapons arsenal, and the enormous resistance against policy change in the direction of deep cuts, let alone elimination. Parochial interests – read budget, personnel, autonomy and prestige – both in the Department of Defense (DOD) and the Department of Energy (nuclear laboratories) combined with the lack of political leadership at the highest levels (including the President) explains the current anachronistic maximum deterrent posture.

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[44] <www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered>.

[45] Speech at the Carnegie Endowment for International Peace Non-proliferation Conference 2007, 25 June 2007.

[46] Proposal by UK Defence Minister Des Browne at the UN Conference on Disarmament in Geneva on 5 Feb. 2008. See: 'UK Offers to Host Nuclear Disarmament Talks', *NTI Global Security Newswire*, 6 Feb. 2008.

[47] David Milliband, 'A World without Nuclear Weapons', *The Guardian*, 8 Dec. 2008; David Milliband, *Lifting the Nuclear Shadow: Creating the Conditions for Abolishing Nuclear Weapons* (London: UK Foreign Office Feb. 2009).

Secretary of Defense Les Aspin and Assistant Secretary of Defense Ash Carter tried to adapt US nuclear weapons policy to the changed circumstances during the Nuclear Posture Review in 1993–94, but lost the bureaucratic game inside the DOD.[48] If the nuclear weapon bureaucracies in the nuclear weapon states want to keep hanging on to their privileges, they can potentially extend this process towards nuclear elimination to a certain (but not unlimited) extent. Committed high-level attention, however, can overcome this bureaucratic battle.

Conclusion

A nuclear weapons debate is in the offing. As states like Pakistan and North Korea succeed in obtaining nuclear weapons and nuclear terrorism possibly becomes a reality, even hard-core realists like Henry Kissinger begin to look closer at the costs and benefits of nuclear deterrence. While nuclear weapons may have had a positive impact during the Cold War, the actual conditions are now completely different. To believe that the nuclear revolution is a 'deus ex machina' used to eradicate interstate wars is not credible and, indeed, is overly simplistic.

On the contrary, it seems that the success of nuclear deterrence in the past contains the seeds of its own destruction. Imitation equals proliferation. A world with 12, 15 or 20 nuclear-weapon states, many of which are in unstable regions like the Middle East, South Asia, and East Asia, is asking for trouble. At the same time, political leadership within the current nuclear weapon states continues to feel more and more constrained in its use of nuclear weapons due to the evolution of international law and the impact of norms such as the nuclear taboo. Last, but not least, by building a missile defence system, the US is tacitly admitting that nuclear deterrence is not the panacea that advocates claim it to be. Further, neither missile defence nor nuclear deterrence can prevent terrorist attacks utilizing weapons of mass destruction upon US territory.

The international community stands on the verge of a new era, one conceived as being either with more nuclear weapon states and a growing risk of nuclear terrorism, or a world in which nuclear weapons will be fundamentally de-legitimized. The choice lies in the hands of the political leaders of the nuclear weapon states. It is our estimate that they will opt for the second scenario.

Based on our typology, both the US and Russia are encouraged to go down the ladder from maximum to minimum, from minimum to existential, and from existential to post-existential deterrence. Moving from stage four (existential deterrence) to stage five (post-existential

[48]See footnote 14.

deterrence) will yield many more advantages than the steps before them. In contrast to mainstream thinking, this analysis points to the need to move relatively fast forward to stage five (post-existential deterrence). The fact that post-existential deterrence does not throw the concept of nuclear deterrence aside should make the idea attractive for those who are still not convinced of the desirability of a world without nuclear deterrence.

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