
In Defense of Deterrence

The Relevance, Morality and Cost-Effectiveness of Nuclear Weapons

In collaboration with the Atomic Energy Commission (CEA)

Bruno Tertrais

Fall 2011



Security Studies Center

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Proliferation Papers

Though it has long been a concern for security experts, proliferation has truly become an important political issue with the last decade, marked simultaneously by the nuclearization of South Asia, the weakening of international regimes and the discovery of frauds and traffics, the number and gravity of which have surprised observers and analysts alike (Iraq in 1991, Libya until 2004, North Korean and Iranian programs or the A. Q. Khan networks today).

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In 2010, he was the recipient of the Vauban Prize. He is the author, among many other publications, of *War Without End* (New-York: The New Press, 2005).

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Introduction

Since 1945, nuclear deterrence has been the target of continuous criticism on strategic, legal and moral grounds.¹ But in the past five years, the renewed debate on nuclear disarmament has been accompanied by an increase in such criticism. Efforts led by four US statesmen, or the more radical “Global Zero” movement, as well as various diplomatic initiatives, have been accompanied by a flurry of new, serious academic studies questioning the legitimacy of nuclear weapons.²

More than ever, nuclear deterrence is attacked by many, both on the “Left” and on the “Right”. To the traditional arguments related to the credibility, the legality or the morality of nuclear deterrence are now added two other factors. First, nuclear weapons, it is argued, have limited value vis-à-vis proliferation and terrorism, and such risks bolster the case for nuclear disarmament. Second, alternatives such as high-precision conventional means and missile defense are said to now be much more effective than they were in the past.

What follows is an attempt to respond to those arguments and offer a proper defense of nuclear deterrence. It is essentially devoted to the most traditional and widely used form of nuclear deterrence, that is, deterrence through the threat of nuclear retaliation (“deterrence by punishment”).

It begins with revisiting and addressing the two classic criticisms of nuclear deterrence: its validity as a war-prevention mechanism (Part One, “Nuclear Deterrence Works”), and its legality as well as morality (Part Two, “Nuclear Deterrence Is Neither Immoral Nor Illegal”). It then goes on to address criticisms which, without being entirely new, have gained in importance in recent years: first, the cost-effectiveness of nuclear deterrence, in particular vis-à-vis so-called possible alternatives such as conventional deterrence and missile defense (Part Three, “Nuclear Deterrence is Cost-Effective”); second, the validity of nuclear deterrence in

This paper expands on a study conducted for the French Ministry of Defense (Directorate for Strategic Affairs) in 2011.

¹ The author would like to thank Elbridge Colby and David Yost for their detailed comments and thoughtful suggestions on an earlier version of this paper.

² For typical academic contributions see Ward Wilson, “The Myth of Nuclear Deterrence”, *The Nonproliferation Review*, Vol. 15, No. 3, 2008; and Ken Berry *et al.*, *Delegitimizing Nuclear Weapons: Examining the validity of nuclear deterrence*, James Martin Center for Nonproliferation Studies, 2010. For a recent statement by the ICRC, see Jakob Kellenberger, “Bringing the era of nuclear weapons to an end”, Statement to the Geneva Diplomatic Corps, 20 April 2010.

the context of twenty-first century security (Part Four, “Nuclear Deterrence Remains Fully Relevant”). It concludes that maintaining and nurturing nuclear deterrence should remain a primary objective of Western governments.

Nuclear Deterrence Works

Nuclear Weapons Have Been Effective War-Prevention Tools

It is by definition impossible to prove that deterrence has worked, and correlation is not causality. But History gives us solid arguments in support of the positive role played by nuclear weapons, especially since our “database” now covers nearly 70 years.

No major power conflict has taken place in nearly 70 years – The role of nuclear deterrence to explain this historical anomaly has been highlighted by leading historians and authors such as John Lewis Gaddis, Kenneth Waltz, and Michael Quinlan.³ No comparable period of time has ever existed in the history of States. There were two dozen conflicts among major powers in the equivalent amount of time following the Treaties of Westphalia (1648), and several after the Vienna Congress (1815).⁴

*There has never been a direct military conflict between two nuclear States*⁵ – Beyond this mere observation, two recent quantitative studies have shown that the possession of nuclear weapons by two countries significantly reduced – all things equal – the likelihood of war between them.⁶ Events in Asia since 1949 provide an interesting test case. China and India fought a war in 1962, but have refrained from resorting to arms against each other ever since. There were three India-Pakistan wars (1962, 1965 and 1971) before both countries became nuclear; but since the late 1980s (when the two countries acquired a minimum nuclear capability), none of the two has launched any significant air or land operations against the other.

³ See in particular John Lewis Gaddis, *The Long Peace*, New York, Oxford University Press, 1990.

⁴ First Russian-Turkish War (1828-1829), War of Crimea (1853-1856), Austro-Prussian War (1856), French-Prussian War (1870-1871), Second Russian-Turkish War (1877-1878).

⁵ With the possible exception of the Kargil conflict, the intensity and scope were however limited. The only instance when US and Soviet forces clashed directly was the 1950-1953 Korean war, but Soviet pilots were flying under North Korean or Chinese colors.

⁶ James F. Pasley, “Chicken Pax Atomica: The Cold War Stability of Nuclear Deterrence”, *Journal of International and Area Studies*, Vol. 15, No. 2, 2008; Robert Rauchhaus, “Evaluating the Nuclear Peace Hypothesis: A Quantitative Approach”, *Journal of Conflict Resolution*, Vol. 53, No. 2, 2009.

No nuclear-armed country has ever been invaded – This proposition too can be tested by the evolution of regional crises. Israel had been invaded in 1948, on the day of its independence. But in 1973, Arab States deliberately limited their operations to disputed territories (the Sinai and the Golan Heights).⁷ It is thus incorrect to take the example of the Yom Kippur war as a “proof” of the failure of nuclear deterrence. Likewise, India refrained from penetrating Pakistani territory at the occasion of the crises of 1990, 1999, 2002 and 2008, whereas it had done so in 1965 and 1971. Another example is sometimes mistakenly counted as a failure of nuclear deterrence: the Falklands War (1982). But this was a British Dependent Territory for which nothing indicated that it was covered by nuclear deterrence. Furthermore, it would be erroneous to take these two events as evidence that extended deterrence does not make sense, as some authors have done (“if nuclear weapons cannot protect part of the national territory, how could they protect a foreign country?”⁸). Extended deterrence is meant to cover interests that are much more important to the protector than non-essential territories; for instance, during the Cold war Germany was much more “vital” to the United States than, say, Puerto Rico.

No country covered by a nuclear guarantee has ever been the target of a major State attack – Here again evidence is hard to give, but can be found *a contrario*. The United States refrained from invading Cuba in 1962, for instance, but did not hesitate in invading Grenada, Panama or Iraq. The Soviet Union invaded Hungary, Czechoslovakia and Afghanistan, but not a single US ally. China has refrained from invading Taiwan, which benefits from a US defense commitment. North Korea invaded its southern neighbor in 1950 after Washington had excluded it from its “defensive perimeter”, but has refrained from doing so since Seoul has been covered with a nuclear guarantee. Neither South Vietnam nor Kuwait were under the US nuclear umbrella. Russia could afford to invade Georgia because its country was not a NATO member. A partial exception is the shelling of Yeongpyeong island (2011); but the limited character of the attack and its location (in a maritime area not recognized by Pyongyang as being part of South Korean territory) make it hard to count it as a major failure of extended deterrence.

Alternative Explanations Are Not Satisfying

Some have suggested alternative explanations which all rest, to some extent, on the idea that international society has undergone major transformations since 1945: the development of international institutions, the progress of democracy, the rise of global trade, etc., to which is often added the memories of the Second World War. Thus for authors such as John Mueller, nuclear weapons played a marginal – non-necessary – role in the preservation of peace.⁹ The Soviet Union, it is also argued, was a

⁷ See for instance T. V. Paul, *The Tradition of Nonuse of Nuclear Weapons*, Stanford, Stanford University Press, 2009, pp. 147-148.

⁸ This seemingly commonsensical argument is put forward by Ward Wilson, *Extended Contradiction*, 14 December 2010, available at: <http://www.rethinkingnuclearweapons.org>.

⁹ See in particular John Mueller, *Retreat from Doomsday: The Obsolescence of Major War*, New York, Basic Books, 1989.

status quo power in Europe which would not have taken the risk of a major war on the continent.

But such explanations are not satisfying. The rise of international trade from 1870 onwards did not prevent the First World War: Norman Angell's "Great Illusion" was a fallacy. The construction of a new global order based on the League of Nations did not prevent the Second.¹⁰

Kenneth Waltz reminds us that "in a conventional world even forceful and tragic lessons have proved to be exceedingly difficult for states to learn".¹¹ In the same vein, Elbridge Colby holds that such cultural argumentation "markedly overestimates the durability of historically contingent value systems while seriously downplaying the enduring centrality of competition, fear, uncertainty and power".¹² Major powers have continued to use military force in deadly conflicts, especially in the two decades after 1945: "war fatigue" is a limited and rather recent phenomenon. As for democratization, it is obviously a red herring: during the Cold war, the risk of major war was between pro-Western (not all of them democratic until at least the late 1970s) and totalitarian regimes.

No one knows how a "non-nuclear cold war" would have unfolded in Europe. However, without nuclear weapons, Washington might have hesitated to guarantee the security in Europe ("no nukes, no troops"), and might have returned to isolationism; and without US protection, the temptation for Moscow to grab territory in Western Europe would have been stronger.¹³ And as Michael Quinlan puts it, in order to claim that nuclear deterrence was key in the preservation of peace, one does not need to postulate a Soviet desire for expansionist aggression: it is enough to argue that "had armed conflict not been so manifestly intolerable the ebb and flow of friction might have managed with less caution, and a slide

¹⁰ Some authors (Wilson, "The Myth of Nuclear Deterrence", *op. cit.*) claim that the Second World War offered a proof of failure of mutual deterrence, because the major contenders on the European theater possessed chemical weapons. But nobody ever pretended – nor is there any reason – that chemical weapons could preserve peace. Incidentally, this case can be partly brought to the credit of the logic of mutual deterrence. *A contrario*, Japan used them against China, which did not possess them. For a demonstration that "World War II serves as a case study of deterrence in action" (the non-use of chemical and biological weapons), see Stephen L. McFarland, "Preparing for What Never Came: Chemical and Biological Warfare in World War II", *Defense Analysis*, Vol. 2, No. 2, June 1986.

¹¹ Kenneth N. Waltz, "Nuclear Myths and Political Realities", *The American Political Science Review*, Vol. 84, No. 3, September 1990, p. 743.

¹² Elbridge A. Colby, "Why Nuclear Deterrence is Still Relevant", in Adam Lowther and Charles Costanzo (eds.), *Deterrence in the 21st Century: Enduring Questions in a Time of Rising Powers, Rogue Regimes, and Terrorism* (forthcoming). An in-between explanation is suggested by Patrick Morgan: the nuclear revolution would have been the "icing on the cake", the culmination of a delegitimization process that had begun earlier on, in particular by annihilating strategies based on the prospect of cheap victory. See Patrick M. Morgan, *Deterrence Now*, Cambridge, Cambridge University Press, 2003, p. 38.

¹³ On this, see James Schlesinger, "The Impact of Nuclear Weapons on History", *The Washington Quarterly*, Vol. 16, No. 4, Autumn 1993.

sooner or later into major war, on the pattern of 1914 or 1939, might have been less unlikely”.¹⁴

Alternative explanations might not even suffice to explain the absence of conflict among European countries: the integration process which began in 1957 and culminated with the creation of the European Union in 1991 might have been much more difficult without the US umbrella.¹⁵ Neither are they satisfying regarding regional powers. It is hard to believe that the political, economic and cultural factors mentioned above are enough to explain the absence of a major conventional war involving Israel, India or Pakistan since these countries have become nuclear powers.¹⁶

Deterrence has limited the scope and intensity of conflict among the major States. If crises in Europe, as well as wars in Asia and the Middle East, did not turn into global conflicts, it is probably due largely to nuclear weapons. The fear of nuclear war and the precautions taken by decision-makers during the Cold war to reduce the risks of direct conflict have been made clear by a collective study that contradicts Mueller's thesis.¹⁷

A former Russian official even writes:

I dare claim and am ready to prove that nuclear weapons were the greatest 'civilizing tool' for these elites. They cleansed their ranks of all radicals and ideologues, and they strengthened the pragmatists who saw their main goal in averting a nuclear war or the clashes that had the potential to escalate to a nuclear conflict.¹⁸

It is not an intellectual stretch to claim that the international stability obtained thanks to nuclear deterrence (in its national and extended forms) has been a form of global common good. For all non-nuclear weapons States benefitted from it during the past 65-plus years – even though some of them suffered from the indirect conflicts made possible by the stability-instability paradox. Without it, for instance, it is dubious that Asia would have known the peace and stability that allowed for its massive

¹⁴ Michael Quinlan, *Thinking About Nuclear Weapons: Principles, Problems, Prospects*, Oxford, Oxford University Press, 2009, p. 28.

¹⁵ Colby, "Why Nuclear Deterrence is Still Relevant", *op. cit.*

¹⁶ One possible alternative explanation for India and Pakistan is the role of US diplomacy in helping to defuse the crises of 1990, 1999 and 2001-2002 – not necessarily a key factor, but probably a significant one. However, the US involvement would not have been as strong in the absence of nuclear weapons.

¹⁷ John Lewis Gaddis *et al.* (dir.), *Cold War Statesmen Confront the Bomb: Nuclear Diplomacy since 1945*, New York, Oxford University Press, 1999. See also John G. Hines *et al.*, *Soviet Intentions 1965-1985*, McLean, The BDM Corporation, 1995.

¹⁸ Sergei Karaganov, "Nuclear Weapons in the Modern World", in Harold Brown *et al.*, *Nuclear Disarmament and Nonproliferation*, Report to the Trilateral Commission, No. 64, 2010, p. 65. Another author evokes a "taming" of the great powers: Godfried van Benthem van den Bergh, *The Taming of the Great Nuclear Powers*, Policy Outlook, Carnegie Endowment for International Peace, 2009.

transformation and development, leading to hundreds of millions of human beings being lifted out of poverty. Patrick Morgan adds that nuclear weapons may even have hastened the end of the Cold war, by giving confidence to Soviet leaders that the country's survival would be assured even after the loss of the Eastern European *glacis*.¹⁹

As a result, one can only subscribe to the wise advice given by Michael O'Hanlon regarding the current drive for the "abolition" of nuclear weapons:

Perhaps nuclear deterrence has been only a minor factor in preserving peace in the past; the issue is arguable. But policymakers need to be careful, and gradual, about how they run the experiment to test that proposition.²⁰

Nuclear Deterrence Also Contributed To the Reduction of Proliferation Risks

No nuclear-endowed country has ever been the victim of a chemical or biological attack – Here, the history of modern Middle Eastern wars is instructive. Egypt had used chemical weapons against Yemen (1962-1967), but failed to do so against Israel in 1967 and 1973. Likewise, Iraq had done the same in its war against Iran (1980-1988), but only fired conventional missiles at Israel during the First Gulf War (1991).

An Alternative Explanation for the Non-Use of WMD by Iraq in 1991?

The idea according to which Saddam Hussein was deterred from employing chemical or biological weapons for fear of nuclear reprisals is based, in particular, on US threats relayed during the Baker-Aziz meeting held in Geneva on 9 January 1991, and on the statements by Iraqi officials (Mr. Aziz, as well as generals Kamal and Al-Samarrai), recorded for a US public television investigation in 1996, as well as other statements by Mr. Aziz.²¹

Over the past few years, alternative explanations have been suggested. Three arguments have been put forward: (1) President Bush's letter included also the hypothesis of Kuwaiti oil wells being set on fire (as well as terrorism acts), but this did not deter Saddam; (2) Interrogations of the Iraqi leader revealed that he never planned or discussed the use of chemical weapons in order to retain Kuwait, and that WMD were reserved for the defense of the country's sovereignty²²; (3) It is the threat of regime change, not of nuclear weapons use, that deterred Saddam from using chemical or biological weapons.

¹⁹ Morgan, *Deterrence Now*, *op. cit.*, p. 27.

²⁰ Michael E. O'Hanlon, *A Skeptic's Case for Nuclear Disarmament*, Washington, The Brookings Institution Press, 2010, p. 74.

²¹ See George H. W. Bush, *My Life in Letters and Other Writings*, New York, Simon and Schuster, 2000, p. 500; James A. Baker III, *The Politics of Diplomacy: Revolution, War and Peace*, New York, Putnam, 1995, p. 359; R. Jeffrey Smith, "U.N. Says Iraqis Prepared Germ Weapons in Gulf War," *The Washington Post*, 26 August 1995; *Frontline: The Gulf War*, Public Broadcasting System, 9 January 1996; Interview with Tariq Aziz, Nightline, ABC-TV, 4 December 2002.

²² Saddam Hussein Talks to the FBI: Twenty Interviews and Five Conversations with "High Value Detainee #1", National Security Archive.

All these arguments can be challenged. (1) President Bush's letter did mention three scenarios. But this letter – that Mr. Aziz refused to take – was accompanied by a verbal warning, by Mr. Baker, which only concerned the use of WMD. To be sure, the Secretary of State later in his remarks mentioned the threat of regime change, but he had also sought to convey – according to his own testimony – the message that a nuclear response was possible. Furthermore, this warning had been amplified by public threats made by other members of the US administration (in particular Secretary of Defense Cheney).²³ (2) The Saddam interrogations are hardly convincing, because the Iraqi leader basically lies to his interrogators. The Iraq Survey Group later published the transcript of a meeting of the main Iraqi officials, which took place in early 1991, which leaves no doubt that Saddam had given the order to put chemical and biological weapons on alert, with Israel and Saudi Arabia as the main targets. Nothing in the conversation indicates that the only circumstances under which he would have used them would have been the takeover of Bagdad or a US use of nuclear weapons.²⁴ (3) As per the fear of regime change, it is hardly a convincing explanation, given that it did not affect Saddam Hussein's behavior ten years later, when the United States made it clear that it was going to invade Iraq if Baghdad did not comply with UN Security Council resolutions.

One cannot say for certain that US and/or Israeli nuclear deterrence prevented the use of chemical or biological weapons by Iraq. But the arguments according to which it did not play a key role remain dubious.

Security guarantees have limited the risk of nuclear proliferation – The role of nuclear security guarantees in the prevention of proliferation seems to be well-established.²⁵ In Europe, from the late 1940s through the 1960s, several countries were tempted to develop nuclear programs, and then gave up in no small part due to the US commitment to defend its NATO allies, including by nuclear means: this was the case for Norway and Germany, but also Sweden. In Asia, the US nuclear umbrella has permitted a dampening of the nuclear temptation in Japan, South Korea and Australia. Of course, the existence of a nuclear guarantee is not always “necessary” or “sufficient” to prevent a State from going nuclear (see the case of France).²⁶ Still, extended nuclear deterrence has proven to be one of the best non-proliferation measures ever devised.

²³ See William M. Arkin, “Calculated Ambiguity: Nuclear Weapons in the Gulf War”, *The Washington Quarterly*, Vol. 19, No. 4, Fall 1996.

²⁴ Central Intelligence Agency, DCI Special Adviser Report on Iraq's WMD, “Saddam's Personal Involvement in WMD Planning”, Regime Strategic Intent - Annex D, march 2005.

²⁵ See Bruno Tertrais, “Security Assurances and the Future of Proliferation”, in James J. Wirtz and Peter Lavoy, *Over the Horizon Proliferation Threats*, Stanford, Stanford University Press, 2011 (forthcoming); and *Ibid.*, Security Guarantees and Nuclear Non-Proliferation, Notes de la FRS, No. 14/11, Fondation pour la recherche stratégique, 10 August 2011.

²⁶ The point that they are neither necessary nor sufficient was made by Berry *et al.*, *Delegitimizing Nuclear Weapons*, *op. cit.*, p. 35.

City-Bombing and Nuclear Deterrence

A widely-noted recent study bases its criticism of nuclear deterrence on the grounds that city-bombing has never proven to be an effective way to win a war.²⁷ But this argument is flawed on several counts.

City-bombing can have an important strategic effect. – First, city-bombing has sometimes had an important role in conflict termination, as shown by the examples of Tehran (1985-1988) and Belgrade (1999).²⁸ It is true that strategic bombing's historical record is equivocal. But it is hard to believe that massive strikes on the cities of a contemporary modern country would not lead – provided it is not a totalitarian State – to very strong domestic pressures in favor of an early ceasefire or surrender.

City bombing is no longer the central tenet of nuclear strategies – But in any case, to argue that city-bombing is still today “at the heart” of nuclear deterrence is incorrect, as many statements backed by declassified texts have shown. The threat of massive destruction does indeed remain a possibility in most if not all nuclear doctrines. But for strategic, technological and to some extent moral reasons, targeting policies have considerably diversified. Gone are the multi-megaton city-busters. Neither can it be claimed anymore that nuclear strikes against an adversary's main political, economic and military assets would *de facto* entail the destruction of whole urban concentrations: most cities are much larger, and their buildings more resistant, than was the case in the years 1940-1960. (The amount of destruction created in Hiroshima and Nagasaki outside the blast zone was in large part due to the fact that most Japanese buildings were not fire-resistant.)²⁹

A nuclear strike would not be comparable to classical strategic bombing – It is dubious that the argument according to which populations can “get used to” and adapt to strategic bombing – a debatable assertion regarding Germany during the Second World War anyway – could apply to a series of nuclear strikes, especially since they would happen in a timeframe which would be very different from that of 1940s-like bombing. This has positive consequences for deterrence – and may be one of the most important arguments here. Nuclear weapons offer political leaders the quasi-certainty that selected targets would be destroyed in a very short timeframe; the adversary cannot bank on the fact that his population would adapt and get used to bombing, that international public opinion would demand a halt in the campaign, or that he would be able to adjust his strategy and respond.³⁰

The debate on the Japanese surrender is irrelevant for the credibility of nuclear deterrence – Some authors claim that the bombing of Hiroshima and Nagasaki was not the main cause of the Japanese surrender in August 1945.³¹ But even if this was true, it would not invalidate the credibility of nuclear deterrence. The 1945 bombings were coercion, not deterrence. The latter was borne out of the images of Hiroshima and Nagasaki, which gave nuclear weapons an aura of terror. The fear of the Bomb then became deeply ingrained through public declarations, the images of nuclear tests, and popular culture (not even taking into account that the vast majority of weapons in service today have higher yields than those of 1945). Whether or not victory against imperial Japan was due to the nuclear bombings is irrelevant.

²⁷ Wilson, “*The Myth of Nuclear Deterrence*”, *op. cit.*

²⁸ Efraim Karsh, *The Iran-Iraq War: Impact and Implications*, London, MacMillan, 1989; Stephen T. Hosmer, *The Conflict Over Kosovo: Why Milosevic Decided to Settle When He Did*, The Rand Corporation, MR-1351-AF, 2001.

²⁹ The best unclassified sources regarding the effects of nuclear weapons are US Office of Technology Assessment, *The Effects of Nuclear War*, 1979; and US Department of Defense, *Nuclear Matters*, 2011.

³⁰ See below about “conventional deterrence”.

³¹ See for instance Wilson, “*The Myth of Nuclear Deterrence*”, *op. cit.*

Nuclear Deterrence Is Neither Immoral Nor Illegal

The Ethics of Deterrence

Moral criticism of nuclear deterrence rests on a few key points, which more or less cover the elements of “just war” theory (the distinction between combatants and non-combatants, necessity, proportionality, etc.).³²

Unconvincing Arguments...

None of the five main ethical arguments traditionally made by challengers is really relevant, in particular because none of them is *inherent* to nuclear deterrence.

The deliberate targeting of populations – The credibility of nuclear deterrence does not rely on the targeting of populations *per se*: such a strategic choice – which is indeed debatable from an ethical standpoint – is not consubstantial to nuclear deterrence.³³ The argument according to which nuclear weapons “are really ideal in only one role, which is killing people en masse” is of a purely rhetorical nature.³⁴

The indiscriminate character of weapons effects – A nuclear weapon can have limited or tailored effects, or be aimed at an isolated target (or be located in a milieu without any civilian presence, such as undersea).³⁵ With low-yield weapons, collateral damage would not be superior to that of many conventional weapons.³⁶ It is factually incorrect to claim, as the Parties to the 2010 NPT Review Conference did in the Final

³² See for instance the letter of American Catholic bishops, “The Challenge of Peace: God’s Promise and Our Response”, May 1983, as well as the work of the International Committee of the Red Cross, in particular François Bugnion, “The International Committee of the Red Cross and nuclear weapons: From Hiroshima to the dawn of the 21st century”, *International Review of the Red Cross*, Vol. 87, 2005.

³³ Some may justify the deliberate bombing of populations in the name of “supreme emergency” (an expression used by Winston Churchill in 1939) in front of a totalitarian threat. See Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations*, New York, Basic Books, 2006 (new edition).

³⁴ Berry *et al.*, *Delegitimizing Nuclear Weapons*, *op. cit.*, p. 1.

³⁵ For instance, the early warning radars of Krasnoïarsk (for the Soviet Union) and Thule (for the United States), which would certainly have been prime targets in a US-Soviet nuclear war.

³⁶ Such an argument should lead to critics of nuclear deterrence calling for a reduction in weapon yields. Which they generally do not.

Document agreed at this occasion, that any use of nuclear weapons would have catastrophic humanitarian consequences.³⁷ Conversely, conventional bombing can have devastating collateral effects even if populations are not deliberately targeted.

The global consequences of a nuclear exchange – Some computer models of global or even regional conflicts do indeed show that a nuclear exchange could have a devastating impact on climate and agriculture. But the scenario of a major nuclear war is far from being the only possible one. Escalation to the extremes – a risk inherent to any military conflict – is not inevitable, though its possibility reinforces deterrence. Its probability is never zero, but it is never 100% either.³⁸

Escalation and The “Use Them Or Lose Them” Dilemma

The idea that a nuclear-armed State could be confronted to a dilemma summarized by the expression “use them or lose them” is at the heart of many escalation scenarios. The idea is that a nuclear country, if attacked, would rather use its weapons rather than take the chance of seeing them destroyed by the adversary. But it is a questionable concept. For it not to be discarded, one would have to assume that (a) either the attacking country has taken the risk of a disarming first strike, which would be suicidal when facing a State having a second-strike capability, and still extraordinarily risky when facing a State not having such capability, or (b) that the attacked country would run the risk of launching its forces on the mere grounds that it believes such forces face imminent destruction. It thus remains an extreme and implausible hypothesis.³⁹

The impossibility to bring aid to victims – Radiation around the impact point could make access to casualties difficult, but not impossible if rescuers are equipped with adequate protection. It should be recalled that in the case of an air burst – the normal scenario of nuclear planning – radioactive fallout is non-existent.⁴⁰

³⁷ 2010 Review Conference of the Parties to the Treaty on the Non-proliferation of Nuclear Weapons, Final Document, NPT/CONF.2010/50, Vol. I, p. 19. That said, the use of the plural (“nuclear weapons” instead of “a nuclear weapon”) might indicate that the drafter’s intent referred to a nuclear war, which indeed would be very likely to have catastrophic humanitarian consequences.

³⁸ See Sir Michael Quinlan, “The ethics of nuclear deterrence: a critical comment on the pastoral letter of the US catholics bishops”, *Theological Studies*, Vol. 48, 1987; Pierre Hassner, “Les enjeux éthiques de la dissuasion nucléaire: quatre débats nationaux”, in *ibid.*, *La violence et la paix. De la bombe atomique au nettoyage ethnique*, Paris, Editions Esprit, 1995; Elbridge Colby, “Keeping the Peace”, *First Things*, January 2011.

³⁹ One is reminded of the phrase attributed to Bismarck about “committing suicide for fear of death”. The author is indebted to David Yost for that point.

⁴⁰ Some claim that nuclear weapons are fundamentally non-discriminating due to the impossibility to predict winds and thus fallout. (See for instance Institute for Law and Peace (INLAP)/World Court Project, “Nuclear Weapons equal War Crimes and Crimes against Humanity”, INLAP web site, undated). This argument loses its credibility for airbursts. On the effects of nuclear weapons see sources in note 29.

The impossibility to defend against nuclear weapons – Air defenses have existed since the First World War; and today, the relative maturity of missile defense technology weakens the argument, at least for limited attacks. But more to the point, the difficulty to defend against nuclear weapons should be viewed as a strategic argument in favor of nuclear deterrence.

...Based on Questionable Intellectual Constructs

Ethical criticism of nuclear deterrence is largely based on a questionable intellectual construct: the assimilation of deterrence to mutually assured destruction, the massive and indiscriminate bombing of cities, and global thermonuclear war. This image is outdated. The scenario of a global nuclear war is no longer central to deterrence, and the least improbable nuclear conflicts (India/Pakistan, United States/China) would probably be brief and unlikely to involve hundreds of strikes.

Such an extreme and artificial image lingers even in the 1996 Advisory Opinion of the International Court of Justice (ICJ), which claims, for instance, that “the destructive power of nuclear weapons cannot be contained in either space or time”.⁴¹ This purely rhetorical statement borders on the meaningless.

But beyond that, and most importantly, such criticism is addressed to the physical employment of weapons (*ex post*), and not to deterrence *per se* (*ex ante*). In the logic of deterrence, the question of proportionality, for instance, is not as relevant as it is for use.⁴² As Kenneth Waltz reminds us, “deterrence does not depend on destroying cities. Deterrence depends on what one can do, not on what one will do”.⁴³ Of course, the argument will not convince everyone. It is often argued, for instance, that even the targeting of cities is immoral, because it means “taking populations as hostages”. But the latter expression, a favorite hyperbole of Cold war debates, is itself morally (in addition to factually) questionable. Does anyone seriously think that Western populations lived during decades in a situation akin to that of individuals held in custody by Hizbollah, the Taliban or Al-Qaida?

By contrast, deterrence, which aims at preventing major State aggression, can be considered as one of the most ethical conflict prevention devices. At the very least, it can claim the moral high ground.⁴⁴ In the name of what should it be considered immoral to prevent the materialization, for instance, of a major biological threat – the effects of

⁴¹ International Court of Justice (ICJ), Reports of Judgments, Advisory Opinions and Orders, *Legality of the Threat Or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, ICJ Reports 1996, pp. 226s, p. 243.

⁴² In the book of Genesis (4:15), God promises to Cain that he will be avenged seven times if anyone kills him. This could be seen as an early expression of a form of “extended deterrence”.

⁴³ Waltz, “Nuclear Myths and Political Realities”, *op. cit.*, p. 733.

⁴⁴ François Heisbourg, “L’avenir incertain de la dissuasion”, in *Ibid.* (ed.), *Les armes nucléaires ont-elles un avenir ?*, Paris, Odile Jacob, 2011, p. 32.

which on populations could be as extreme and indiscriminate as a massive nuclear one – by the promise of retaliation?

Deterrence and International Law

That said, is nuclear deterrence in conformity with international law? The practice of States has made it part of customary law: for several decades, most great powers have assured their security – and that of their allies – through nuclear weapons.⁴⁵ But what about use? Even though deterrence is about the threat and not the actual employment of nuclear weapons, the legal characterization of such use is not without consequence on the credibility and the political sustainability of nuclear deterrence in Western societies based on the rule of law.

Nuclear Weapons, Self-Defense and Belligerent Reprisals

Self-defense is part of natural law. Article 51 of the United Nations Charter only recognizes this principle. It specifies that nothing in the Charter should impair this inherent right.

Traditional criteria for self-defense include necessity and proportionality.

The necessity condition – If faced with a major aggression – whatever the means employed by the adversary – the defending party might have no option other than to employ nuclear weapons to stop it, especially if he is the weaker party from a military standpoint. The necessity condition can thus be fulfilled. If its survival was at stake, international law should not prevent a State from defending itself with nuclear weapons: this is what an ICJ judge has called the “*absolute defense*” [*excuse absolutoire*].⁴⁶ The “Responsibility to Protect” (the principle according to which any UN member has the responsibility to protect its own population) could be used to support the concept of nuclear deterrence.⁴⁷

The proportionality condition – This is traditionally understood in two different ways. As a general rule, it means that force must be limited to what is necessary to repel aggression.⁴⁸ Here an example could be that of the Second World War. The scope of the means employed to vanquish Nazism, fascism and Japanese imperialism was considerable. But should

⁴⁵ At the extreme, one could claim that, in this regard, proliferation has reinforced the legitimacy of nuclear deterrence.

⁴⁶ ICJ, *Legality of the Threat Or Use of Nuclear Weapons*, Separate Opinion of Judge Guillaume, p. 290.

⁴⁷ *UN Security Council Resolution 1674*, 2006, reaffirmed a principle adopted at the UN Summit of 2005 according to which “Each individual State has the responsibility to protect its populations from genocide, war crimes, ethnic cleansing and crimes against humanity. This responsibility entails the prevention of such crimes, including their incitement, through appropriate and necessary means”. The author is indebted to Ariel Levite for the suggestion.

⁴⁸ ICJ, Reports of Judgments, Advisory Opinions and Orders, *Case Concerning the Military and Paramilitary Activities In And Against Nicaragua (Nicaragua v. United States)*, 27 June 1986, ICJ Reports 1986, pp. 112s.

that lead one to conclude that the proportionality condition was not fulfilled?⁴⁹ Nothing says that “unacceptable damage” would necessarily be “disproportionate” in comparison with the stakes of the conflict: by definition, such stakes would be major if not extreme.⁵⁰

Separately, Additional Protocol I to the 1949 Geneva Conventions (see below) suggests that collateral damage should not be excessive with regard to the expected military advantage. It is true that in most circumstances, a nuclear strike would cause important or even massive collateral damage – just like any other type of massive bombing. On this point, the argument is the same: it cannot be claimed that collateral damage would necessarily be superior to the expected benefit.

The proportionality condition can thus also be met.⁵¹ In fact, the problem of proportionality appears to be no more (though no less) acute for nuclear weapons than it is for conventional ones.

One should also note that, as pointed out by the ICJ, the United Nations Charter says nothing about the fact that self-defense can only justify necessary and proportionate measures.⁵²

In addition, international law recognizes that “belligerent reprisals” can be legal. This refers to responding to an illicit act by another illicit act in order to force the aggressor to desist, for instance. The conditions for belligerent reprisals are partly identical to those of self-defense.⁵³ (There is, however, a debate regarding how proportionality should be applied in such a case. Furthermore, belligerent reprisals should be an act of last resort.⁵⁴

⁴⁹ This does not change the fact that the deliberate bombing of civilian populations in World War Two may have been excessive in comparison with the gains achieved.

⁵⁰ The nature of the adversary and its goals would also enter into account. As Michael Quinlan puts it, “Where exactly, along the vast spectrum between a hundred and a hundred million, the crossover point between proportionate and disproportionate would fall would be a difficult assessment, requiring judgment which would vary widely with circumstances, such as the nature and record of the aggressor”. Quinlan, “*The Ethics of Nuclear Deterrence*”, *op. cit.*, p. 19. Of course, if one accepts, as they said during the Cold war, that it is “better to be red than to be dead”, in other words if one assigns a higher price to values other than freedom and the autonomy of the threatened State, the judgment becomes different. On this debate see Hassner, “Les enjeux éthiques de la dissuasion nucléaire: quatre débats nationaux”, *op. cit.* It should be added that one can be “red and (virtually) dead”: in a totalitarian society, physical risks can be extreme.

⁵¹ See the US and UK written statements to the ICJ, June 1995.

⁵² ICJ, *Etats-Unis v. Nicaragua*, *op. cit.*,

⁵³ Stefan Glaser, *L'arme nucléaire à la lumière du droit international*, Paris, Pedone, 1964, pp. 53-56.

⁵⁴ Andrew D. Mitchell, “Does One Illegality Merit Another? The Law of Belligerent Reprisals in International Law”, *Military Law*, Vol. 70, 2001.

This concept could be applied to a nuclear response to a WMD strike by a non-nuclear State, despite negative security assurances.⁵⁵

Nuclear Weapons and International Humanitarian Law

Additional Protocol I (1977) to the Geneva Conventions (1949) is today the central element of international humanitarian law.⁵⁶ It prohibits the use of means of a nature to cause superfluous injury or unnecessary suffering, or long-term, widespread and severe damage to the natural environment (Article 35), and develops the distinction between armed forces and civilians, with as a consequence the need to target only the former (Articles 48 to 58).

Again, this does not condemn nuclear deterrence strategy *per se*.

Traditional targeting includes only airbursts (primarily for efficiency reasons: it is the best way to ensure that the maximum amount of kinetic energy will be directed at the target). Planners can easily calculate the minimum height that is needed to avoid radioactive fallout. Contrary to chemical, biological or radiological weapons (and with the exception of enhanced radiation weapons), the primary effects of nuclear weapons are blast and heat – which together amount to about 85% of the total delivered energy – not radiation.

Regarding the targeting of populations, counter-arguments have already been developed above. It should be added that the United States, following the adoption of Additional Protocol I (to which it is not a party), announced that it does not target populations *per se*. Regarding collateral damage, Additional Protocol I only forbids excessive damage with regard to the expected military advantage. But again, a nuclear crisis would by definition involve vital stakes.

Finally, it should be recalled that in any case, nuclear powers which subscribed to Additional Protocol I did so only with the caveat that it does not apply to nuclear weapons (which in any case was clear from the negotiators' intent).⁵⁷

The Final document adopted at the 2010 NPT Review Conference reaffirmed the necessity for all States to comply at all times with international humanitarian law.⁵⁸ This means that the Parties implicitly

⁵⁵ It should be recalled that reservations and interpretative declarations expressed in relation to the ratification of the protocols to the treaties establishing nuclear-weapon-free zones have not been met with objections from the parties.

⁵⁶ *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I)*, 8 June 1977.

⁵⁷ The Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law (1974-1977), which gave birth to the Protocol, had excluded from its deliberations the question of the legality of nuclear weapons.

⁵⁸ *2010 Review Conference of the Parties to the Treaty on the Non-proliferation of Nuclear Weapons*, Final Document, NPT/CONF.2010/50, Vol. I, p. 19.

agreed that the use of nuclear weapons was not in itself contrary to international law.

The ICJ Advisory Opinion

On this legal dimension, the advisory opinion (emphasize: advisory; this was not a ruling) given on 8 July 1996 by the International Court of Justice should be read very carefully. The Court (a) refused to take a position on “the practice known as the ‘policy of deterrence’”, (b) refrained from stating that the use of nuclear weapons would be in all circumstances contrary to the requirements of international humanitarian law (it uses the expression “scarcely reconcilable”, not exactly a damning indictment), and (c) as is well known, was unable to determine that the use or threat of use of nuclear weapons would be illicit in extreme circumstances of self-defense, when the very survival of the State would be at stake.⁵⁹

It can thus be argued that far from delegitimizing nuclear deterrence, the Court’s advisory opinion in fact rehabilitated it.

So far, this study has addressed the most classic objections to nuclear deterrence, as they have developed since 1945. In recent years, however, criticism of nuclear deterrence tends to focus as much if not more on its cost-effectiveness: nuclear weapons may be useful indeed (as well as legal and perhaps moral), but the costs of their continued existence, it is argued, now outweigh its benefits, especially since the relevance of nuclear deterrence in the twenty-first century security environment is not as assured as it used to be. We now turn to these objections.

⁵⁹ ICJ, *Legality of the Threat Or Use of Nuclear Weapons*, *op. cit.*

Nuclear Deterrence Is Cost Effective

The Costs of Deterrence Remain Acceptable

Of course, the benefits of nuclear deterrence have to be measured in relation to its actual or potential costs.

Some authors have claimed that crises and low-intensity conflicts have multiplied due to the existence of nuclear deterrence. What has been called the “stability-instability paradox” by Glenn Snyder is a reality. But the number of international conflicts had slowly been declining since 1945.⁶⁰ And – leaving Korea and Vietnam aside if one was to claim that such wars were by-products of nuclear deterrence – was not that a relatively small price to pay for the prevention of major power conflict?

It is not incorrect to state that the possession of nuclear weapons may encourage proliferation: for instance, Pakistan became nuclear mostly because India did; the Indian program was largely motivated by that of China; Beijing wanted nuclear weapons because Washington and Moscow did, etc. But apart from the fact that the number of actual nuclear countries has always remained rather low, the history of nuclear programs – in particular those of the past 20 years – shows that conventional superiority is a much greater incentive to pursue nuclear weapons. Thus paradoxically a world in which Western countries would not have nuclear weapons anymore might be – if disarmament had not been accompanied by much stricter international controls – a world in which proliferation might have much stronger chances to develop.

Another potential cost of nuclear deterrence is the risk of miscalculation or accident. The risk of accidental nuclear war was the subject of numerous reflections and studies during the Cold war. More recently, a school of thought embodied by the works of Scott Sagan and Bruce Blair has put the emphasis on the risks inherent to complex systems and organizations such as those which manage nuclear weapons.⁶¹

⁶⁰ On average (based on Uppsala Data Conflict Project numbers), from 6,5 per decade in the 1950s to about 1 in the 2000s.

⁶¹ See in particular Scott Sagan, *The Limits of Safety. Organizations, Accidents, and Nuclear Weapons*, Princeton, Princeton University Press, 1993.

Finally, as recalled above, one of the motivations for the “abolition” of nuclear weapons is the risk of nuclear terrorism.

It remains a fact, however, that no nuclear explosion has taken place in nearly 70 years (other than nuclear tests), and that, for what is publicly known, there not been either an accidental or unauthorized launch, a weapon stolen, or a serious weapon accident. The procedures that guarantee safety and security were simple if not rudimentary during the Cold war, but they are much more robust and effective today in Western countries, and for what is publicly known, rather elaborate in most other nuclear-armed countries. No system is infallible, and there may very well be one day a major nuclear incident; but the probability that such an incident would lead to the actual detonation of a nuclear weapon seems to be vanishingly small. Likewise, the probability of nuclear terrorism seems to be vastly exaggerated.⁶²

As far as deterrence itself is concerned, it would be wrong to calculate its inherent risks as one does for complex technological systems: it primarily rests on human reasoning – which itself is far from being infallible, but as Robert Jervis says, it does not take a lot of rationality for deterrence to work.⁶³

To claim that “we have been lucky so far”, as have many analysts and politicians – from Robert McNamara to the Gang of Four – is either metaphorical or unverifiable. By contrast, as explained below, statistical studies have shown that the possession of nuclear weapons significantly reduced the probability of war among two countries. Kenneth Waltz does not exaggerate when he claims that “the probability of major war among states having nuclear weapons approaches zero”.⁶⁴

Nuclear pessimism has a long lineage of authors who have been proven wrong. In 1960, C. P. Snow wrote that if a dozen new countries were to build nuclear weapons, the risk of a nuclear explosion in the next decade would be a “mathematical certainty”.⁶⁵ In 1973, Fred Iklé, one of the most brilliant American minds of the Cold war, who could not see any other explanation for non-use than mere luck, predicted that nuclear deterrence would probably fail before the end of the 20th century.⁶⁶ There is no reason to take seriously the allegedly scientific previsions made over the past few years, such as that of Martin Hellman (1% risk of failure per year) or that

⁶² On this point, John Mueller has it right: see *Atomic Obsession: Nuclear Alarmism from Hiroshima to Al Qaeda*, New York, Oxford University Press, 2009. It should be recalled that even if nuclear weapons did not exist, the risk of nuclear terrorism would still technically be present (through the theft of highly enriched uranium produced for reactors).

⁶³ Robert Jervis, “Deterrence Theory Revisited”, *World Politics*, Vol. 31, No. 2, January 1979.

⁶⁴ Waltz, “Nuclear Myths and Political Realities”, *op. cit.*, p. 740.

⁶⁵ C. P. Snow, “The Moral Un-Neutrality of Science”, *Science*, Vol. 133, No. 3448, 27 January 1961, pp. 255-262.

⁶⁶ Fred C. Iklé, “Can Nuclear Deterrence Last Out the Century?”, *Foreign Affairs*, Vol. 51, No. 2, January 1973, pp. 267-285.

made – with less intellectual pomp – by the Scientific American magazine (one chance out of 30 for the current decade).⁶⁷

The risk of nuclear escalation – The risk of escalation has to exist if deterrence is to be operative. But if one sets aside the Cuban Missile Crisis (1962) for the Soviet Union and perhaps, to some extent, the Yom Kippur War (1973) for Israel, there does not seem to be any example when nuclear weapons have been really “close” to being employed: neither in Korea (1950), nor at Dien-Bien-Phu (1954), nor in the Formosa Straits (1954-1955 and 1957-1958); neither during the second Berlin crisis (1961), nor during the battle of Khe Sanh (1968), the Ussuri River crisis (1969), the US/North Korea tensions (1969), the “madman” nuclear alert (1969)⁶⁸ or the South Asia war (1971). Likewise for the Able Archer incident (1983), the Gulf War (1991), or the South Asian crises of 1990 1999 and 2002.⁶⁹ To envision the possible use of nuclear weapons, discuss it with one’s advisers, seriously consider it if the crisis was to worsen, possibly make it known publicly (and/or put forces on a higher state of alert), have it planned by military staffs is one thing. To have “the finger on the button” and be on the verge of ordering a nuclear strike is quite another. We will never know if nuclear weapons would have been used if one of these crises had further escalated. But they showed that with very few exceptions, the highest political authorities – of various types of regimes and personality – have been extraordinarily prudent regarding their use.⁷⁰ Most exercises and wargames showed that possessors of nuclear weapons were extraordinarily reluctant to engage in massive nuclear strikes.⁷¹ George Quester, one of the most subtle American analysts of deterrence theory, considers, for instance – after a rigorous analysis of the early days of the Cold war – that ethical motivations were paramount to explain the absence of any US nuclear use when it was in a situation of monopoly.⁷² Hence the idea of a “nuclear taboo” proposed by Nina Tannenwald for the United

⁶⁷ Martin E. Hellman, “Risk Analysis of Nuclear Deterrence”, *The Bent of Tau Beta Pi*, Fall 2008; John Matson and John Pavlus, “Laying Odds on the Apocalypse”, *Scientific American*, Vol. 303, September 2010.

⁶⁸ The “madman” nuclear alert was a decision made by Nixon in October 1969 to increase the level of military readiness of US forces around the world in order to convince the Soviets and the North Vietnamese that he might be ready to use nuclear weapons to win the Vietnam War.

⁶⁹ A valid argument, however, is that there is a “learning period” between two adversaries (the United States and the Soviet Union until 1962, India and Pakistan until 2002), during which crises can be dangerous. This is one reason, among others, why it is difficult to support Waltz’s arguments in favor of nuclear proliferation.

⁷⁰ Henry Kissinger recently claimed: “I can’t even think of a single occasion when we took measures that were moving consciously toward nuclear war”. “Address by Henry A. Kissinger”, in George P. Shultz *et al.* (dir.), *Deterrence: Its Past and Future*, Stanford, Hoover University Press, 2011, p. 66. The author added during a seminar held in London in May 2011: “At DEFCON-3, you are still far from DEFCON-1”.

⁷¹ This was true even on the Soviet side. See L. Douglas Keeny, *15 Minutes: General Curtis LeMay and the Countdown to Nuclear Annihilation*, New York, St. Martin’s Press, 2011, p. 177.

⁷² George H. Quester, *Nuclear Monopoly*, Piscataway, Transaction Publishers, 2000.

States or that of a “tradition of non-use” suggested by T. V. Paul for nuclear-armed countries in general.⁷³ It is not an exaggeration to claim that the nuclear terror message conveyed by popular culture (novels, movies, cartoons, documentaries, photographs...) played a role in the consolidation of this taboo.⁷⁴

The risk of inadvertent nuclear war – As for the risk of “inadvertent” nuclear war (a deliberate nuclear strike because of a false alarm), this is hardly a credible scenario. Multiple false alarms took place during the Cold war. But contrary to what some journalists and novelists may believe, there is no reason to think that a US or Russian president has ever been close to launching nuclear weapons due to a mere alert. One example frequently cited – which ranks high in the mythology of nuclear disarmament activists – is that of the 1995 Norwegian sounding rocket launch; the Russian early warning system, at that time in very poor condition, had signaled that it might be a missile.⁷⁵ President Yeltsin had been summoned, and the *Cheget* (the nuclear “briefcase”) had reportedly been presented to him. It is possible and even likely that Russia has a “launch-on-warning” posture. But can one seriously believe that Moscow would have launched a nuclear attack (against whom?) just because an unknown object had been launched from Norway, and even before it was ascertained whether the object was going to reach Russian territory (which was not the case)? As for the Cold war false alarms – there were several in the United States in the 1980s, including because of software glitches – they never led a US President to envision a nuclear strike. In the United States, an alert regarding a possible nuclear attack has to be confirmed by two different types of sensors (dual phenomenology); a threat assessment conference then would decide if political authorities should be contacted.

The risk of accidental or unauthorized use – Likewise, the risk of an “accidental” (non-deliberate) or “unauthorized” strike is considerably exaggerated by disarmament activists. In most if not all countries, to be launched, nuclear forces have to receive a series of complex instructions with multiple verifications. As recalled by the commander of USSTRATCOM, General Chilton, US missiles are not on a “hair-trigger alert” posture: they are “in the holster”.⁷⁶ The nuclear forces of the five NPT-recognized Nuclear-Weapon States have been detargeted, and Asian nuclear warheads are reportedly separated from their launchers. Such procedures have been devised partly so that catastrophist fiction scenarios – which were, it should be said, much more credible until at least the 1960s

⁷³ Nina Tannenwald, *The Nuclear Taboo: The United States and the Nonuse of Nuclear Weapons since 1945*, Cambridge, Cambridge University Press, 2007; T. V. Paul, *The Tradition of Nonuse of Nuclear Weapons*, *op. cit.*

⁷⁴ It is tempting to argue that the status that nuclear weapons sometimes have as a “totem” of national identity – in France in the past, in Russia, India and Pakistan today, in Iran tomorrow perhaps – may contribute to the preservation of the “taboo” on their use by States which possess them.

⁷⁵ As is well-known, there exists an international notification procedure for space launches or missile tests. Norway had complied with it, but it seems that the Russian Foreign Ministry had lost track of or had not forwarded the notification.

⁷⁶ Elaine M. Grossman, “Top US General Spurns Obama Pledge to Reduce Nuclear Alert Posture”, NTI Global Security Newswire, 27 January 2009.

– could not materialize. Serious incidents regarding the custody of nuclear forces have been reported, but none that ever posed the gravest risk. An American author has interestingly suggested that since 1945, the tens of thousands of persons that have had the charge, at one level or another, of nuclear weapons “must have taken much greater care than is taken in any other situation involving human agents and complex mechanical systems”.⁷⁷

Alternatives to Nuclear Deterrence Are Not Credible

Furthermore, costs and risks associated with nuclear deterrence have to be measured in comparison with possible alternatives. But alleged possible substitutes lack credibility.⁷⁸

Conventional Weapons Are No Substitute

As is well-known, conventional deterrence has a long record of failure – in fact, as long as civilization itself. As former UK Prime Minister Margaret Thatcher once reportedly said, there is a monument to its failures in every French village.⁷⁹

The *threat* of conventional bombing is not enough to make an adversary desist when the stakes are extreme or vital: even when they are more limited, the crises of the past 20 years – Iraq in 1991, Serbia in 1999, Afghanistan in 2001, Iraq again in 2003 – have shown that it does not always lead adversaries to change their strategic calculus.

The reasons are well-known. Besides the intrinsically frightening character of nuclear weapons, due to radioactivity, these weapons have important specific characteristics.

Let us start with the technical ones. There is still today a large difference – at least an order of magnitude – between conventional and nuclear yields. According to open literature, the smallest known nuclear weapons yields are measured in hundreds of tons of equivalent-TNT (300 tons for the lowest yield of the US B-61 bomb), whereas the most powerful conventional bombs, which were tested during the past decade, are measured at the maximum in tens of tons of equivalent-TNT (a little over 10 tons for the US Massive Ordnance Air Blast, perhaps twice for the

⁷⁷ Theodore Caplow, *Armageddon Postponed: A Different View of Nuclear Weapons*, Lanham, Hamilton Books, 2010, p. 38.

⁷⁸ Only “passive” prevention instruments are discussed here: the preventive or preemptive uses of force are not examined, nor is the possibility of employing nuclear weapons in a “war-fighting” role.

⁷⁹ No source was found for this alleged statement, which was reportedly pronounced at a NATO Heads of States and Governments summit (possibly in 1990) but may also be apocryphal.

equivalent Russian device).⁸⁰ For this reason, conventional weapons cost much more for an equivalent effect.⁸¹ Going back to conventional deterrence, even assuming that such deterrence was credible for the defense of vital interests, would be a return to the logic of big battalions. It is far from certain that Western countries – with the possible exception of the United States – would have the means or the political will for the arms races that would probably follow.⁸² This difference in yields is particularly relevant when one attempts to maintain a second-strike capability: other things being equal, an SSBN fleet endowed with conventional missiles would be extraordinarily costly.⁸³

Even more than its nuclear counterpart, conventional strategy relies on the threat of targeted strikes on key assets and centers of gravity. Such a logic places extraordinary demands on intelligence and C3.⁸⁴ The amount of energy expended by nuclear weapons makes them “forgiving” (less demanding in these respects).

Conventional means today still cannot credibly threaten two particular categories of targets.⁸⁵ The most important one consists of hardened targets. Just to give a recent example: in 1999, NATO failed to disable Pristina’s military airport.⁸⁶ As the former director of a US nuclear lab reminds us, “some targets are simply too hard to be destroyed by anything less than a nuclear explosion”.⁸⁷ Another category is deeply buried targets. In order to neutralize a buried installation (by coupling effect), a conventional weapon would need to penetrate much more deeply than a

⁸⁰ The United States had in the 1960s weapons of a much smaller yield, the Davy Crockett and SADM warheads reportedly had yields of 10-15 tons of equivalent TNT.

⁸¹ The most comprehensive and credible evaluations of the annual cost of US nuclear deterrence give a total of about 25 billion dollars (thus the equivalent of about one-thirtieth of the Pentagon’s budget). O’Hanlon, *A Skeptic’s Case for Nuclear Disarmament*, *op. cit.*, p. 64.

⁸² In addition, it should be recalled that the US Congress has been consistently reluctant to fund conventionally-armed long-range ballistic missiles, on the grounds, in particular, of the possible confusion in an adversary’s mind about the nature of the response. Today (May 2011), the US Air Force envisions hypersonic vehicles to fulfill the requirements of the Prompt Global Strike Concept.

⁸³ The alternative would be to base strategic stability on other instruments. But which ones? See Elbridge Colby, “The Substitution Fallacy: Why the United States Cannot Fully Substitute Conventional for Nuclear Weapons”, *New Paradigms Forum*, 24 December 2010.

⁸⁴ See Dennis M. Gormley, “The Path to Deep Nuclear Reductions. Dealing with American Conventional Superiority”, *Proliferation Papers*, no. 29, Fall 2009, Institut français des relations internationales, p. 18.

⁸⁵ To this list can be added mobile targets, although they can raise significant intelligence challenges even for nuclear weapons. (In addition, conventional strikes are much better effective today against such targets, see *Ibid.* p. 23.)

⁸⁶ Tim Ripley, “Kosovo: A Bomb Damage Assessment”, *Jane’s Intelligence Review*, September 1999.

⁸⁷ Stephen M. Younger, *The Bomb. A New History*, New York, Harper Collins, 2009, p. 122.

nuclear one, and in many cases much beyond what is feasible today.⁸⁸ Of course, using nuclear weapons to destroy such installations would pose a well-known problem: fallout could be massive in case of shallow penetration, which could make a political leader hesitate. But let us recall once again that this is about deterrence, not use (the challenge being to persuade the opposing leader that we would not be self-deterred by such a prospect).⁸⁹

The other essential characteristics of nuclear weapons are political. A massive and sustained bombing campaign could, in many scenarios, have a physical effect equivalent to several nuclear weapons. However, as stated above, it is far from obvious that Western public opinion would bear the conduct of such a prolonged campaign, the unfolding of which would be visible 24/7 on television and the Internet. As was seen on several occasions recently – Kosovo, Afghanistan, Iraq, Southern Lebanon, Gaza, Libya... – the media and publics get impatient very quickly, demand fast results and are shocked by collateral damage and targeting errors. (In a major war, domestic sensitivity to collateral damage inflicted to the adversary's population would certainly be limited. But this would play out at the global level, potentially affecting the political context of the war.)⁹⁰ And that is without taking into account possible asymmetrical reprisals (terrorism, cyber-attacks...) which could be conducted by an adversary.

A conflict can be winnable in theory, but not in practice; and even in situations of obvious conventional superiority, the outcome is never guaranteed.⁹¹ As stated by Kenneth Waltz, “so complex is the fighting of wars with conventional weapons that their outcomes have been extremely difficult to predict”.⁹² Once again, other things being equal, nuclear weapons give the political authorities the quasi-certainty of massive but targeted destruction.

Could the threat of a massive “regime change” operation be enough to make an adverse leader think twice about major aggression or the use of WMDs? This is unlikely. The difficulties of the US-led coalition in Iraq have probably devalued the threat of regime change for at least a generation.

These two specific features of nuclear weapons have clear deterrence benefits.

⁸⁸ See Christopher Ford, “Conventional ‘Replacement’ of Nuclear Weapons”, New Paradigms Forum, 19 December 2010; and Elbridge A. Colby, “Why We Should Study Developing Nuclear Earth Penetrators - And Why They Are Actually Stabilizing”, Foreign Policy Research Institute, May 2011.

⁸⁹ Conversations with foreign visitors have revealed that North Korea was apparently preoccupied with US penetrating weapons systems programs in the 2000s (the B61-11 bomb, the Robust Nuclear Earth Penetrator project).

⁹⁰ This is partly a self-sustaining process: public outcry leads to more restrictive rules of engagement, which often lengthens the duration of operations.

⁹¹ See O’Hanlon, *A Sceptic’s Case for Nuclear Disarmament*, *op. cit.*, pp. 65-67.

⁹² Waltz, “Nuclear Myths and Political Realities”, *op. cit.*, p. 734.

It is unlikely that technological evolutions on the horizon will make this argumentation obsolete.⁹³ Peacetime Western superiority is global, not necessarily local. Conventional forces remain “time-consuming to mobilize and deploy, and their use often leads to protracted and bloody wars”.⁹⁴ From a technical standpoint, Elbridge Colby compares the substitution of nuclear weapons by conventional ones to an asymptote curve: to threaten the kinds of targets mentioned above, the difficulties become exponential.⁹⁵ Future long-range precision strike weapons will not alter this. In 2004, a Defense Science Board task force concluded that the United States would not have, by 2030, an intelligence, surveillance and reconnaissance architecture commensurate with the ambitions of the Prompt Global Strike program.⁹⁶ It is for these reasons that, from the point of view of the commander of USSTRATCOM, such means cannot replace nuclear weapons even by “ten-for-one”.⁹⁷

Neither Is Missile Defense

Many arguments opposed to the idea of conventional weapons as substitutes for nuclear ones can also be applied to missile defense.

Missile defense can play many useful roles. It reinforces the freedom of action of political leaders, acts as a “deterrent by denial”, covers cases where nuclear deterrence does not apply, and can be a damage limitation instrument. But deterrence by denial can never be as powerful as deterrence by retaliation: from the aggressor’s point of view, the potential costs of the former are nothing compared with those of the latter. And the damage limitation role of missile defense cannot be applied today to massive threats – nor will it be in the foreseeable future. The cost-effectiveness of missile defense remains questionable. The United States spent some 140 billion dollars over the past 30 years on missile defense, and continues to spend about 10 billion a year.⁹⁸ In concrete terms, this investment has given it, as of the Summer of 2011, 30 Ground-Based Interceptors (an ability to intercept no more than 15 relatively primitive ICBMs), as well as some 60 SM-3 and 30 THAAD interceptors. It is clear that even if it were desirable, the complete protection of such a large territory as the United States by non-nuclear means would remain out of reach.

⁹³ O’Hanlon, *A Skeptic’s Case for Nuclear Disarmament*, *op. cit.*, pp. 68-70. This could however be the case for deep penetration; see Gormley, “The Path to Deep Nuclear Reductions”, *op. cit.*, pp. 20-21.

⁹⁴ O’Hanlon, *A Skeptic’s Case for Nuclear Disarmament*, *op. cit.*, p. 72.

⁹⁵ Colby, “*The Substitution Fallacy*”, *op. cit.*

⁹⁶ US Department of Defense, Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics, *Report of the Defense Science Board Task Force on Future Strategic Task Forces*, February 2004.

⁹⁷ General Chilton in Hearing to receive testimony on the Nuclear Posture Review, US Senate, Committee on Armed Services, 22 April 2010, p. 25.

⁹⁸ The cost of missile defense since 1985 has been estimated at 144 billion dollars in appropriations to the Missile Defense Agency and its predecessors (Congressional Budget Office, *Options for Deploying Missile Defenses in Europe*, February 2009, p. 6). The Department of Defense’s budget proposal for the fiscal year 2012 allocates 10.7 billion dollars to ballistic missile defense programs.

Finally, even assuming the total coverage of one's territory by defensive modes (anti-aircraft, anti-ballistic- and cruise missiles) in front of a major threat, something that today can only be achieved at a reasonable cost for very small territories such as Israel's, such defenses would not take into account non-traditional modes of employment of nuclear weapons such as terrorism

Nuclear Deterrence Remains Fully Relevant

The Continued Usefulness of Nuclear Deterrence

Even admitting that nuclear deterrence was effective when we faced a major threat, could it still be as useful in today's strategic context?

The fact that most threats are now more limited does not mean that nuclear deterrence is irrelevant. Vital interests may be threatened in a more limited fashion than was the case during the Cold war. In the sense of nuclear deterrence, "vital" is broader than "survival".

Without nuclear deterrence, Western powers would be much more reluctant to intervene against a nuclear-armed adversary to defend their political or strategic interests, or even to protect populations: imagine for instance that Libya had completed its nuclear program: would NATO have intervened to prevent a carnage in Benghazi without the insurance that they would be protected against Libyan nuclear coercion or blackmail? Of course, it is far from being certain that the Alliance would have intervened if Libya had had nuclear weapons (some member States would certainly have opposed a NATO operation); but the point here is that the possession of nuclear weapons as a "counter-deterrent" reinforces the chances of intervention to defend strategic or humanitarian goals.

As for deterrence vis-à-vis major powers, a word of caution is in order. Even those who claim that the possibility of a new major threat in the coming two decades is close to nil have to admit that today's partners can become tomorrow's enemies in much less time than that. (Libya is, to some extent, a case in point.)

The potential adversaries of Western countries may have value systems different from ours, and exercising credible deterrence vis-à-vis them would not be easy. But there is no reason to believe that they are "irrational". Iraq, Iran, Pakistan, North Korea and China have shown that they perfectly understood the logic of deterrence through the threat of retaliation.

Most of the regimes that are possible objects of Western nuclear deterrence (Iran, China, North Korea...) have shown throughout their history that they could, just as the Soviet Union had during the Second World War, bear a very high number of civilian casualties during a conflict.

In dealing with such regimes, threatening centers of power is not only a moral choice: it is also a rational one.⁹⁹

Regarding the chemical or biological threat that may be posed by regional powers, the experience of the First Gulf War (cf. supra.) seems to validate the idea that nuclear deterrence can play a useful role.¹⁰⁰ Several countries, including France, the United States and India, explicitly consider that a biological attack, in particular, would entail the risk of nuclear retaliation. (Michael O'Hanlon has a point when he claims that such a response "might possibly be done in a more humane way than the biological attack"¹⁰¹)

Nuclear weapons also play a residual role to prevent a State from using terrorist means to attack vital interests (such as, precisely, an act of nuclear terrorism). Such a role has been publicly stated by the United States, France and the United Kingdom.

Finally, the nuclear horizon continues to affect the relationships among great powers. It prevents crises among them from becoming direct military conflicts. Russia would probably not have invaded Georgia had this country been covered by a nuclear guarantee, and conversely might have advanced to Tbilisi – instead of acting mostly in the disputed territories of Abkhazia and Southern Ossetia – in the absence of any US reaction. Washington, for its part, might have been tempted to undertake a stronger military reaction had Russia not been a nuclear power.

It is sometimes said that public opinion would not accept the use of nuclear weapons and that Western leaders would be under immense pressure during a major crisis to avoid using them – to the point that they would be self-deterred. The argument is not without merits, but it meets three objections. First, one should not underestimate the reactions of Western publics to a mass attack – witness Pearl Harbor or 9/11. Second, a nuclear response could be executed in a very short amount of time, and thus once decided would not be subject to public pressure, in contrast with a conventional bombing campaign. Third, what Western analysts believe ultimately does not matter: what matters, of course, is what the adversary believes (though he may believe that "we would not dare").¹⁰²

⁹⁹ A nuclear strike against an adversary's "centers of power" would be anything but "surgical". The assured destruction of a country's political, economic and military centers of power would involve the simultaneous use of a significant number of nuclear weapons (possibly including some of a fairly high yield to deal with hardened targets). In the case of a major power, this would probably mean hundreds of weapons on target. In most scenarios, there would be significant if not massive damage to populations.

¹⁰⁰ It can be argued that the role of nuclear weapons to deter non-nuclear threats is legitimized by the language of Article VI of the Non-Proliferation Treaty, which links nuclear disarmament to general and complete disarmament.

¹⁰¹ O'Hanlon, *A Skeptic's Case for Nuclear Disarmament*, *op. cit.*, p. 61.

¹⁰² An adversary's beliefs could be partially shaped by Western commentators' opinions; but this is beyond the scope of this analysis.

Finally, extended deterrence remains fully relevant to limit proliferation risks: the demand for security guarantees is as strong in North-East Asia, and stronger in the Middle East, than it was during the Cold war.

The Enduring Legitimacy of Nuclear Deterrence

But one could also claim that the very legitimacy of nuclear deterrence has been bolstered in the past 20 years – or, at the very least, that the evolutions of the political and strategic context have not delegitimized it.

From the point of view of customary law, the legality of the possession of nuclear weapons can be said to have been confirmed by the unanimous extension for an indefinite duration of the NPT (1995), by the vote of resolution 984 (1995) of the UN Security Council on security assurances, and by the conclusion of several new treaties establishing nuclear-weapon-free-zones, with protocols to be ratified by the Nuclear Weapons States.

The fact that all the new nuclear-armed nations have adopted – at least rhetorically – doctrines of deterrence, and the continuation of nuclear restraint (the absence of any operational use) have reinforced the taboo or tradition of non-use which exists regarding nuclear weapons.

An acute regional nuclear crisis would certainly lead to an immediate intervention of major powers – as was seen in 1990, 1999 and 2002 in South Asia – or even, had nuclear weapons been used, to military action to “quench the nuclear fire”. Again, the risk of fast escalation to the extremes is never zero: but it is weaker than it was in the past.

Technological progress with regard to accuracy and intelligence collection (as well as MIRVing) has led to the adoption in Western countries, of more discriminate targeting strategies, and to the abandonment of their most powerful, “city-busting” weapons.¹⁰³ Such countries, which also benefit from conventional superiority in relation to most of their adversaries, were also able to give up for good the temptation of seeing nuclear weapons as a means to compensate for conventional imbalances, and thus associated nuclear deterrence with “extreme circumstances of self-defense” (an expression used by the 1996 ICJ advisory opinion). The development of missile defenses reinforces that trend.¹⁰⁴

At the same time, drilling machines have become cheaper and more efficient: the burial of sensitive installations, which can be much more easily

¹⁰³ To increase accuracy by one order of magnitude (that is, to multiply it by 10) is tantamount, in terms of efficiency, to increase the yield by two or three orders of magnitude (that is, to multiply it by 100 to 1000).

¹⁰⁴ This argument will not always be valid. If, for budgetary reasons, Western countries were to significantly diminish their defense expenditures while at the same time those of emerging powers were to continue to rapidly increase, the differential in military power would be eroded.

threatened by nuclear weapons than by conventional ones (with the caveats mentioned above), seems to be a long-term trend.

The argument according to which, in the early 21st century, a political leader would not dare to use a nuclear weapon due to public pressure – especially in a society where information is widely and immediately disseminated – can actually be turned on its head. As stated above, a nuclear strike would be almost instantaneous and thus less subject to opinion pressure than a conventional bombing campaign would be; and, again, we should not underestimate the possibility that our publics would be the first to cry for blood. As for the fear of being dragged in front of an international court, one can doubt that it would weigh heavily on a leader whose country has just been the target of a massive or horrendous aggression (besides the fact that he or she would probably remain legally immune in his or her own country).

Another possible “cost” of deterrence – the increase in low-level intensity conflict (see above) – may have diminished. The number of wars has decreased by about 50% since 1990.¹⁰⁵

In short, many of the arguments traditionally used to challenge the legitimacy of nuclear deterrence tend to increasingly lose their credibility: deterrence is less and less about threatening cities; the characteristics of modern weapons would make their use less indiscriminate than in the past; the risk of escalation to the extremes is lower than it used to be; one can better defend against a nuclear attack; and indirect conflicts are less numerous than in the past.

Other arguments can bolster the domestic legitimacy of nuclear deterrence policies. First, in the past 20 years the decrease in nuclear arsenals has been accompanied by a continuation of economic growth: thus the percentage of national wealth devoted to nuclear deterrence is lower – at least for Western countries and Russia – than it was 30 or 40 years ago. Second, for countries which are ageing (which will soon be the case for a majority of nuclear weapons possessors), or in which the demand for social protection will increasingly weigh on national budgets, it will be possible to present nuclear deterrence as a relatively low-cost form of national security insurance. The argument according to which decreasing defense budgets should imply a transfer of nuclear expenses to conventional forces (often heard in Europe) could be reversed: without going back to the Cold war logic of nuclear weapons as a means to compensate for conventional deficiencies, it could be claimed that societies that, in the long run, may lose some of their abilities to intervene around the world to defend their interests will need at least to have the capacity to protect their core vital interests at all times.

Nuclear deterrence is comparable what Winston Churchill said about democracy: the worst possible war-prevention instrument with the

¹⁰⁵ See the Uppsala Data Conflict Project database. This does not apply to South Asia.

exception of all the others. It could be considered a temporary, but effective, as well as legally and morally acceptable way to prevent war among major powers, or aggression against their allies, until democratic peace comes.

That said, the enduring acceptability of nuclear deterrence should not be considered a given. It is a fact that political, intellectual and religious elites tend to be less immediately convinced of its relevance today. Uncontrolled nuclear proliferation would lead many officials and analysts – it is already the case in the United States – to consider that its risks outweigh its benefits. *A fortiori* should a major nuclear event occur such as a severe nuclear crisis, an act of terrorism or a deadly accident: such an event could have such a psychological effect that it might lead, *volens nolens*, to a generalized move towards abolition.¹⁰⁶ It is also to be noted that in the longer run, the continuation of nuclear arsenal reductions might lead to the temptation of going back to the targeting of cities – thus raising anew some old ethical dilemmas.

Likewise for its efficiency. For instance, today potential adversaries of Western countries – which often consider the latter as being “weak” – might be less convinced of their determination to defend themselves than the Soviet Union probably was.

Thus in the coming decades, nuclear weapons will only be able to play a major role in the preservation of global peace and security if political leaders pay attention to factors that could affect the acceptability and effectiveness of deterrence. This is especially the case since the images of Hiroshima and those of atmospheric testing are beginning to fade from collective memory. It is not impossible that nuclear weapons may lose, over time, their terrifying character; the ultimate paradox of the nuclear taboo would be that it ends up generating its own destruction.

¹⁰⁶ A parallel can be drawn with the field of nuclear energy. If the Fukushima accident had not been contained and its consequences had been worse than Chernobyl, it would probably have become much harder to justify to public opinions to carry on with energy policies relying on nuclear power.

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