Cold War Legacy and Continuing Temptation: Tactical Nuclear Weapons in International Humanitarian Law

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Abstract: During the Cold War as well as in the wake of the 9/11 terrorist attacks, low yield tactical nuclear weapons have been deployed or, in the latter case, at least envisaged (again). Of particular interest in the early years of the 21st century have been so called bunker busters, nuclear weapons which can penetrate the ground and which can be used to destroy underground facilities, such as Iranian nuclear facilities. In this article, the role of tactical nuclear weapons during the Cold War and today is explained and the legality of the use of tactical nuclear weapons, in particular bunker busters, is examined from the perspective of international law, both in the context of the non-proliferation regime and, more importantly, the *ius in bello*, International Humanitarian Law.

Keywords: Cold War, 9/11, Nuclear Weapons, International Humanitarian Law, United States, Russia, Germany.

I. Introduction

1. Background

In its 1996 advisory opinion regarding the legality of the use of nuclear weapons and the threat thereof,¹ the International Court of Justice (I.C.J.) stated that, although the use and threat of use of nuclear weapons is incompatible with International Humanitarian Law (IHL),² the United Nations’ (UN) highest judicial organ³ was unable to render an opinion on small nuclear weapons, since the Court had no information under which circumstances the use of such low-yield nuclear weapons was envisaged nor whether the use of small nuclear weapons would bear

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² Ibid., para. 105 (2) E.
the risk of an escalation of the conflict in question to an all-out nuclear war. With the wars after 9/11, the development of nuclear weapons by North Korea and fears of the acquisition of a nuclear capability by Iran, this situation has changed in recent years. Tactical nuclear weapons became thinkable again, thus raising a number of issues in international law. This is particularly, but not exclusively, the case with regard to International Humanitarian Law. After the Bush Administration formulated a new Nuclear Posture Review which in part became public in March 2002, funding for research into the possibility to build nuclear ‘bunker buster’ bombs, i.e. bombs which could take out hardened and / or underground targets, was approved by the United States Congress on 12 November 2002. Low-yield nuclear weapons are generally said to be explosives with an output of less than 5 kilotons (kT).

Already before the political relations between Russia and the (now bigger) West deteriorated to the brink of a new Cold War in the course of the year 2014, Russia’s deployment of tactical nuclear weapons has been a continuing concern. In this article, the ideas behind the development of tactical nuclear weapons as well as the historical background are explained and their legality under IHL is questioned. While plans for the creation of new small nuclear weapons are said to have been shelved for now, the mere possibility of such weapons and the idea of a limited nuclear war make it necessary to research this issue.

2. Tactical Nuclear Weapons during the Cold War

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4 International Court of Justice (note 1), para. 94.
5 On the development of nuclear weapons in North Korea, see Larry A. Niksch. NORTH KOREA’S NUCLEAR WEAPONS DEVELOPMENT AND DIPLOMACY (2010).
10 ‘Bunker busters’ are also known as earth-penetrating weapons and are designed to hit underground targets, such as formerly safe bunkers.
11 Kucia (note 9).
12 The term “kiloton” refers to the equivalency with the explosive power of one thousand tons of Trinitrotoluene (TNT).
One key Cold War scenario was the possible invasion of West Germany by Warsaw Pact forces. Given West Germany’s short East-West extension and the proximity of major targets such as Frankfurt and Hannover to the German-German border, nuclear battlefield weapons had been deployed in West Germany. They were meant to be used by West German and Allied forces in order to halt or at least slow down any Warsaw Pact invasion into West Germany before reinforcements would arrive. During the Cold War, a large number of Allied Forces were based in Germany but the North Atlantic Treaty Organization’s (NATO) war plans included the need to send more troops from other NATO states and in particular from North America to Germany in the event of an invasion, which was practiced annually in the so-called Return of Forces to Germany (REFORGER) exercises. The REFORGER exercises were at time so large that they triggered concerns in the USSR that they could be used as cover for an actual invasion to the Warsaw Pact states by NATO. The transport of Allied forces to Germany in the event of a Soviet invasion would take some time during which NATO forces already present in West Germany would have had to hold against the expected onslaught from the East. West Germany’s inability to trade territory for time lead to the idea to use small nuclear weapons on the battlefield in the Eastern parts of West Germany. One (but by no means the only) example of nuclear battlefield artillery was the a type of “nuclear bazooka” commonly referred to by NATO forces as “Davy Crockett”. The Davy Crockett was a portable nuclear battlefield weapon, which was to be transported on a jeep and operated by a team of two. It had one 0.01 or 0.02 kT warhead. The concept behind it was as simple as astonishing: immediately after the beginning of a massive ground invasion from the East, a small team would drive from Allied bases near the border towards the advancing Warsaw Pact invasion force; a few miles before actually making contact with the enemy force, a small nuclear warhead would be fired towards the invasion force and the Allied troops would retreat immediately in order to escape the nuclear blast they had just unleashed on the enemy. Even without the use of strategic nuclear weapons, parts of West Germany would have been reduced to a nuclear wasteland in order to slow down the Soviet advance long enough for other forces to be ready to repel the attack and for reinforcements to arrive across the Atlantic. In addition, the use of nuclear mines and nuclear warheads e.g. on “Lacrosse” and “Lance” missiles, had been considered by the West during the Cold War but nuclear battlefield weapons systems were part of the arsenals of both sides - and continue to play a role in the arsenals of both the

20 Ibid.
23 The MGM-18 Lacrosse missile was designed for close-support of ground troops. The missile cold be equipped with a W40 nuclear warhead. (See no author named. Lacrosse Missile MGM-18, in: BROOKINGS.EDU, http://www.brookings.edu/about/projects/archive/nucweapons/lacrosse.
United States and the Russian Federation.\textsuperscript{25} It appears save to assume that most nuclear powers have the technological ability to design and produce nuclear battlefield weapons, if so desired. While this requires a relatively small warhead, examples such as the Lance missile or the potential for putting a nuclear warhead on Scud missiles\textsuperscript{26} shows that the warhead can remain sizable. Building nuclear artillery systems does not require the know-how which went into the creation of weapons like the Davy Crockett which US forces\textsuperscript{27} were supposed to use against a Soviet invasion.

In 1994, after the end of the Cold War, the United States banned research on such small nuclear weapons.\textsuperscript{28} This made sense because the existence of small nuclear weapons created the possibility of a local, tactical, nuclear strike, which could trigger a nuclear response by other states which do not have this tactical nuclear option but ‘only’ strategic nuclear weapons such as nuclear bombs and missile based nuclear weapons. The idea of mutually assured destruction (MAD), which prevailed during the Cold War, does not apply to small nuclear weapons in the same way. This is especially the case if the technology is not widely available among hostile actors.

A side-effect of a proliferation is the risk of accessibility of small, portable, nuclear devices by terrorists. Already today, there is a permanent risk of radiological attacks due to the ease of access to nuclear material, e.g. from medical devices,\textsuperscript{29} be it through a “dirty bomb”\textsuperscript{30} or through simply placing nuclear material in a public place.\textsuperscript{31}

A dirty nuclear bomb attack against a state which has strategic but not tactical nuclear weapons and weak conventional armed forces (or conventional armed forces which lack the ability to strike directly at a potential far-away target abroad) could lead to a strategic nuclear response, thereby potentially triggering a global nuclear war. The global risks inherent in the use of nuclear weapons appear have led to a conscious decision on the part of the United States to refrain from further developing such small nuclear devices. The increased risk of terrorism shows that this was also an important decision in this regard. This problem, however, is not

\textsuperscript{25} The Center for Arms Control and Non-Proliferation, \textit{U.S. TACTICAL NUCLEAR WEAPONS IN EUROPE FACT SHEET} (2011), \url{http://armscontrolcenter.org/issues/nuclearweapons/articles/US_Tactical_Nuclear_Weapons_Fact_sheet/}.


\textsuperscript{27} The then West German Federal Minister of Defense Franz Josef Strauss had asked for Davy Crockets to be handed over to West German Bundeswehr forces as well. Although NATO commander-in-chief General Laris Norstand initially supported that request, the American government refused to authorize German forces to handle the small nuclear weapon, cf. note 19.


\textsuperscript{29} See e.g. Gabriela Martinez, Joshua Partlow, Stolen cobalt-60 found in Mexico; thieves may be doomed, Washington Post, 5 December 2013, \url{http://www.washingtonpost.com/world/stolen-cobalt-60-found-in-mexico-curious-thieves-likely-doomed/2013/12/05/262e9990-5d66-11e3-8d24-31016b976b2_story.html}.

\textsuperscript{30} “A ‘dirty bomb’ is one type of a radiological dispersal device (RDD) that combines conventional explosives, such as dynamite, with radioactive material”. (United States Nuclear Regulatory Commission, \textit{FACT SHEET ON DIRTY BOMBS} (2012), \url{http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-dirty-bombs.html}).

\textsuperscript{31} This method has been used by Chechen separatists in order to substantiate their claim of access to nuclear material: “In November 1995, Chechen rebel leader Shamal Basayev claimed that his forces had access to nuclear weapons and materials. To prove his claim, he guided a Moscow television crew to Izmailovsky Park in Moscow, where a container of radioactive cesium was discovered.” (David Albright, Kevin O’Neill and Corey Hinderstein, \textit{NUCLEAR TERRORISM: THE UNTHINKABLE NIGHTMARE}, Institute for Science and International Security (2001), \url{http://www.isis-online.org/publications/terrorism/overview.pdf}, p. 3.)
one which has newly emerged after 9/11. In fact, in early 1977, West German Red Army Faction (RAF) terrorists attacked a U.S. Army Depot in Giessen, West Germany, in an attempt to steal nuclear weapons.  

Giessen is located west of the Fulda Gap and north of the Federal Republic of Germany’s (FRG) commercial center of Frankfurt am Main, along one of the Germany’s most ancient trading routes and also one of most likely invasion routes from the German Democratic Republic (GDR) towards Frankfurt in the event of a Soviet attack. The idea to have small nuclear weapons on the battlefield in order to halt a Soviet advance into West-Germany almost led to nuclear disaster. While the RAF attack on the Giessen Depot could be repelled. Yet, this is a reminder of the risk that a small nuclear weapon can fall into the hands of terrorists as well.

3. Tactical Nuclear Weapons after 9/11

The ‘new’ tactical nuclear weapons, which have been envisaged in recent years are said to have yields "substantially higher than five kilotons". Funding for research into the required Robust Nuclear Earth Penetrator (RNEP) Technology, which is supposed to allow for a penetration which in turn should allow for a subterranean explosion, was also approved by the U.S. Congress on 22 May 2003.

In 2005, the program was officially cancelled but there has been speculation that it might continue. Like in the case of Cold War era nuclear battlefield weapons, the mere existence of the technology is sufficient reason for concern as small nuclear weapons might give decision-makers the impression that a tactical use of nuclear weapons would be possible without a strategic retaliation. This assumption is extremely dangerous as it has to be wrong only once in order to trigger widespread annihilation. In particular as the generation of political and military decision-makers who were already active in the Cold War, at least in the 1980s, is leaving the scene and is bound to be replaced by a generation of actors for whom the Cold War (let alone Hiroshima and Nagasaki) is a history lesson rather than an active memory (even if only a childhood memory), this approach might become tempting again in the future.

Possible targets for low yield nuclear devices could be underground command bunkers at underground which could not be reached with conventional weapons. However, the use of a tactical nuclear weapon is hardly a surgical strike: it is estimated that even 2,100 meters from the explosion the radioactive dose would be lethal. Of particular concern is the fact that a subterranean explosion will blow out large amounts of radioactive dirt which inevitably will rain down over the local region, since no RNEP can bury even a 0.15 kT device deep enough

33 Everet Beckner, as quoted by Kucia (note 9).
35 Ibid.
36 Kucia (note 9).
38 Ibid.
39 Nelson (note 28).
to contain the explosion.41 The only earth-penetrating nuclear bomb currently available, the B61-11, is said to be only able to penetrate some 20 ft into dry air when dropped from an altitude of 40,000 ft.42 According to tests conducted in the U.S., a 5kT device needs to be buried some 650 ft under ground, in order to contain the explosion in the ground43 and a 100 kT explosion can only be contained if it occurs 1300 ft under ground.44 Yet it is hardly possible, from a technical point of view, to achieve such deep a penetration, given the fact that the hardened tip of the warhead would deform due to the heat caused by the impact.45 Consequently, the nuclear bunker busting technologies available today appear to be insufficient to avoid significant fallout and damage above ground.

II. Legality of the Use of Tactical Nuclear Weapons under International Humanitarian Law

While the legality of the use of a weapon depends on circumstances such as the target, the presence of civilians in the potentially affected area etc., some general remarks can be made concerning the use of tactical nuclear weapons and its compatibility with IH.

1. The Prohibition of indiscriminate attacks

According to Art. 51 (4) of the 1st Additional Protocol (AP I)46 to the Geneva Conventions47 non-discriminate attacks are prohibited. This is also a rule of customary international law.48 Although it is not illegal per se to use weapons which do not discriminate between military and civilian targets,49 it is illegal to use weapons in a non-discriminatory way. If a small nuclear device such as the Davy Crockett would be used on the battlefield, e.g. against advancing enemy troops in an uninhabited desert area, the attack could be discriminatory, provided that there are no civilians within the effective range of the weapon. A larger bomb, be it nuclear or even conventional (e.g. the Daisy Cutter / Commando Vault BLU-82 bombs used by the United States in Vietnam and Afghanistan50) raises the issue more severely, as does the use of armed force in the vicinity of civilians. Any use of small nuclear weaponry against command centers and the headquarters of political leaders located in populated areas would most likely be indiscriminate and therefore already prohibited by Art. 51 (4) AP I and customary international law.

2. The Prohibition of unnecessary suffering or injury

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41 Nelson (note 28).
42 Ibid.
43 Ibid.
44 Ibid.
45 Ibid.
48 But see also the wording in International Court of Justice (note 1), para. 78 et seq.
49 See also Stefan Kirchner. Der aktuelle Fall: Der Einsatz von Bomben des Typs BLU-82 “Daisy Cutter” durch die USA in Afghanistan, in: 15 HUMANITÄRES VÖLKERRECHT — INFORMATIONSSCHRIFten (2002), pp. 26 et seq.
Furthermore, Art. 35 (2) of the 1st Additional Protocol (AP I) to the Geneva Conventions and customary international law prohibit the causation of unnecessary suffering or injury. The burning effects of the flash caused by the nuclear explosion and the death by radiation which soldiers not killed immediately will suffer go beyond what is necessary to incapacitate hostile forces. Because all weapons causing burn wounds are considered to be prohibited under this rule, the burn wounds suffered due to the nuclear flash would justify classifying nuclear devices as prohibited under customary international law and Art. 35 (2) AP II. This conclusion would still leave open the possibility of using such devices against unmanned locations.

3. Protection of the Environment in Times of Armed Conflict

A further prohibition of the employment of small scale nuclear could arise from rules of international environmental law, specifically Art. 35 (3) API which prohibits means and methods of warfare of which it can be expected that they harm the environment, which clearly would be the case, would there be substantial radiation left behind after the explosion. Although the explosion would be underground, it would not be deep enough to be fully contained. Even if such a deep impact would be possible, the radiation could affect for example the ground water, resulting in a violation of Art. 35 (3) AP I. Given the large impact of modern warfare on the environment, such as during the Vietnam war and the 2nd and 3rd Gulf Wars (Operations “Desert Storm” and “Iraqi Freedom”), there seems to be no sufficient state practice for a rule of customary international law parallel to Art. 35 (3) AP I.

IV. Conclusions and Outlook

Using small nuclear devices with present day RNEP technology therefore would be illegal under international law if used against targets located in populated areas and must not be used against human targets at all due to the unnecessary suffering which would be caused, both of which would violate IHl, specifically Art. 51 (4) AP I, Art. 35 (2) AP II and customary international law. The use of such weapons would furthermore be contrary to Art. 35 (3) AP I due to the like environmental impact and could, if applicable, be contrary to negative security assurances given by nuclear powers under the NPT framework.

Small nuclear devices are considered to be particularly dangerous not because of their explosive power but because they can contribute the idea that a limited nuclear war is possible. Large nuclear weapons were not used during then Cold War due to the deterrent effect which so fittingly was described as mutually assured destruction: if one side were to use nuclear weapons, the other side would retaliate in kind, leading to total devastation. The number of nuclear weapons held by the West and the USSR during the Cold War (or, for that matter, the number of nuclear weapons under US and Russian control) was more than sufficient to turn the other side into a nuclear wasteland. It was MAD and the occasional calm mind of those in charge which prevented the use of nuclear weapons. In the case of tactical nuclear weapons the idea that a limited use of nuclear weapons is possible without triggering the use of strategic nuclear weapons by the attacked party can be disastrous. From the perspective of International Humanitarian Law there appears to be very little leeway for states and there seem to be very

51 “It is prohibited to employ weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering.”


few situations in which the use of a ‘small’ tactical nuclear weapon could be compatible with international law. It can, however, not be fully excluded that the use of such weapons could be legal under some circumstances. In this context, it is helpful to remember the I.C.J.’s advisory opinion as far as the existence of a state is concerned. The threat of nuclear war has not been banned at the end of the Cold War. To the contrary, the emergence of new nuclear powers since then has only increased the risk of a nuclear exchange. Were one nuclear power to commission tactical nuclear weapons, this risk would be increased dramatically. While the General Assembly of the United Nations declared every use of nuclear weapons to be incompatible with international law, its non-binding resolution has not yet been followed up by an international treaty outlawing all nuclear weapons and lacking a clear *opinio juris* to this effect, the International Court of Justice’s advisory opinion continues to reflect the state of international law in this regard. In so far, it appears that the risk of a global nuclear war is a stronger deterrent than international law alone. It is to be hoped that this deterrent effect will also prevent the future use of tactical nuclear weapons.

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54 International Court of Justice (note 1), para. 97.