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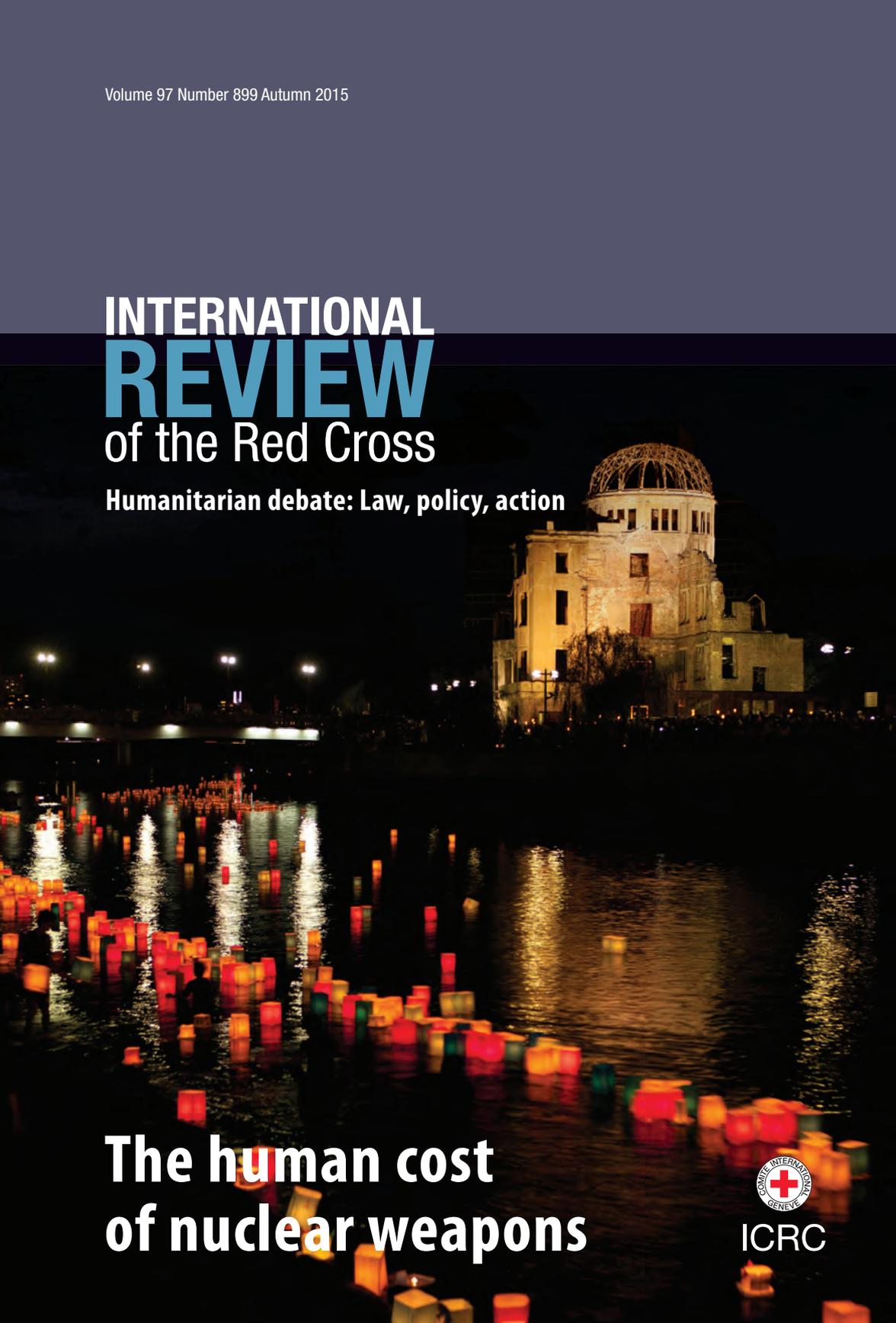
INTERNATIONAL REVIEW of the Red Cross

Humanitarian debate: Law, policy, action

**The human cost
of nuclear weapons**



ICRC



Aim and scope

Established in 1869, the *International Review of the Red Cross* is a periodical published by the ICRC and Cambridge University Press. Its aim is to promote reflection on humanitarian law, policy and action in armed conflict and other situations of collective armed violence. A specialized journal in humanitarian law, it endeavours to promote knowledge, critical analysis and development of the law, and contribute to the prevention of violations of rules protecting fundamental rights and values. The *Review* offers a forum for discussion on contemporary humanitarian action as well as analysis of the causes and characteristics of conflicts so as to give a clearer insight into the humanitarian problems they generate. Finally, the *Review* informs its readership on questions pertaining to the International Red Cross and Red Crescent Movement and in particular on the activities and policies of the ICRC.

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The International Committee of the Red Cross (ICRC) is an impartial, neutral and independent organization whose exclusively humanitarian mission is to protect the lives and dignity of victims of war and other situations of violence and to provide them with assistance. It directs and coordinates the international activities conducted by the International Red Cross and Red Crescent Movement in armed conflict and other situations of violence. It also endeavours to prevent suffering by promoting and strengthening international humanitarian law and universal humanitarian principles. Established in 1863, the ICRC is at the origin of the Movement.

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INTERNATIONAL
REVIEW
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Humanitarian debate: Law, policy, action

**The human cost of
nuclear weapons**

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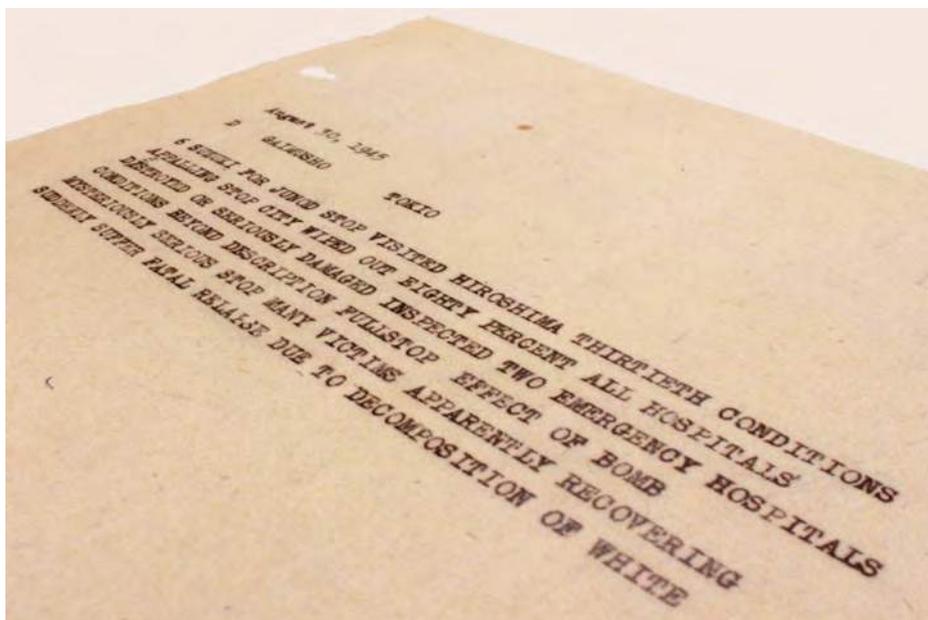
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EDITORIAL

A PRICE TOO HIGH: RETHINKING NUCLEAR WEAPONS IN LIGHT OF THEIR HUMAN COST

Vincent Bernard, Editor-in-Chief*



Visited Hiroshima thirtieth, conditions appalling stop city wiped out, eighty percent all hospitals destroyed or seriously damaged; inspected two emergency hospitals, conditions beyond description full stop effect of bomb mysteriously serious stop many victims, apparently recovering, suddenly suffer fatal relapse due to decomposition of white blood cells and other internal injuries, now dying in great numbers stop estimated still over one hundred thousand wounded in emergency hospitals located surroundings, sadly lacking bandaging materials, medicines stop.

Fritz Bilfinger, ICRC, telegram dated 30 August 1945¹

* The author would like to thank Ellen Policinski, thematic editor for the *Review*, for her contribution to this issue.

It is estimated that approximately 340,000 people died immediately and within the five years following the bombs being dropped on Hiroshima and Nagasaki on 6 and 9 August 1945.² From the day of the bombing to today, the International Red Cross and Red Crescent Movement (the Movement) has been responding to the needs of victims and has been consistent in its opposition to the use of nuclear weapons.

The Red Cross and Red Crescent: A consistent engagement on behalf of victims

The day after the first atomic bomb was dropped on Hiroshima, several medical teams from the Japanese Red Cross Society arrived in Hiroshima from neighbouring towns. They helped the staff at the Japanese Red Cross hospital, which while badly damaged was still operating, and served in improvised dispensaries set up in tents in different parts of the devastated city.

The first foreign Red Cross worker on the ground in Hiroshima was Fritz Bilfinger from the International Committee of the Red Cross (ICRC). He was able to reach Hiroshima on 29 August and sent the telegram above back to the ICRC office in Tokyo. A few days later, Marcel Junod arrived in Hiroshima from ICRC Tokyo and described a city where “there was nothing but silence and desolation”.³ According to witnesses encountered by Junod, within a few seconds of the blast,

thousands of human beings in the streets and gardens in the town centre, struck by a wave of intense heat, died like flies. Others lay writhing like worms, atrociously burned. All private houses, warehouses, etc., disappeared as if swept away by a supernatural power. Trams were picked up and hurled yards away, as if they were weightless; trains were flung off the rails Every living thing was petrified in an attitude of acute pain.⁴

Makeshift hospitals were overcrowded with people suffering from severe injuries due to burns and radiation. There was a general lack of equipment and medicines, and also of medical staff, who had been decimated. The few doctors and nurses left were facing totally new types of wounds, for which there was no effective treatment.⁵

1 Fritz Bilfinger, telegram dated 30 August 1945, ICRC Archives, File No. G. 8/76. A copy of the original telegram – as well as Bilfinger’s report on the effects of the atomic bomb at Hiroshima, and photos – is available on the ICRC website at: <http://icrchistory.tumblr.com/post/125827746385/rapport-de-fritz-bilfinger-délégué-du-cicr-au> (all online references were accessed in November 2015). Bilfinger’s full report, including a copy of the telegram in its entirety, can be found in the “Reports and Documents” section of this issue of the *Review*.

2 See ICRC special web pages for the anniversary of the bombings, “Hiroshima and Nagasaki: 70 Years On, Survivors and Their Families Still Gravely Affected”, available at: www.icrc.org/en/hiroshima-nagasaki.

3 François Bugnion, “Remembering Hiroshima”, *International Review of the Red Cross*, Vol. 77, No. 813, 1995, available at: www.icrc.org/eng/resources/documents/misc/57jmge.htm.

4 Marcel Junod, “The Hiroshima Disaster – a Doctor’s Account”, 12 September 2005, available at: www.icrc.org/eng/resources/documents/misc/hiroshima-junod-120905.htm.

5 See Marcel Junod, “The Hiroshima Disaster”, *International Review of the Red Cross*, Vol. 64, No. 737, 1982; Marcel Junod, “The Hiroshima Disaster (Continued)”, *International Review of the Red Cross*, Vol. 64, No. 738, 1982. For an account of the work of the ICRC right after the Hiroshima bombing and in the following decades, see F. Bugnion, above note 3, pp. 307–313.

Still today, the Japanese Red Cross hospitals continue to treat several thousand victims for cancers and illnesses attributable to the 1945 atomic bombings of those cities. In the period between April 2014 and March 2015, 4,657 officially recognized atomic bomb survivors were treated at the Hiroshima Atomic-Bomb Survivors Hospital, and 7,297 officially recognized atomic bomb survivors were treated by the Japanese Red Cross Nagasaki Genbaku Hospital.⁶ The survivors are among the strongest voices calling our attention to the severity and enormous scale of the suffering caused by nuclear weapons.⁷

The ICRC took a clear stance on nuclear weapons soon after such weapons were used for the first time. Less than a month after the first atomic bomb had been dropped on Hiroshima, the ICRC sent a message to National Societies stating that nuclear weapons should be abolished.⁸ The position of the ICRC was later summarized in the following manner:

Precluding any discrimination between military objectives and civilian objects, causing atrocious suffering to those stricken by its effects, and impeding any possibility of bringing aid to the victims of the cataclysm they cause, nuclear weapons called into question the very foundations of the law of war and of the assistance activities conducted by the Red Cross.⁹

Seventy years after the bombings of Hiroshima and Nagasaki, the international community still finds it difficult to make real progress towards the prohibition and elimination of nuclear weapons. Nevertheless, the International Red Cross and Red Crescent Movement has a deep responsibility to “rise in defence of humanity”¹⁰ and to provide a voice to draw attention to the unacceptable humanitarian consequences of the use of nuclear weapons, highlight the implications of such weapons under international humanitarian law and urge

6 ICRC and Japanese Red Cross Society, “Long-Term Health Consequences of Nuclear Weapons: 70 Years On, Red Cross Hospitals Still Treat Thousands of Atomic Bomb Survivors”, Information Note No. 5, July 2015.

7 See the *hibakusha* testimony in the “Voices and Perspectives” section of this issue of the *Review*.

8 *Ibid.*; “The End of Hostilities and the Future Tasks of the Red Cross”, Circular Letter No. 370 to the Central Committees of the Red Cross Societies, 5 September 1945, in *Report of the International Committee of the Red Cross on Its Activities during the Second World War*, Vol. 1, ICRC, Geneva, May 1948, pp. 688–690. Since then, the ICRC’s position has been consistent: see, for instance, Jakob Kellenberger and Peter Maurer’s speeches reproduced in this issue of the *Review*. See also Statement of the ICRC at the UN General Assembly, 51st Session, 19 October 1996, available at: www.icrc.org/eng/resources/documents/misc/57jncx.htm; Council of Delegates of the International Red Cross and Red Crescent Movement, Resolution 1, “Working Towards the Elimination of Nuclear Weapons”, 26 November 2011, available at: www.icrc.org/eng/resources/documents/resolution/council-delegates-resolution-1-2011.htm; Council of Delegates of the International Red Cross and Red Crescent Movement, Resolution 1, “Working Towards the Elimination of Nuclear Weapons: Four-Year Action Plan”, 17–18 November 2013, available at: www.icrc.org/eng/resources/documents/publication/p1140.htm.

9 Francois 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, No. 859, 2005, p. 512, available at: www.icrc.org/eng/resources/documents/article/review/review-859-p511.htm.

10 *Ibid.*

governments to pursue the prohibition and elimination of these weapons as quickly as possible. In line with the ICRC's consistent position on nuclear weapons, but also in view of the recent initiative to reframe the issue of nuclear weapons in terms of the humanitarian consequences of their use, the *Review* decided to publish an issue on nuclear weapons.

Still the most serious threat to humanity

Since their first use in 1945, the world has known about the catastrophic effects of nuclear weapons. The danger of nuclear attacks was ever-present for more than four decades during the Cold War. In some countries, preparedness drills were regularly conducted, nuclear shelters were maintained in anticipation of a potential nuclear attack, and anti-nuclear protests took place. Today, the level of awareness is much different. Many people, including most of those born after the end of the Cold War, are unaware of the continued risks that nuclear weapons pose to humanity and the severe humanitarian consequences that would follow should such weapons ever be used.

While the threat no longer seems as present, paradoxically we now know more than ever before about the effects of even limited nuclear war on the environment and health of human beings,¹¹ and that, as was highlighted by the International Court of Justice (ICJ) in its 1996 its Advisory Opinion on the *Legality of the Threat or Use of Nuclear Weapons* (Nuclear Weapons Advisory Opinion), “[t]he destructive power of nuclear weapons cannot be contained in either space or time”.¹²

Although nuclear weapons have not been used in armed conflict since 1945, nuclear testing has had terrible consequences on the lives of populations living nearby and some of the military personnel involved. These include the inhabitants of testing areas, often ethnic minorities or insular populations. Many testing areas have also suffered serious environmental damage.¹³

Despite these facts, nuclear weapons remain a pillar in the security policies of a number of States, and for some, possessing them has become a perverse status symbol. While the total number of nuclear weapons in the arsenals of the nuclear-armed States is less than it was at the height of the Cold War, nuclear weapons States continue to maintain and even modernize their nuclear arsenals. Today, nearly 16,000 nuclear weapons are stored at sites located in fourteen countries, many

11 See, e.g., Ira Helfand, *Nuclear Famine: Two Billion People At Risk? Global Impacts of Limited Nuclear War on Agriculture, Food Supplies and Human Nutrition*, 2nd ed., International Physicians for the Prevention of Nuclear War and Physicians for Social Responsibility, November 2013, available at: www.ippnw.org/nuclear-famine.html.

12 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, *ICJ Reports 1996* (Nuclear Weapons Advisory Opinion), para. 35.

13 For an account of nuclear testing in the Pacific region in particular, including the effects on populations and the environment, see the article by Tilman Ruff in this issue of the *Review*.

ready for immediate use.¹⁴ Approximately 1,800 nuclear warheads are kept on high alert status in the United States and Russia, ready to be fired in minutes.¹⁵ The vast majority of these weapons are much more powerful than the ones used in Hiroshima and Nagasaki. This makes the danger of their intentional or accidental detonation even more frightening.

Due to the fact that there has not been a nuclear attack since Nagasaki, the sense of urgency amongst the general public has faded. However, humanity may not be able to avoid accidental or intentional nuclear detonation forever. The fact that such weapons have not been used in more than seventy years is no guarantee that they will not be used again. The longer these weapons exist, and as they are developed by more States and possibly even acquired by non-State actors, the likelihood of another nuclear detonation increases.

Not outside the scope of the law

Contrary to some other weapons about which there is a serious concern in humanitarian terms,¹⁶ international humanitarian law (IHL) does not explicitly prohibit the use of nuclear weapons. This does not mean that the law is silent: IHL contains a range of general rules governing the conduct of hostilities that are relevant to assessing the legality of nuclear weapons, such as the rules on distinction and proportionality, the prohibition on indiscriminate attacks, the prohibition on the use of weapons of a nature to cause superfluous injury or unnecessary suffering, and the rules protecting the natural environment. At the core of these rules lies the general principle that individual civilians and the wider civilian population enjoy a general protection from the dangers arising from military operations.

It should not be forgotten that, in addition to destroying important military objectives, nuclear weapons were also meant to be used against urban areas and their civilian populations. The bombings of Hiroshima and Nagasaki were the culmination of an escalating series of bombing raids on major urban centres during the Spanish Civil War and the Second World War. Although there has been much debate about the legality of the Hiroshima and Nagasaki bombings under the rules applicable at the time, if carried out today such attacks would raise a range of serious issues and concern under current IHL rules.

In 1996, the ICJ issued its Nuclear Weapons Advisory Opinion, deciding that the use of nuclear weapons would “generally be contrary to the rules of

14 *Ibid.* See also Hans Kristensen and Robert Norris, “Worldwide Deployments of Nuclear Weapons, 2014”, *Bulletin of the Atomic Scientists*, 28 August 2014, available at: <http://bos.sagepub.com/content/early/2014/08/26/0096340214547619.full>.

15 Hans Kristensen and Matthew McKinzie, “De-alerting Nuclear Forces”, *Bulletin of the Atomic Scientists*, 19 June 2013, available at: <http://thebulletin.org/de-alerting-nuclear-forces>. See also the article by Hans Kristensen and Matthew McKinzie in this issue of the *Review*.

16 For example, chemical and biological weapons, anti-personnel landmines, cluster munitions, and blinding laser weapons.

international law applicable in armed conflict, and in particular the principles and rules of humanitarian law”. Despite this, it did not take a decision on whether such weapons would be compatible with the law in “an extreme circumstance of self-defence in which the very survival of a State would be at stake”,¹⁷ a part of the decision that has been widely criticized.¹⁸ At that time, the *Review* produced an issue addressing the topic of nuclear weapons, largely through the lens of the Nuclear Weapons Advisory Opinion.¹⁹ Since then, the *Review* has continued to publish regularly on the subject.²⁰ Today, given the opportunity to capitalize on the increased focus on the humanitarian consequences of the use of nuclear weapons, it seems opportune to revisit the topic more fully in this thematic issue.

Nearly twenty years after the Nuclear Weapons Advisory Opinion, it is clear that nuclear weapons continue to raise serious concerns in humanitarian terms and that their use would raise serious questions about their compatibility with existing IHL rules. As the ICRC stated in 1996 in response to the Advisory Opinion, it is “difficult to envisage how a use of nuclear weapons could be compatible with the rules of international humanitarian law”.²¹ In this edition, Louis Maresca and Eleanor Mitchell have concluded that the use of nuclear weapons in a populated area would amount to an indiscriminate attack, and in addition, that any use outside such areas should be presumed to be in violation of international law.²²

Reframing the issue: The humanitarian track

Until recently, the discourse about nuclear weapons has primarily focused on deterrence, self-defence and the role of nuclear weapons in military doctrine more generally. Etymologically, the word “deterrence” is related to “terror”, the fear inspired in a potential adversary by the threat of nuclear retaliation to an attack. According to this theory, one State’s possession of nuclear weapons will deter others from using similar weapons out of the fear of reprisals.

17 Nuclear Weapons Advisory Opinion, above note 12.

18 See, e.g., Hisakazu Fujita, “The Advisory Opinion of the International Court of Justice on the Legality of Nuclear Weapons”, *International Review of the Red Cross*, Vol. 79, No. 823, 1997; Daniel Thurer, “The Legality of the Threat or Use of Nuclear Weapons: The ICJ Advisory Opinion Reconsidered”, in *Volkerrecht und die Dynamik der Menschenrechte: Liber Amicorum Wolfram Karl*, Wien, 2012.

19 Thematic issue on “Nuclear Weapons”, *International Review of the Red Cross*, Vol. 79, No. 823, 1997, available at: www.icrc.org/eng/resources/international-review/review-316-nuclear-weapons/index.jsp.

20 Including Nobuko Margaret Kosuge, “Prompt and Utter Destruction: The Nagasaki Disaster and the Initial Medical Relief”, *International Review of the Red Cross*, Vol. 89, No. 866, 2007, available at: www.icrc.org/eng/resources/documents/article/review/review-866-p279.htm; Thomas Fisher, “The ICRC and the 1962 Cuban Missile Crisis”, *International Review of the Red Cross*, Vol. 83, No. 842, 2001, available at: www.icrc.org/eng/resources/documents/article/other/57jr5k.htm.

21 Statement of the ICRC to the United Nations General Assembly, 51st Session, 18 October 1996, as published in the *International Review of the Red Cross*, Vol. 78, No. 822, 1996, available at: www.icrc.org/eng/resources/documents/misc/57jncx.htm.

22 See the article by Lou Maresca and Eleanor Mitchell in this issue of the *Review*.

As a witness to the devastation of 1945, the role of the Movement is not to assess the political motivations behind the possession of certain weapons but to bring to the fore their humanitarian consequences and their implications under IHL principles and rules. In recent years, two notable ICRC initiatives have contributed to a renewed debate on nuclear weapons through the lens of their human cost.

First, assessments undertaken by the ICRC in 2007 and 2009 showed clearly that there is a lack of capacity at the national and international levels to effectively assist the victims of a nuclear detonation. “The evident lack of an international capacity to help such victims underscores the inescapable fact that to prevent the use of nuclear, radiological, biological and chemical weapons is an absolute imperative”, concluded Dominique Loyer and Robin Coupland.²³

Second, ICRC President Jakob Kellenberger asserted in a seminal statement in 2010 that the organization

firmly believes that the debate about nuclear weapons must be conducted not only on the basis of military doctrines and power politics. ... The currency of this debate must ultimately be about human beings, about the fundamental rules of international humanitarian law, and about the collective future of humanity.²⁴

Within the Movement, this was followed by a resolution reiterating its historic positions regarding nuclear weapons and encouraging States to work towards their elimination, together with a four-year action plan to that end.²⁵

These developments, coupled with the final declaration of the 2010 Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT), where NPT States Parties for the first time expressed their “deep concern at the catastrophic humanitarian consequences of any use of nuclear weapons”, led to the humanitarian impact of nuclear weapons becoming the principal theme of the nuclear weapons debate. Three conferences on the humanitarian impact of nuclear weapons, in Oslo (2013), Nayarit (2014) and Vienna (2015), followed; these were the first multilateral meetings exclusively dedicated to the humanitarian aspects of the issue. The messages from these meetings went on to influence the discussions and positions of many States at the 2015 NPT Review Conference and the subsequent meetings of the United Nations (UN) General Assembly. The process culminated in a “Humanitarian Pledge” calling on States and other stakeholders to work to stigmatize, prohibit

23 Robin Coupland and Dominique Loyer, “Who Will Assist the Victims of Use of Nuclear, Radiological, Biological or Chemical weapons – and How?”, *International Review of the Red Cross*, Vol. 89, No. 866, 2007, p. 344. See also Robin Coupland and Dominique Loyer, “International Assistance for Victims of Use of Nuclear, Radiological, Biological or Chemical Weapons: Time for a Reality Check?”, *International Review of the Red Cross*, Vol. 91, No. 874, 2009. For an update on the ICRC’s response framework, see the article by Gregor Malich, Robin Coupland, Steve Donnelly and Johnny Nehme in this issue of the *Review*.

24 Jakob Kellenberger, “Bringing the Era of Nuclear Weapons to an End”, statement to the Geneva Diplomatic Corps, Geneva, 20 April 2010, reproduced in this issue of the *Review*.

25 Council of Delegates, Resolution 1 and Four-Year Action Plan, above note 8.

and eliminate nuclear weapons, adopted by the UN General Assembly as Resolution 70/48. Some 139 States voted in favour of the resolution.²⁶ In a 2015 speech to the diplomatic community in Geneva, ICRC President Peter Maurer drew attention to the sometimes overlooked element of the risk of accidental or unintentional nuclear detonation,²⁷ further emphasizing the need to eliminate these weapons.

In light of what we know about the terrible consequences of the use of nuclear weapons, it is now more clear than ever that the international community must imperatively find a way to achieve total nuclear disarmament, through a ban treaty or otherwise.²⁸ As long as nuclear weapons exist, there remains a risk that they might be detonated, and this must never happen again.

In order to prepare this thematic issue, the *Review* met with several *hibakusha*, survivors of the atomic bomb blasts in Hiroshima and Nagasaki. It interviewed the director of the Nagasaki Red Cross hospital and met the director of the Nagasaki Atomic Bomb Museum and the editors of the *Chugoku Shimbun*, a Hiroshima newspaper which runs an education campaign about the atomic bomb. The *Review* interviewed ICRC President Peter Maurer and Tadateru Konoe, president of the International Federation of Red Cross and Red Crescent Societies and of the Japanese Red Cross in Tokyo, immediately after their visit to Hiroshima and Nagasaki. The *Review* also met various journalists, writers, lawyers, humanitarian practitioners and experts at the conference on the humanitarian impact of nuclear weapons in Oslo in 2013. This work is reflected in the following pages.

The *Review* would like to express its gratitude to the contributors and pay tribute to the perseverance of the *hibakusha*, who continue to testify about their personal story and the loss of their family members and friends. The bombings of Hiroshima and Nagasaki are not only their personal tragedy, nor are they merely a page of Second World War history – nuclear weapons remain today a sword of Damocles hanging over humankind.

26 International Campaign to Abolish Nuclear Weapons, “Humanitarian Pledge: Stigmatize, Prohibit and Eliminate Nuclear Weapons”, available at: www.icanw.org/pledge/; UNGA Res. 70/48, 11 December 2015, available at: www.icanw.org/wp-content/uploads/2015/03/N1541140.pdf.

27 See the February 2015 speech by Peter Maurer reproduced in this issue of the *Review*.

28 See the article by Treasa Dunworth in this issue of the *Review*.

VOICES AND PERSPECTIVES

After the atomic bomb: *Hibakusha* tell their stories

In this issue, the Review has chosen to feature the voices of hibakusha, those who survived the nuclear bombings in Japan. These three hibakusha have shared their experiences with the hope that our readers will understand the horrors of nuclear weapons use. They have each suffered and witnessed the horrific suffering of others caused by nuclear weapons, and their families may continue to suffer medical problems for generations to come. Each calls for assurances that nuclear weapons will never be used again. These are their stories.*

.....



Dr Masao Tomonaga was born in Nagasaki and survived the detonation of the second atomic bomb on 9 August 1945. He later graduated from Nagasaki University Medical School, where he specialized in internal medicine and haematology. He was previously the Director of the Japanese Red Cross Nagasaki Atomic Bomb Hospital, and engaged in research on the after-effects of atomic bomb radiation on human health. He is now Chairman of the Nagasaki Global Citizen's

Assembly for the Elimination of Nuclear Weapons and directs a clinic attached to the Atomic Bomb Survivors Nursing Home.

.....

* These interviews were conducted in Tokyo, Hiroshima and Nagasaki by Vincent Bernard, Editor-in-Chief, and Hitomi Homma, Communication Officer, ICRC Tokyo, on 10, 11 and 12 February 2015.

Dr Tomonaga, you were a small child at the time the atomic bomb was dropped on Nagasaki. What was your personal experience of the atomic bombing and its immediate aftermath?

I was born on 5 June 1943. At the time of the bombing, I was two years and two months old. That morning, I was sleeping on the second floor of our Japanese-style wooden house in a Japanese-style bed, when suddenly the blast from the atomic bomb crushed our house. Fortunately I was not harmed, maybe because I was protected by the bed itself and the ceiling of the house did not hit me directly.

After the blast, my mother, who had been preparing food, searched for me in the rubble of what had been my bedroom, and found I was still sleeping in the bed. She got me out of the ruins of our house, which burned to the ground ten to fifteen minutes after the initial blast. These are the dual physical effects of an atomic bomb: first the blast and then the fire. A huge fire broke out in the area where my house was after the blast. My mother and I escaped to nearby Japanese shrine, where we spent one night. I have no memory of this experience because I was very young; my mother told me the story when I became older.

At the time, my father was serving in the Japanese Army Air Force and was stationed in Taiwan. From Taiwan, he heard that first Hiroshima and then Nagasaki had been totally destroyed by two new atomic bombs. He thought his family had perished in Nagasaki until about a month later, when he got a letter from my mother telling him that we were alive.

My father was captured in the war and held as a prisoner in Taiwan, so even after he learned we were alive, he could not come back to Nagasaki right away. Since he was a military doctor, he was allowed to practise medicine for people near the air force base where he was detained. He spent a year and a half there before he was allowed to return to Nagasaki. After his return, he became an associate professor of the medical school, his *alma mater*. When he started to practise medicine again, he found that there was a rapid increase in leukaemia among atomic bomb survivors, especially children. Over time, as a doctor treating patients in Nagasaki, my father inevitably became a specialist in treating atomic bomb survivors.

Based on this account, one might say that you continued the work of your father. Is he the one that inspired you to specialize in the effects of radiation?

Yes. When I was in high school, I began to think I should become a doctor, like my father. I decided to become a medical doctor when I learned that there was such a rapidly growing occurrence of leukaemia among children who survived the atomic bomb. I wanted to become a specialist in medical research into the health effects of the atomic bomb.

I was also interested in the effects of radiation because I wondered if I was affected by the atomic bomb. The rapid increase in leukaemia cases made me somewhat concerned about the effects of radiation on my own body when I was

studying to enter medical school. After I began medical school, I started to learn more about the atomic bomb's effects.

Although I was worried, I never suffered from the effects of the atomic bomb, probably because my house was located just over 2.5 kilometres from ground zero. This area was estimated to have a very low dose of radiation, fortunately – only 20 millisievert.

When did you start working in the Red Cross Hospital in Nagasaki, and what type of work were you doing there?

In Hiroshima, there was already a Red Cross hospital when the atomic bomb was dropped there in 1945. In Nagasaki, there was no Red Cross hospital at the time of the bombing, but in 1958 the Nagasaki Red Cross Hospital was established especially for atomic bomb survivors because by that time survivors in Nagasaki had become very anxious about the frequent occurrence of leukaemia.

The (then rather small) hospital was established by the Japanese government, Nagasaki Prefecture and Nagasaki City, in cooperation, and was given to the Japanese Red Cross Society. Since then, the hospital has grown to twice its original size. After the initial wave of elevated rates of leukaemia, which continued for about fifteen years, a second wave of solid cancerous tumours began. Increased occurrence of these cancers still continues today and causes great suffering for atomic bomb survivors and their families.

Research shows that “short-distance survivors” – those who were located within 1.5 kilometres of the hypocentre of the blast – have an average rate of leukaemia about fifty times higher than the average rate of leukaemia occurrences among distant survivors. This was the first finding of an atomic bomb radiation-induced disease, leukaemia.

Who are the main victims of this increase in cancer rates?

Atomic bomb survivors themselves are the main victims of the increase in cancer rates. The atomic bomb's effects on the second generation, the children of survivors, are still not clear. So far studies of the genetic effects of atomic bomb radiation, meaning the second-generation effects, show no increase of leukaemia or other cancers among children born to atomic bomb survivors, but we must be very careful in drawing conclusions; these children are still rather young, mostly in their 50s. Soon they will enter the cancer-prone age, meaning their 60s and 70s, and rates of cancer may increase. We are still carrying out intensive research on whether cancer rates will increase among survivors' children. That said, there has already been animal research studying rats and mice showing a positive correlation between irradiation of parent mice and subsequent malformations in the second generation, as well as cancerous tumours.

The initial leukaemia peak disappeared after about fifteen years, but to my surprise a second leukaemia peak is now appearing, this time among the survivors

who were children younger than ten years old at the time of the bombing. They are now approximately 85 years old. These survivors develop a special type of leukaemia, called MDS,¹ which occurs in the elderly.

It is very clear that the atomic bomb affects the human body for a lifetime, which means that the atomic bomb radiation affected survivors' DNA. Double-strand DNA is the driver of the cells that make up the human body. Radiation from the atomic bomb injured these double-strand DNA and, while still hot from the radiation, the damaged DNA erroneously re-coupled, developing malignant genes, or abnormal gene fusions that cause various cancers, including this second type of leukaemia, MDS.

Going back to the explosion of the atomic bomb, we know it caused massive damage and destruction, which you yourself survived and have learned about through your mother. What were the immediate, short- and long-term medical consequences for the survivors of the atomic bomb?

The Nagasaki medical university was left in ruins. It is located only 600 metres from the hypocentre. Nine hundred professors and medical students were killed almost instantly, and the university hospital, which was the largest hospital in Nagasaki, was completely destroyed by the bomb. Because of this, there was no meaningful medical care available for surviving *hibakusha* immediately after the atomic bomb was dropped.

To further complicate matters, for a few days no medical rescue could reach those affected. Heavily irradiated survivors of the atomic bomb all died within one to two months because there were no effective treatments, not even antibiotics or blood transfusions, and because the infrastructure was totally destroyed, including hospitals and pharmacies. Although those survivors exposed to radiation within 1.5 kilometres of the hypocentre were treated as best as they could have been under the circumstances, many, many survivors died in the immediate aftermath of the bombing.

Within 1.5 kilometres of the hypocentre there were significant short-term medical effects, such as destruction of bone marrow and mucosa, or colon surface, which causes bleeding and infections for a few months.

In addition to suffering short- and long-term illnesses caused by radiation, survivors who were hit by the blast had burns, broken limbs and similar injuries – is there a higher proportion of disabled people in Nagasaki than in other cities in Japan?

Most survivors suffered burns. One woman I personally was acquainted with, who died a few months ago in the nursing home, suffered severe burns on her

1 Myelodysplastic syndrome.

whole face, and when it healed the entirety of her face was covered with scar tissue with keloid formation. Because of this she lost her chance of marriage at a very young age.²

Harsh medical consequences such as severe burns and fractures and other bodily injuries, for example due to broken glass, were typical effects of the atomic bomb blast. Some people were struck by so many shards of broken glass that some of the glass had to be left inside their bodies.

People near the blast itself suffered burns. People who were much further away from the hypocentre at the time of the blast suffered other injuries. A British Navy research team came to Nagasaki and observed the *hibakusha*. One officer wrote that each victim was killed three times: once by the blast, once by the heat, and once by the radiation. If an individual was closer to ground zero, her whole body became charcoal. Those terribly burned victims received a lethal dose of radioactivity as well as heat radiation, and also fractures.

Elderly survivors may not have relatives to care for them, and you mentioned the fact that one woman was unable to marry because of her injuries. What other non-medical consequences were caused by the atomic bombing?

Nagasaki University doctors performed extensive psychological research in 1995, on the occasion of 50th anniversary of the atomic bombing. We found that about 7,000 survivors showed a very high incidence of depression and post-traumatic stress disorder after fifty years, a very large-scale psychological consequence. They suffer from flashbacks to the memory of the bombing, causing their mental health to deteriorate. This was the first data about psychological research. I showed this data at the first Conference on the Humanitarian Impact of Nuclear Weapons, held in Oslo in 2013.³

There are also other non-medical effects. First of all, there were financial or economic problems. Most of the survivors lost their houses and belongings and became destitute. In the first five to almost ten years, no economic help was provided by the Japanese government. Because of this, survivors united to protest to the government, asking for hospital and medical care as well as economic support. That was the beginning of the survivors' movement, whose long history of protest still continues today. Survivors want the government to admit that their present condition, physically, mentally and socially, is due to the atomic bombing.

2 Dr Tomonga spoke more about this woman in his presentation "The Lifelong Health Effects of Atomic Bombs by Immediate DNA Damage", Conference on the Humanitarian Impact of Nuclear Weapons, Oslo, 4–5 March 2013, available at: www.regjeringen.no/globalassets/upload/ud/vedlegg/hum/hum_tomonaga.pdf.

3 *Ibid.*

When the Nagasaki Atomic Bomb Hospital was established in 1958, the Japanese government initiated a medical care system for all survivors. Medical costs were compensated almost completely, even for dental treatment. Survivors are given a booklet that they can show at the hospital when admitted to get free medical care. Moreover, those survivors receive a monthly payment of about around \$270 to cover additional health costs.

Those survivors who have developed cancers and those who were located less than 2 kilometres from the centre of the blast, meaning they were exposed to moderate to high doses of radiation, get additional financial support amounting to around \$1,000 per month. There are still about 200,000 living survivors who can benefit from this in Nagasaki and Hiroshima combined. This number is decreasing because as time passes, the number of living survivors is dwindling. About 90% of them receive the monthly medical care payments and maybe 10% of the total survivor population receive additional monthly financial support. There are very strict conditions that must be met in order to receive the additional financial support, and there are still many survivors who sue the government and the Ministry of Health for additional financial support.

How were the survivors treated by the rest of the Japanese people? Is there any stigma to having been in Hiroshima or Nagasaki when the cities were bombed?

There was some social stigma. Some people could not get married in the very early recovery phase, in the 1950s and early 1960s. Many people who were not exposed to the atomic bomb were hesitant to allow their sons or daughters to get married to atomic bomb survivors. That was a kind of social discrimination. But gradually this segregation disappeared and many survivors could have a normal family life. It took almost ten years to reach an understanding of the effects of the atomic bomb. Some people were heavily affected – those who were located a short distance from the centre of the blast – but those who were some distance away seemed fine. Once this was widely recognized, there was no more of such discrimination in allowing marriage with survivors.

I myself never personally experienced any social stigma, but the woman I mentioned earlier who suffered severe burns on her face could not get married and could not get hired for normal jobs. Eventually she became a housekeeper at the university hospital. Her salary was very low. Every day for her whole life, she swept all the corridors at the hospital until she was 65 years old, when she moved into the nursing home. She had a very lonely life, but when she was about 50 years old, she decided to talk about her experience of the atomic bombing. She became a very famous protester against the atomic bomb. She was even invited to visit the Pope in Rome. That was an extremely happy point in her life. But it took more than forty years for her to feel comfortable talking about her experience, and she did so only because she felt that otherwise the world would never eradicate the atomic bomb.

You spent your career treating people in Nagasaki who were affected by the atomic bomb, primarily those who survived the bombing itself. Are you still treating survivors?

I spent almost forty years as a specialist at the university hospital. After I retired from the university six years ago, I was appointed director of the Japanese Red Cross Nagasaki Atomic Bomb Hospital. I worked there five years, and retired this March. Now I am the director of a clinic attached to the Atomic Bomb Survivors Nursing Home, taking care of about 400 elderly atomic bomb survivors who have no family to care for them because so many of their family members were killed by the atomic bomb. At this clinic I am still providing medical care for these elderly survivors similar to the care I provided when I was working at the Atomic Bomb Hospital.

With more than seventy years of life experience in and around Nagasaki, what are some of the main lessons you would draw from your experience treating and interacting with survivors? Are there any lessons learned that you can pass on?

It has been seventy years since the atomic bombing, and I have become a specialist in the medical consequences caused by it. As a scientist, I have noted the lifelong effects of atomic radiation on the body, DNA and genes.

I have unique viewpoint in two ways: as a survivor myself, and as a scientist, a medical doctor who can see the effects at the DNA level. By combining these two points of view, I see that we as human beings are facing very serious questions about nuclear technology.

Human civilization developed nuclear fission technology, which became, on the one hand, nuclear weapons, and on the other hand, nuclear power stations. This innovation brought a very meaningful energy source as well as a very destructive and inhumane weapon that has horrific effects on the human body. These are the two faces of nuclear technology. The outcome of my seventy years of observation is that the Japanese population, as well as the rest of the world's citizens, need to seek a way towards world peace, without nuclear weapons.

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Photograph by Jeff
Cooke, © ICRC.

Mr Sadao Yamamoto was born in 1931 and was 14 years old when the atomic bomb was dropped on Hiroshima on 6 August 1945. He was approximately 2.5 kilometres away from the hypocentre when the bomb exploded. He has since become an advocate for the abolition of nuclear weapons through sharing his story. In 1970, he conducted the first performance of Ishibumi – Requiem for a Male Chorus, in honour of the first-year students who were killed in the atomic bombing of Hiroshima. It has been sung every year since, and to mark the

*70th anniversary of the atomic bomb being dropped on Hiroshima, the original choir sang the requiem in 2015.*⁴

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Mr Yamamoto, you were in junior high school at the time the atomic bomb was dropped on Hiroshima. How do you remember Hiroshima before the atomic bomb was dropped? What was your daily life like? What happened in the days before the atomic bomb was dropped?

We did not have major air raids in Hiroshima prior to the atomic bomb. There had been two small air raids where a bomber flew over the city and dropped small bombs; another time, a B-29 plane flew over Hiroshima and dropped about ten bombs in the city centre. Other than that, there were no major air raids, so in those days it was oddly kind of peaceful. At night sometimes we had air-raid warnings and we would have to cover the lights with black cloth and go into the air-raid shelters. During the daytime we had ordinary, regular lives.

When the bomb was dropped, I was in the second year of junior high school. 140,000 people died because of the atomic bombing, including many students like myself. At that time, the population of the city of Hiroshima was about 350,000, including the military personnel stationed there and those who came from outside of the city; as much as 40% of the total population died in the bombing.

At that time, students from the elementary school in the third through sixth grades were evacuated to the countryside because of the air raids. First- and second-grade students were considered too young to be separated from their families. There were only three schools left in Hiroshima: one was the two-year high school, another was the boys' junior high school, and the third was the girls' junior high school. When they were not at school, the junior high school students were mobilized to work at the munitions factories and other military facilities. The third year to fifth year of the junior high students mainly worked at the munitions factories. There were many small munitions factories in the city, but the major ones were located relatively far from the hypocentre. The first-year and second-year junior high school students, like myself, were engaged in building demolition, which was carried out in the centre of the city. We would tear down buildings to make fire lanes to prevent fire spreading after air raids. It was tough work. Adults tore down the buildings, and students would clear the debris.

These building demolitions were carried out in the centre of Hiroshima, and the students were mobilized from almost all over the city. This meant that a lot of students in the first and second year of junior high were victims of the atomic bomb because they were working in the area directly surrounding the

4 Mr Yamamoto has given testimony for the Hiroshima Peace Culture Foundation, which can be read on the organization's website. Sadao Yamamoto, "1st and 2nd Year Students at Hiroshima Second Middle School – A Difference of Life or Death", *Peace Culture English Newsletter*, No. 72, January 2015, available at: www.pcf.city.hiroshima.jp/hpcf/heiwabunka/pce72/English/08E.html.

hypocentre. Concretely, 8,187 students were mobilized in building demolition work with 176 teachers from thirty-five schools in the city. Out of these, 6,295 students and 132 teachers were killed by the bombing. This means that almost 77%, or three out of four, of the total mobilized students were killed. All of the older students from the schools who were mobilized to work in the demolition works near the hypocentre were killed.

Today, in the Peace Memorial Park, along Peace Boulevard, there are three monuments in memory of the student victims of the atomic bomb. One of them is for my school, the boys' school; another is for the shipbuilding technical high school, and the third is for the girls' school. The largest number of victims came from the girls' school, from which all of the first- and second-year students, 544 students in total, were killed by the bombing, along with seven teachers. At my school, 321 first-year students were killed by the bombing, along with four teachers.

At my school, the first-year students and second-year students alternated classes and work, attending classes and engaging in building demolition work every other day. The day prior to the bombing, 5 August, our second-year students went to work and the first-year students attended school. On that fateful morning we were scheduled to attend classes, but the day before a teacher told us not to go to school the following day, but instead to gather at the eastern drill grounds instead of going to school to weed the potato field there. I believe that determined our fate.

The location where the first-year students were working was on the riverbank, behind a building about 600 metres from the hypocentre of the explosion. The eastern drill grounds where the second-year students had gathered were about 2.5 kilometres from the hypocentre, near the Hiroshima station. This difference in distance from the hypocentre was the difference between life and death. All 321 of the first-year students were killed. The second-year students were burned all over our bodies, but none of us were killed.

Where were you when the atomic bomb was dropped on Hiroshima? What was your personal experience of the atomic bombing and its immediate aftermath?

On 6 August 1945, at 8:15 a.m., the time of the bombing, I was in the east drill ground, and at that time we noticed there were three B-29 bombers flying over the sky from the southeast. There had been an air-raid warning, but it had been cancelled and there were only three planes, so we thought they must be doing reconnaissance.

We looked up into the sky and noticed that suddenly, after flying over the city, those planes turned around and flew away, which was strange. At that moment, we heard a roaring explosion and all of us were blown back onto the grass by a shocking wave of heat. I was knocked unconscious. After I came to and stood up, I noticed that in the direction of the Hiroshima train station, there was a huge, pink pillar of fire. We thought the station must have been bombed.

The left sides of our faces were burned. Those burns were treated with vegetable oil because in those days it was believed that applying vegetable oil would prevent bacteria from entering our bodies. After we received that treatment, we fled with our friends to the shrine on the nearby mountain because we were afraid that another bomb would be dropped. There were already some adults at the shrine, and they told us not to go outside because it was too dangerous, so I hid inside with some of my classmates. When there was no sign of another bomb we went outside to see the city, but all we could see was white smoke. Then gradually we could see that the houses and buildings were burning down, including the elementary school.

By around three or four in the afternoon, the fire had died down. I decided to go back to my house. It was about a kilometre from the evacuated area. Everything was burning in that area. I saw the house completely destroyed. The tatami mats covering the floor were lifted up, and it was all messy. Fortunately, my family was all right. My elder sister, who had been mobilized, also came home. My father was lucky because he was at work at the time of the explosion inside a building only about 680 metres from the hypocentre, but fortunately he was on the other side of a thick concrete wall inside the building so he was not injured. The building then caught fire and burned down. He was one of the few survivors.

What happened to the first-year students from your school? How did this inspire you to advocate for an end to nuclear weapons?

The first-year students at my school were engaged in building demolition work a little more than half a kilometre from the hypocentre. The atomic bomb exploded at a height of 600 metres above the ground, and it is said that the temperature on the surface of the ground around the hypocentre reached 3,000 to 4,000 degrees Celsius, an unimaginably high temperature, in an instant. It must have been a living hell for all of them. I had thought that everyone was killed on the spot instantly, but twenty-four years after the bombing, in the fall of 1969, a TV drama named *Ishibumi* was aired by the local TV station, based on the story of what happened to those first-year students after the bombing. In Japanese, an *ishibumi* is a stone monument bearing an inscription, like the one in Hiroshima inscribed with the names of the victims. The next year, a book of the same title was published, depicting what happened to the first-year students.⁵

I was astonished to learn that of the 321 first-year students, about a third were killed on the spot and some of them drowned in the river, but the rest of them, some of them severely burned all over their bodies, walked several kilometres to attempt to get back to their homes out of an ardent desire to see their parents. Some twenty students instead tried to go back to the school, led by

5 “Monument”, *Wikipedia*, available at: <https://ja.wikipedia.org/wiki/%E3%81%84%E3%81%97%E3%81%B6%E3%81%BF> (in Japanese).

a teacher. Some died on the way. Others jumped into the river, singing war songs together for encouragement.

After I watched that TV programme, I determined that it was necessary for me to share the tragedy of the first-year students of my school with the next generation in musical form. I asked a student from that year to write a song. The song is called *Requiem Ishibumi*. At the time, I was a conductor for a male chorus. On 2 October 1970, we presented *Requiem Ishibumi* on the spot where the Hiroshima city public hall once stood. The monument for the victims from my school stands on the riverbank, so we performed with the door open to the river and dedicated our song to the souls resting at the monument. Now this song is sung by the chorus group from the school every year. In 2015, the original members of the chorus will sing the song to mark the 70th anniversary of the atomic bombing.

You have told us about your experience and the experience of other students on 6 August 1945. What did you observe in the immediate aftermath of the atomic bomb? Were there lots of people helping each other?

Right after the A-bomb was dropped, because of the blast and the heat, I was blown off into a field. All of the second-year students were scattered; I do not remember where my friends went. The teachers did not tell us anything, and as I said, we went to the shrine on the hillside, because it was in the forest and my friends and I thought it was safer.

There was an army transportation unit near the Hiroshima port, and they were given an order to help the survivors at around 8:15, immediately after the bomb was dropped. But the central part of Hiroshima was engulfed in a big fire, making it difficult to go into the city centre to give relief. I heard that all they were able to do was take care of the people who were fleeing from the city centre. There is an island near Hiroshima called Ninoshima Island, and on Ninoshima Island there is an army quarantine facility. Many survivors were shipped to the facilities on Ninoshima. Many people came to Ninoshima from the surrounding area to look for their family members. Eventually the relief teams came into the city to give support.

What was your experience in the following days and weeks? Did you leave the city or did you stay there and try to look for your relatives?

After the bomb, all the people who were able to flee had fled. Many of those who could not escape died in the burning city. My aunt, one of my mother's younger sisters, was in the Hondori Street area, about 400 metres from the hypocentre. On the day after the bomb was dropped, my mother told me to go there to see what was happening to her family. The house was still on fire. There had been some people there, but now all that was left were charred bones. One person I saw was just a skeleton, but the bones were on fire.

I did not find my aunt. I did eventually find her son, one of my cousins, who told me what had happened to his family. My aunt's husband was apparently not injured but was accommodated in the facility on the island of Kanawa-jima Island in Hiroshima Bay. I went there to see him. He didn't have any visible injuries, but we heard later that he was moved to another facility where he died six days later due to the intense radiation he suffered, even though he seemed OK when I saw him. My aunt was 400 metres from the hypocentre when the atomic bomb was detonated, and was also exposed to radiation. She died on 14 August 1945.

You have lived in Hiroshima for your entire life. What long-term consequences have you observed? Were you scared that you had been exposed to radiation yourself?

Already in 1945 we knew from the newspapers that the bomb had been an atomic bomb. Japanese newspapers talked about the bomb being an atomic bomb for the first time after Japan accepted the Potsdam Declaration and surrendered, probably on 15 or 16 August, but at the time I did not know anything about radiation – I only knew an atomic bomb was a big bomb. Later in life, after I learned about the health effects of radiation, I was afraid I would develop cancer from the radiation. Mostly I was afraid of leukaemia.

What lessons can be learned from the unimaginable suffering caused by the atomic bomb? What message do you have for the future?

Many people, including the many young students I have spoken about, were killed by the atomic bombing. We should never repeat the tragedy. I hope that we will have a peaceful world without wars and without nuclear weapons, and through this kind of testimony I am making every effort towards that goal.

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Mr Yoshiro Yamawaki was just 11 years old when the atomic bomb was dropped in Nagasaki. He and his twin brother were about 2.2 kilometres from the hypocentre. He has since become an advocate for the elimination of nuclear weapons and hopes that in sharing his experience he can prevent others from having to suffer the effects of nuclear weapons. In 2010 he was appointed as a Special Communicator for a World without Nuclear Weapons by the Japanese government.⁶

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6 Mr Yamawaki has given his testimony at the Nagasaki Atomic Bomb Museum. You can read another version of that testimony on the Nagasaki Atomic Bomb Museum website. Yoshiro Yamawaki, “The Unforgettable Experience of the Atomic Bombing”, available at: http://nagasakipeace.jp/english/survivors/yoshiro_yamawaki.html.

Mr Yamawaki, you grew up in Nagasaki and were there on the day the atomic bomb was dropped. Can you describe your experience? What was Nagasaki like in the days and weeks prior to the atomic explosion?

I was in the second grade of elementary school when Japan started the Pacific War. When the newspaper and the radio reported that Japan had drawn battle lines with the United States and Britain, many Japanese citizens believed that Japan would achieve victory because from the time we were young, we were instilled with the idea that Japan was the land of God. However, as the war went on, the inevitable defeat of Japan became clear. The war was still going on when I entered the sixth grade, and it was during summer vacation of that year that the atomic bomb was dropped on Nagasaki. I was exposed to the atomic bomb while at home, some 2.2 kilometres from the hypocentre of the explosion.

Let me first tell you about my family back then. My father, who was 47 years old, worked as an engineer for the Mitsubishi Electric Corporation. My mother was 37 years old and there were seven of us children, including myself. My oldest brother was 14 years old and a third-year junior high school student. My twin brother and I were 11 years old and in sixth grade at the elementary school. I had two younger sisters and two younger brothers as well. However, in my family, it was only my father and we three older boys who were in Nagasaki on the day the atomic bomb was dropped, and who suffered its effects.

US Air Force Lockheed fighters and Grumman fighters attacked Nagasaki three times two weeks before the atomic bombing. During the last of those attacks, bombs were dropped on Inasa International Cemetery, which was near my family's house. The blast caused some big gravestones to break through the roof and fall into my house. My mother was shocked by the incident. She took my younger brothers and sisters and went to her mother's home in Saga the day before the atomic bombing.

What happened on the day that the atomic bomb was dropped on Nagasaki? Where were you on that day, and what did you experience?

On the morning of the atomic bombing, my father, my brothers and I woke up at home. My mother had already evacuated to the countryside with my four younger siblings. After getting breakfast, our father went to work as usual. My older brother, who was in junior high school, went to the weapons factory where he was working as part of the mobilized student forces. The two of us twins stayed at home because it was summer vacation and there was no school.

Until just before 11 o'clock, we were out on the veranda. Then we got hungry and went into the sitting room in the back of the house. While we were sitting there at the table, a whitish-blue light shot across the room. Then came a roar that seemed to shake the whole house. The two of us got down on the tatami mat and covered our eyes, ears and noses with our fingers, just like we

had been taught to do. In that position, with plaster from the walls and other debris falling down on top of us, I remember thinking that a bomb had directly hit our property and that we would probably be buried alive there.

The falling debris didn't continue falling for long, however. After a few minutes I heard the voices of people in the neighbourhood, screaming and crying. Remaining on the ground, I lifted my head up and looked around to find that everything had completely changed. Almost all the furniture had been mangled and tossed around. The walls had come crumbling down, and in every room the tatami-mat floors were covered with dirt and debris. If my twin brother and I had not moved from the veranda to go to the sitting room five minutes before, we most likely would have suffered horrible wounds from the heat rays and the blast.

The roof had been blown off, and we could see the sky. The pillars and walls were embedded with large numbers of sharp-edged fragments of broken glass. The other houses in the neighbourhood were in the same state of destruction. Across the harbour, the central part of the city was covered in clouds of dust.

My twin brother and I evacuated to the bomb shelter in our yard, where we waited for our father and our older brother to come home. About an hour had passed when our oldest brother arrived home from his factory. He told us that it was too dangerous to stay in that small bomb shelter and that we should move to a larger one nearby.

The bigger bomb shelter, which was like a tunnel carved into the cliff-side, was filled with mothers and their children. Children who were outside when the bomb detonated had been showered with heat rays and had suffered burns on any exposed skin. Other children were crying because they had been injured by shards of glass and other fragments that had been thrown by the blast. We spent that entire night waiting anxiously for our father to come back. By the next morning, however, he still hadn't returned. At that point, the three of us went to find him.

What did you see when you ventured out into the city? What were the immediate needs of the people in the aftermath of the atomic bomb?

The primary concern of survivors was to look for family members. Right after the bombing, people began to look for their relatives. In terms of medical needs, as you can imagine, the hospitals were destroyed, but a relief centre had been established in an elementary school. The medical workers were also injured and there was no medicine, so they fetched water from the ocean and boiled it to put on the injuries. It was the best that they could do. More sophisticated medical assistance was not available. There was a hospital set up by the Japanese army in the late afternoon of 9 August that had some medicine and a few medical workers, but it was not a very sophisticated hospital.

The second thing that the survivors were concerned with was a shortage of food. There was no allocated food delivered by the government, so survivors

ate whatever they happened to have in the house or asked their relatives to send food.

Another thing that survivors suffered from was the lack of shelter. With their houses destroyed, people did not know where to go. The northern part of Nagasaki city was completely destroyed. Some people lived underground in bomb shelters. Others collected pieces of wood from the ground and built makeshift shelters.

What did you and your brothers observe when you went looking for your father? What happened when you eventually found him?

The damage we saw grew worse and worse as we continued on to look for our father. The houses near the roadside had all burned to the ground. Even those trees and electric poles that remained standing were scorched. The factories on the other side of the river now looked like masses of crushed wire, with only the largest of their columns left standing.

There were many dead bodies amongst the debris littering the roads. The faces, arms and legs of the dead had become swollen and discoloured, causing them to look like black rubber dolls. As we stepped on the bodies with our shoes, the skin would come peeling off like that of an over-ripe peach, exposing the white fat underneath.

There were many dead bodies floating in the river as well. We were drawn to one that belonged to a young woman of about 18 or 19, from which a long white belt was dragging behind. When we got closer, we saw that this white belt was really her intestines, which were protruding from the side of her abdomen. Feeling nauseous, we turned our eyes away and hurried off in the direction of our father's workplace.

When we had come within about 100 metres of the factory where our father worked, my brother suddenly screamed out and stood paralyzed with fear. I looked over his shoulder to see a boy of 6 or 7 who had died with something white hanging out of his mouth. At first glance, it seemed to me that he had been vomiting up noodles when he died. Looking closer, however, I realized that the roundworms that had been living inside his body had come shooting out when he died. We ran away, fighting back our nausea.

Our father's factory had been reduced to nothing but scorched metal framing. Through the demolished walls we saw three men working with shovels. We called out, "Our name is Yamawaki. Where is our father?" One of the men glanced over and said, "Your father is over there." He pointed in the direction of the demolished office building.

The three of us dashed off in the direction he had pointed to. What we found there was our father's corpse, swollen and scorched like all of the others. As we stood there stunned, the men with the shovels told us that if we wanted to take our father back home, it was better to cremate him there first. The crematories had also been destroyed in the bombing and could not be used. Not

knowing what else to do, we went around the scorched ruins of the factory and gathered up smouldering pieces of wood so we could perform the cremation. We put our father's body on top of a bed of burned posts and then piled up the pieces of wood on top of him. When we lit it on fire, the flames rose high in the air. We put our hands together to say prayers for him. When we looked up again after finishing our prayers, we saw both of our father's feet were sticking out from the fire. That was an absolutely unbearable thing to see. Our feelings must have showed because the man from the factory told us we had better go home for the day and come back the next day to collect the remains.

The next morning we looked around the kitchen area of our demolished house for a pot to put our father's remains in. We found one and the three of us took it along with us as we went to collect our father's remains. It was very strange but we were not scared at all by the corpses that we saw any more. We thought of them as no more than objects that blocked our way as we walked.

When we arrived at the place where we had cremated our father's body, however, a shock awaited us. The body still remained as it had been the day before, in a half-cremated state and covered over with ash. There was no one from the company around. We three brothers only wanted to collect our father's cremated bones, but his half-burned body was lying exposed. The only parts of his body that had been cremated were the tips of his hands and feet and part of his stomach. We could only pick out a few of his bones.

This body, which was like a skeleton covered in ash, was far more gruesome than the corpse of someone just deceased. It was even more unpleasant when we thought about how this body belonged to the same father we had always talked to and eaten meals with. It got so that I could no longer bear to look at our father's body and I said to my brother, "Let's go home now and leave his body here."

Thinking back on that, I know that it was not the right thing to do. My brother looked at our father's body for a while longer and then said that there was nothing more we could do except to take his skull home. My brother had brought tongs, but when the tongs touched our father's skull it crumbled apart like a plaster model and the half-burned brains came flowing out. Letting out a scream, my brother threw down the tongs and darted away. The other two of us ran after him. There were the circumstances under which we forsook our father's body. I think that all people who lost family members and others close to them in the atomic bombing went through experiences similar to this. There were approximately 74,000 people who were killed in an instant by that one, single atomic bomb.

These are scenes from the atomic bomb that will never leave my mind. My mother, who had gone out to the country with the younger children on the day of the atomic bombing, passed away eight years ago at the age of 97. My brothers and I never told her the details of what happened when we went to retrieve our father's remains. One reason why we didn't tell her was that she was, in fact, our stepmother, who had taken care of us since our biological mother passed away when my twin brother and I were 2 years old.

Do you still suffer from anguish because of the things that you witnessed? Does giving testimony like you did today help you to overcome that?

I still have those images and visions, and I am still suffering from them. When I see something like an image of a skull, it reminds me of my father's skull, and when I see something like a long, white cloth, it reminds me of the dead woman floating in the river. The testimony itself does not help me to overcome those emotions and the visions, but later the teachers and students send letters to me. That is my encouragement. It keeps me going.

In the years since the bombing, did you or your brothers experience any long-term health effects because of the atomic bomb? Did you receive any medical care?

It was not until many years after the atomic bomb was dropped that I learned about the effects of radiation. Before then I had no knowledge about the radiation and its effects. I believe that the majority of the people in Nagasaki did not know what radiation was.

In the aftermath of the bombing there was a special examination of the effects of the radiation by the US Atomic Bomb Casualty Commission [ABCC]. The ABCC was not there to examine the health conditions. They came to survey the conditions that were caused by the radiation and collect data rather than to make individual medical check-ups. The ABCC team came and they examined those who were severely injured, but the Japanese government health benefits came into effect only twelve years later. That is how much time it took for them to acknowledge that the atomic bomb survivors needed special health care.

When I was 35, I began to have liver and kidney problems. Because of these health problems I have been admitted to Nagasaki Atomic Bomb Hospital fifteen times. I was given interferon and other treatments, which I am still receiving.

I was granted an Atomic Bomb Survivor's Health Book Certificate, qualifying me for health-care benefits, and eventually was diagnosed with stomach cancer. I went through surgery to treat my cancer in 2008 and 2010 at Nagasaki University Hospital. After the surgeries I have continued to go to the Atomic Bomb Hospital to be treated for my disease. My oldest brother and my twin brother have also been diagnosed with cancer.

You have been appointed as a Special Communicator for a World without Nuclear Weapons to act as a spokesperson for survivors. As a spokesperson, what is the main message you want to transmit? In particular, what message do you want to transmit to young people?

The then prime minister, Naoto Kan, appointed me as a Special Communicator for a World without Nuclear Weapons in September 2010. This was something I had not

expected. In this role, I have testified about my atomic bomb experience to high school and junior high school students in the United Kingdom and to members of the United Nations Fellowship Programme.

The most important thing that I would like to convey to people is the reality of the severe impact that the use of nuclear weapons has. The effects go on across generations to the children and grandchildren of survivors, carrying on the cruelty of using these weapons. I have four daughters, and my oldest daughter has a type of disease that is similar to leukaemia. My second daughter is suffering from breast cancer.

How do you see the detonation of the atomic bomb after the war was over? When you think about the Americans, who dropped the atomic bomb on Nagasaki, is there a sense of forgiveness or is it impossible to forgive?

In the beginning, people in Nagasaki did not know what type of bomb was dropped and wondered why such a wide area was affected. The word “atomic” was used in newspapers, but this was a new type of bomb and there was a report that the damage or suffering was limited. Some of the newspapers would say this because reporting on the atomic bomb was strictly controlled by the Allied Powers General Headquarters, who feared it would cause public security concerns and make the Japanese hostile toward Allied occupation forces.

Gradually, in the years after the bomb was dropped, I learned about how it was developed. Once I learned about how this bomb was developed and how it was used, I did not have any sense of hate towards ordinary Americans because I knew that most Americans did not know about the atomic bomb at that time. Only a few scientists and President Truman knew about the atomic bomb. I have some hard feelings towards those few people who decided to drop the bomb, but I do not hate Americans as a whole. For instance, General Eisenhower or General MacArthur, who came to Tokyo after the war ended, I know that even they were against dropping the bomb on Hiroshima and Nagasaki.

Looking forward, what do you believe the future will hold? What would you like the world to take away from your experience?

I pray that no one else will ever experience the brutal tragedy that I witnessed at the age of 11, but it is said that there are some 15,700 nuclear warheads in existence,⁷ all of which are far more powerful than the atomic bombs used on Nagasaki and Hiroshima.

There are still many people in the world who do not know how fearful and cruel nuclear weapons are. In addition to this, the world has become increasingly

⁷ For more discussion on the current state of nuclear arsenals, see Hans Kristensen and Matthew McKinnie's article in this issue of the *Review*.

tense in the wake of 9/11 and there are still civil wars and international conflicts being fought.

As long as they exist, nuclear weapons will inevitably lead to disaster. Please lend us your strength to eliminate nuclear weapons from the face of the earth and make sure that Nagasaki is the last place on the Earth to suffer an atomic bomb. Let us all work together, all of us, to build a peaceful world, a world free of war. The atomic bomb is not an ordinary weapon, so it should not be used in any war. As you know, even war has limits.

VOICES AND PERSPECTIVES

The view from under the mushroom cloud: The *Chugoku Shimbun* newspaper and the Hiroshima Peace Media Center

Tomomitsu Miyazaki

Tomomitsu Miyazaki is the director of the Hiroshima Peace Media Center, a wing of the *Chugoku Shimbun* newspaper. The Peace Media Center website is dedicated to coverage of the atomic bombings, nuclear issues and peace issues in five languages.

Keywords: Hiroshima, atomic bomb, nuclear weapons, media.

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The *Chugoku Shimbun* is a daily newspaper based in Hiroshima, the city that experienced the first nuclear attack in human history. Founded in 1892, with a circulation of 620,000, the *Chugoku Shimbun* is one of Japan's leading regional newspapers.¹ On 6 August 1945, an atomic bomb exploded above the city and citizens of Hiroshima. The bomb's powerful blast, heat rays and radiation annihilated the city, killing more than 100,000 people, including those who had succumbed to injuries and illness by the end of 1945. Those who managed to survive lost not only loved ones but also their homes, schools and workplaces. They endured the chaos of the postwar period and rebuilt the city. The *Chugoku Shimbun* has always stood beside the people of Hiroshima as a newspaper company that also endured the tragedy, and it worked hard to support the city's reconstruction in the aftermath of the atomic bombing. Furthermore, it has long pursued a variety of distinctive efforts to help realize a world without war and nuclear weapons.



Figure 1. West End of Miyuki Bridge, 2.2 kilometres from the hypocentre. Survivors gather in front of the police station in Sendamachi to receive assistance from police officers. Photo by Yoshito Matsushige, © *Chugoku Shimbun*.

This article, illustrated with pictures taken by the newspaper's photographer, Yoshito Matsushige, will give readers insight into the experience of the *Chugoku Shimbun's* staff on the day the atomic bomb was dropped on Hiroshima. It features the stories of three staff members, photographer Yoshito Matsushige, journalist Haruo Oshita, and Yasuo Yamamoto, manager of the paper's stenography department. It also describes the *Chugoku Shimbun's* efforts to document the experience of Hiroshima's citizens, notably through the establishment of the Hiroshima Peace Media Center, and the newspaper's work towards a future without nuclear weapons.

Voices of *Chugoku Shimbun* staff on the day the atomic bomb was dropped

More than 100 employees of the *Chugoku Shimbun*, about one third of the newspaper's work force at the time, were killed in the atomic bombing. The company's headquarters, located about 900 metres east of the hypocentre, were completely destroyed. The *Chugoku Shimbun's* ability to print newspapers suffered a disastrous blow, with the two rotary presses destroyed by fire and the

1 Jiro Yamamoto, "Message", *Hiroshima Peace Media Center*, available at: www.hiroshimapeacemedia.jp/?page_id=25636 (all internet references were accessed in November 2015).

communication equipment in ruins. The surviving workers suffered injuries, and many lost family members.

Below is the testimony of three of *Chugoku Shimbun*'s employees in 1945. Yoshito Matsushige was a photographer who took a handful of historic photos on the day the atomic bomb was dropped. Haruo Oshita saw the burnt ruins of the city, like a vision of hell, as he walked to the newspaper building. Yasuo Yamamoto lost his only son, 13 years old at the time, to the atomic bombing. Afterwards he made the revival of the *Chugoku Shimbun* his mission and worked tirelessly towards that end.



Figure 2. West End of Miyuki Bridge, 2.2 kilometres from the hypocentre. Survivors suffering burns receive dabs of cooking oil brought from the Hiroshima Army Provisions Depot nearby, or oil used for the transformers of the Hiroshima Electric Railway. Photo by Yoshito Matsushige, © *Chugoku Shimbun*.

Yoshito Matsushige

One avenue that the *Chugoku Shimbun* has pursued in its efforts to realize a world without nuclear weapons is its coverage of the atomic bombing and peace issues, beginning with the five photographs taken by *Chugoku Shimbun* photographer Yoshito Matsushige (1913–2005) on the day of the bombing. There are many photos of the bomb's mushroom cloud taken from a distance that day, but only the five images captured by Mr Matsushige depict what happened to human beings under the atomic cloud. Some people were seriously injured, knocked unconscious by the blast, or trapped under collapsed buildings. Others had their clothes and bodies so severely burned that their skin peeled away, hanging down in strips. Still, those who survived somehow managed to flee from the city to outlying areas.

The most well-known of the five photos are the two taken at a location 2.2 kilometres from the hypocentre of the atomic blast, just three hours after the bomb exploded. The photos show people at the west end of Miyuki Bridge after they fled from the area near the hypocentre. In his later years, Mr Matsushige described what he had seen:

I had walked for two and a half hours downtown through blood-red rubble strewn with corpses, and I never snapped my shutter once. The only pictures I took were the two on the west end of Miyuki Bridge about three hours after

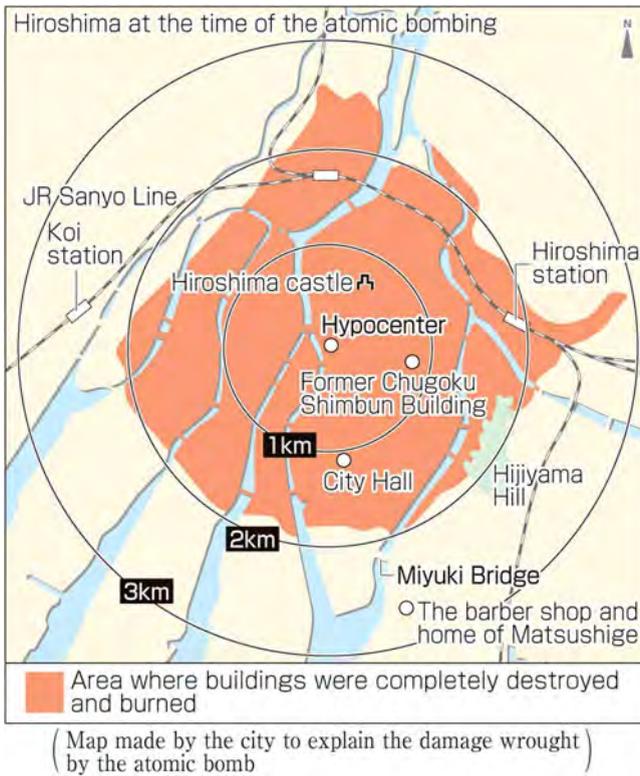


Figure 3. Map of Hiroshima at the time of the atomic bombing. © Chugoku Shimbun.

the bombing, two more of my house that afternoon before going into town, and one more that evening of a policeman issuing survivor's certificates in Minamimachi – a total of five.

When I raised the camera for a second shot, I found that the viewfinder was clouded with tears. It wasn't really anger, but I thought America had done a terrible thing. I felt sorry for the victims and it was so cruel that I cried.

I wanted to take more photos from the police branch office. I could see people treating victims. But I found it impossible to look through the viewfinder. The scene before my eyes was so gruesome. I walked closer to people, but I couldn't snap the shutter. Feeling uncomfortable, I asked no one in particular, "Isn't this terrible?"

I think it was good that I took those photos. Of course, they won't tell everything about the horror of the bombing, but I still feel I had done well to



Figure 4. The barber shop and home of Yoshito Matsushige, located 2.7 kilometres from the hypocentre. The shop was run by Mr Matsushige's sister and his wife. The blast littered the barber shop with rubble and broken glass. His wife, who appears in the scene, was pregnant at the time. Photo by Yoshito Matsushige, © *Chugoku Shimbun*.

about 8 kilometres west of Hiroshima, to go to the headquarters of the *Chugoku Shimbun*. He caught a ride on a relief truck from the Hatsukaichi Police Department, but the bridge into the Hiroshima delta had collapsed and the truck could not advance into the city. He crossed the Koi Railway Bridge, about 2.3 kilometres from the hypocentre. The railroad ties on the bridge were on fire. With raging flames blocking his path, he made his way down the road. "There was nothing but dead bodies."³ When he finally made it to the newspaper building, "the presses were on fire, and the newsprint warehouse was in flames, too."⁴ He simply sat there, dumbfounded.⁵

Yasuo Yamamoto

From the day of the A-bombing most of the surviving employees of the *Chugoku Shimbun* and their families were faced with the deaths of family members. They were also struggling to learn whether others were safe ...

2 Yoshito Matsushige, "I Couldn't Press the Shutter in Hell", *Eyewitness Testimonies: Appeals from the A Bomb Survivors*, 3rd ed., Hiroshima Peace Culture Foundation, 2003, pp. 71, 80, available at: www.hiroshimapeacemedia.jp/?p=22987. See also "Messages from A-bomb Survivors: Yoshito Matsushige, Part 1", 7 December 2010, available at: www.hiroshimapeacemedia.jp/?p=53026.

3 Masami Nishimoto, *Special 120th Anniversary Series: The A-bombing and the Chugoku Shimbun, Part 3*, 7 April 2012, available at: www.hiroshimapeacemedia.jp/?p=24045.

4 *Ibid.*

5 *Ibid.*

get even a few pictures under such extreme circumstances. Without those photos, nothing would tell what really happened.²

Through tearful eyes, Mr Matsushige managed to capture the horrific conditions in the aftermath of the atomic bombing. He is just one of many who have sought to convey the atomic bomb experience.

Haruo Oshita

On the morning of 6 August, Haruo Oshita, then 42 years old, looked up and saw a column of black smoke rising into the sky above Hiroshima as he left his home in Itsukaichi,



Figure 5. The view from the barber shop window, 2.7 kilometres from the hypocentre – the fourth photograph taken that day. A man walks past the wreckage of a two-story fire station that collapsed in the blast. Photo by Yoshito Matsushige, © *Chugoku Shimbun*.

Yasuo Yamamoto, then 42 years old, was riding his bicycle to work from his home in Danbaranaka-machi (now Danbaraminiami, Minami Ward), about 2.5 kilometres from the hypocentre, when he was thrown by the blast from the A-bombing. His 13-year-old son, Masumi, a first-year student at Hiroshima No. 1 Junior High School, had been mobilized to carry out demolition work and was working near city hall at the time of the bombing. He returned home with his face burned and swollen.

Mr Yamamoto later described one of the last conversations he had with his son. “It was around 11 that night. ‘Is there really a Pure Land?’ My son asked this strange question, breathing faintly ... ‘Is there jellied bean paste there?’ My wife finally choked out an answer. ‘Yes, there’s jellied bean paste and everything there.’ Then he said, ‘Then I think I’ll die.’”⁶

Mr Yamamoto put his son’s body in a handcart and carried him to the crematorium. The following day, 8 August, he went to work. He described his feelings at that time in the August 1965 edition of *Shinju*, an anthology of poetry he edited. “My son was dead, and I should have had no human will, but from that moment on I believed that the recovery of the *Chugoku Shimbun* was my duty, and I began to rouse myself.”⁷

6 This account was included in “The Stars Are Watching,” published by the Association of Bereaved Families of Students of Hiroshima No. 1 Junior High School in 1954.

7 M. Nishimoto, above note 3.

Employees were also stricken by the acute effects of radiation. Mr Yamamoto, who was manager of the paper's stenographic department, wrote:

After 20 days my hair began to fall out in the places where I had been burned ... But I couldn't take a day off from our preparations to put out the paper, so I continued to make that long-distance round trip by bicycle with my white bandages on.⁸

... Some of those who had been lucky enough to escape harm began to come back to work and then got leukemia and died. I was depressed and wondered if we'd really be able to put out the paper there.⁹

Documenting Hiroshima after the mushroom cloud: The Hiroshima Peace Media Center

Over the years, many other reporters from our newspaper have written articles and taken photos in a long-standing effort to document what became of the city and its people under the bomb's mushroom cloud. At the time, the city had a population of about 350,000 people, around 140,000 of whom are believed to have died by the end of 1945.¹⁰ Those who survived this fate still suffered the loss of loved ones, as well as feelings of guilt because they fled for their lives while leaving behind others who were calling for help. Many people later died from the after-effects of exposure to the radiation spewed out by the bomb; still others have faced a high risk of developing cancer even decades after the attack.¹¹

The suffering of the survivors, both physical and mental, will linger as long as they live. What happened on 6 August 1945 is not a thing of the past; seventy years later, the repercussions of that day continue to be felt. Today there are nearly 16,000 nuclear weapons on the earth.¹² Compared to the time of the Cold War, the number has been reduced significantly, but it is nonetheless enough to decimate the world many times over. Nuclear weapons are so inhumane that if a nuclear war were to break out, there would be no winners; there would be only the devastation of this planet and the extinction of humankind. Unless we work to realize a world without nuclear weapons or war, humanity will have no future because the possibility that nuclear weapons will be used will hang over our heads as long as these weapons exist. Should a nuclear war break out, humankind

8 Masami Nishimoto, "Printing in Nukushina", in M. Nishimoto, *Special 120th Anniversary Series: The A-bombing and the Chugoku Shimbun*, Part 5, 21 April 2012, available at: www.hiroshimapeacemedia.jp/?p=24053.

9 *Ibid.*

10 "Q. How many people died because of the atomic bombing?", City of Hiroshima website, available at: www.city.hiroshima.lg.jp/www/contents/1319174554447/index.html.

11 For more information, see, e.g., "Frequently Asked Questions", Radiation Effects Research Foundation, available at: www.rerf.jp/general/qa_e/qa5.html. The Radiation Effects Research Foundation is a Japanese-US scientific organization dedicated to studying the health effects of A-bomb radiation.

12 See Hans M. Kristensen and Matthew McKinzie in this issue of the *Review*.



Figure 6. East End of Miyuki Bridge, 2.3 kilometres from the hypocentre. Tokuo Fujita, a police officer, writes out casualty certificates for survivors so they can receive rations of food and other provisions. The bandage on his head is for cuts he received from flying glass. Mr Fujita was at the Ujina Police Station, 4.7 kilometres from the hypocentre, at the time of the bombing. Photo by Yoshito Matsushige, © *Chugoku Shimbun*.

will face extinction and the future of our species will be lost. In other words, nuclear weapons and human beings cannot coexist. This is the message that the *Chugoku Shimbun*, together with the citizens of Hiroshima, has been conveying to the world.

However, a regional newspaper's influence extends only so far, and cannot move public opinion in Japan to the degree that the leading media outlets in Tokyo can. This challenge becomes even larger when seeking to convey our message to the wider world. As a newspaper company, reporting the news will always be our top priority. But as a newspaper based in a city that has suffered the consequences of the atomic bomb, the *Chugoku Shimbun* hopes to help the world understand the inhumanity of nuclear weapons through information and

opinions on this subject, which can contribute to the realization of a world free of nuclear weapons.

In the past, the *Chugoku Shimbun* has made a number of efforts to communicate more widely. As one example, a feature series entitled "Exposure – Victims of Radiation Speak Out", which ran from May 1989 through May 1990, reported on victims of radiation exposure at twenty-one locations in fifteen countries, including the former Soviet Union, Brazil, the United States, French Polynesia, India, Namibia and South Korea. This series, which was awarded the Japan Newspaper Publishers and Editors Association Award in 1990, was published in book form.¹³ This effort naturally had its limits, however. The *Chugoku Shimbun's* reach could not extend to major bookstores in the United States.¹⁴

13 *Sekai no hibakusha*, Kodansha, Tokyo, 1991. An English-language version was published by Kodansha International in 1992.

14 "Exposure – Victims of Radiation Speak Out", *Hiroshima Peace Media Center*, available at: www.hiroshimapeacemedia.jp/?post_type=exposure&lang=en.

The rise of the Internet has enabled the newspaper to more effectively reach audiences in Japan and overseas. In 2008, the *Chugoku Shimbun* established the Hiroshima Peace Media Center within the news and editorial department and launched a website dedicated to coverage of the atomic bombings, nuclear issues and peace issues.¹⁵ The full range of articles, editorials and columns on these subjects that are written for the newspaper by our reporters and editorial writers are posted to this website. Some of this content is also translated into English so it can be accessed and read by non-Japanese speakers.

In 2014, one year before the 70th anniversary of the atomic bombings, the Hiroshima Peace Media Center website began offering content translated into Chinese, French and Russian, with the help of Hiroshima University and other supporters. This effort was made to commemorate the 70th anniversary of the atomic bombing, and the project will continue to be pursued. Although not as many articles have been translated into these languages as have been translated into English, some content from the newspaper is now conveyed to the world in a total of five languages. English, Chinese, French and Russian were chosen because these languages are spoken in the nuclear weapon States. Our hope is that the people living in the nations that speak these languages will learn what would happen to the people and cities under the mushroom cloud if nuclear weapons were used.

Toward a future without nuclear weapons

Currently, the Hiroshima Peace Media Center website contains more than 23,000 articles, which cover not only the damage caused by the atomic bombing and the current state of nuclear weapons in the world, but also issues involving nuclear energy, including the accident at the Fukushima No. 1 (Daiichi) nuclear power plant,¹⁶ and the suffering that Japan inflicted on the people of other nations in the past.¹⁷ Numerous photographs connected to the atomic bombing of Hiroshima are also featured, as well as articles contributed by experts on nuclear issues from around the world. To date, the website has been visited over a million times by people in 200 countries and regions. Nearly 10% of these visits are from outside Japan.

Another area of focus for the *Chugoku Shimbun* involves handing down the experiences of the atomic bombing to younger generations. Central to this effort are the newspaper's "junior writers", students in Hiroshima between the sixth grade of

15 Available at: www.hiroshimapeacemedia.jp/?lang=en.

16 The nuclear accident in Fukushima was the subject of a special series: "Fukushima and Hiroshima", *Hiroshima Peace Media Center*, available at: www.hiroshimapeacemedia.jp/?cat=3942. Since this series ran, the Hiroshima Peace Media Center has posted more than 700 additional articles about the accident on its website. These can be found by searching the site with the keyword "Fukushima".

17 The Hiroshima Peace Media Center website currently has no specific section on Japanese aggression during World War II, but the *Chugoku Shimbun* often touches on this issue in news articles and opinion pieces, which are also posted on the Hiroshima Peace Media Center website. Such articles can be found by searching the website with phrases like "suffering Japan inflicted".

elementary school and the third year of high school.¹⁸ It is not unusual for Japanese newspapers to nurture student reporters, but the *Chugoku Shimbun* is apparently the only newspaper in Japan with student reporters who are focused on covering peace-related issues.

One of the key aspects of the junior writers' activities is the ongoing series "Survivors' Stories".¹⁹ Many of the survivors are part of the generation of grandparents of these young people, and their average age has now exceeded 80. The junior writers see themselves as the last generation able to listen directly to the first-hand accounts of the survivors. Their active involvement in this programme is heartening.

Another important part of their work is the series of one-page feature articles called "Peace Seeds", which was introduced in 2015 and appears twice a month.²⁰ There are typically around forty-five junior writers, divided into five groups. Each group selects themes related in some way to the atomic bombing or peace, gathers information, and writes articles. This series has included such articles as "Hiroshima in 2045, 100 Years After the Atomic Bombing",²¹ "Peace Declarations Convey Desire and Determination for Nuclear Abolition"²² and "Children in Conflict Areas Struggle to Live Normal, Peaceful Lives".²³

- 18 Articles involving the junior writers are available at: www.hiroshimapeacemedia.jp/?post_type=junior. The "Peace Seeds" articles, a series of one-page feature articles written by the junior writers for which they select themes related to the atomic bombing or peace issues and gather information for their reports, are available at: www.hiroshimapeacemedia.jp/?post_type=seeds&lang=en.
- 19 The Hiroshima Peace Media Center website contains many "Survivors' Stories": for example, Sakiko Masuda, "His Mother Told Him: 'Don't Give Up'", *Survivors' Stories*, 15 January 2013, available at: www.hiroshimapeacemedia.jp/?p=26985, telling the story of atomic bomb orphan Mr Shoso Kawamoto, who lost six members of his family – his parents and siblings – to the bombing; Rie Nii, "Hawaiian-Born, A-bombed in Hiroshima", *Survivors' Stories*, 10 August 2012, available at: www.hiroshimapeacemedia.jp/?p=26953, about Ms Sayoko Fujioka, who was born and raised in Hawaii, moved to her father's hometown of Hiroshima at the age of 14, and was 22 when the atomic bomb fell; Sakiko Masuda, "Crawling to Safety, Hovering between Life and Death", *Survivors' Stories*, 8 August 2012, available at: www.hiroshimapeacemedia.jp/?p=26936, about Ms Hiroko Tokukiyo, who experienced the atomic bombing from a distance of 330 metres and still has glass fragments in her body; and Daisuke Yamamoto, "Affected by Chromosomal Abnormalities: Telling of A-bomb Experiences", *Survivors' Stories*, 3 July 2014, available at: <http://www.hiroshimapeacemedia.jp/?p=32818>, telling the story of Mr Mitsuo Kodama, who was 870 metres from the hypocentre at the time of the atomic bombing and has suffered chromosomal abnormalities.
- 20 For examples of "Peace Seeds" articles, see Tokitsuna Kawagishi, "Okunoshima Island, Peaceful Tourist Destination, Reveals Japan's History of Aggression", *Peace Seeds: Teens in Hiroshima Sow Seeds of Peace*, 22 May 2015, available at: www.hiroshimapeacemedia.jp/?p=44665; Arata Kouno, "Mobilized Students Worked Hard, Unable to Study or Dream", *Peace Seeds: Teens in Hiroshima Sow Seeds of Peace*, 4 June 2015, available at: www.hiroshimapeacemedia.jp/?p=45238.
- 21 Kana Fukushima, "Hiroshima in 2045: 100 Years after the Atomic Bombing", *Peace Seeds: Teens in Hiroshima Sow Seeds of Peace*, 2 February 2015, available at: www.hiroshimapeacemedia.jp/?seeds=peace-seeds-teens-in-hiroshima-sow-seeds-of-peace-part-1-part-1-hiroshima-in-2045-100-years-after-the-atomic-bombing&query=hiroshima+in+2045.
- 22 Shiho Fujii, "Peace Declarations Convey Desire and Determination for Nuclear Abolition", *Peace Seeds: Teens in Hiroshima Sow Seeds of Peace*, 16 March 2015, available at: www.hiroshimapeacemedia.jp/?p=41986&query=peace+declarations+convey+desire+and+determination+for+nuclear+abolition.
- 23 Nana Kawaichi, "Children in Conflict Areas Struggle to Live Normal, Peaceful Lives", *Peace Seeds: Teens in Hiroshima Sow Seeds of Peace*, 13 April 2015, available at: www.hiroshimapeacemedia.jp/?p=43031.



Figure 7. “Let’s Learn about Hiroshima”, 2015, published by the *Chugoku Shimbun* in cooperation with the Hiroshima International Cultural Foundation. © *Chugoku Shimbun*.

Through their work, these young reporters are seeking to prevent the memories of the atomic bombing from fading. This distinctive effort has been positively received, and many notable figures have granted interviews to the junior writers, including United Nations (UN) Secretary-General Ban Ki-moon;²⁴ Yohei Kono, then speaker of the House of Representatives;²⁵ and Hayao Miyazaki, the well-known director of Japanese animation.²⁶

In an effort to hand down the atomic bomb experience to the next generation, the *Chugoku Shimbun* has also been distributing “Let’s Learn about Hiroshima”, a newspaper for peace studies programmes, at high schools and junior high schools. All junior high and high school students in Hiroshima

24 Masahiro Mikoshi, Minako Iwata, Seira Furukawa and Masaya Obayashi, “A Visit to Hiroshima on August 6: Interview with UN Secretary-General Ban Ki-moon”, *Peace Seeds*, 2010, available at: www.hiroshimapeacemedia.jp/hiroshima-koku/en/special/index_2010082302.html.

25 Risa Kushioka, Ryota Matsuda, Miyu Sakata, Minako Iwata and Moeko Takaki, “The 7th G8 Speakers’ Meeting in Hiroshima: Interview with Lower House Speaker Yohei Kono”, *Peace Seeds*, 2008, available at: www.hiroshimapeacemedia.jp/hiroshima-koku/en/special/index_20080428.html.

26 Nao Tatsugawa, Masahiro Mikoshi and Chisa Nishida, “Interview with Hayao Miyazaki, Animation Film Director: Children Can Raise the Spirits of Adults and Change Society”, *Peace Seeds*, 2009, available at: www.hiroshimapeacemedia.jp/hiroshima-koku/en/special/20090511_1.html.



Figure 8. The offices of the *Chugoku Shimbun* before the atomic bombing. The three-storey main building, constructed with reinforced concrete, is on the left. To its right is the company's newer building, seven storeys tall. © *Chugoku Shimbun*, held by Takeyo Masui.

Prefecture have received a copy of this newspaper each year since 2013. The newspaper features the accounts of atomic bomb survivors and basic information on the harm caused by the atomic bombing.

In 2015, the 70th anniversary of the atomic bombings and the end of World War II, the junior writers took on a number of challenging new tasks. Some took part in a study tour in Europe to learn about the Holocaust (Shoah) – the genocide of the

Jewish people by Nazi Germany – and others travelled to New York to cover this year’s Review Conference of the Nuclear Non-Proliferation Treaty (NPT), which takes place at UN headquarters once every five years.

On the study tour, eight students from Hiroshima visited Poland and the Netherlands in late March and learned about the Holocaust, which symbolizes, along with the atomic bombings, the horrors of World War II. They toured the site of the former Auschwitz concentration camp, where more than a million people were killed, and the secret annex where Anne Frank and her family hid from the Nazis. They listened to survivors of the Holocaust and exchanged views with local youth. The eight participants of the tour included six university students and two junior writers who are in high school. The university students were selected by five universities in the prefecture through a process of essays and interviews.

The participants engaged in discussion with young people in the countries they visited to learn how local youth are working to pass on memories of the Holocaust, and they sought to find common ground in their efforts to hand down history. At the end of May, the Japanese students reported on their experiences of the tour with public presentations. They summarized the lessons they learned by crafting the Hiroshima Youth Appeal 2015.²⁷

Two other junior writers were dispatched to New York to cover the 2015 NPT Review Conference. They reported on the conference proceedings as well as the activities undertaken by the Hiroshima city and prefectural governments.²⁸ They also interviewed Foreign Minister Fumio Kishida of Japan.²⁹ At the Youth Forum, which was organized by Mayors for Peace, they delivered a speech to the international community.³⁰ The membership of Mayors for Peace, for which Hiroshima Mayor Kazumi Matsui serves as president, now consists of more than 6,990 cities.³¹

These were the first opportunities for junior writers to travel abroad to pursue their reporting. The two projects were organized so that young people in Hiroshima could take the opportunity presented by the 70th anniversary of the atomic bombings and the end of the war to think about their role and their responsibilities. People living in places that have experienced tragedy, like Hiroshima, tend to focus on their own suffering. As these young people deepened their knowledge of the tragedies that have taken place in other parts of the world,

27 See Yuji Yamamoto, “Session on ‘Hiroshima and the Holocaust’ Appeals for Young People to Take Action for Peace”, *Junior Writers Reporting*, 3 June 2015, available at: www.hiroshimapeacemedia.jp/?junior=session-on-hiroshima-and-the-holocaust-appeals-for-young-people-to-take-action-for-peace.

28 See “Junior Writers Cover NPT Review Conference: Future Without Nuclear Weapons Not a Dream”, *Peace Seeds: Teens in Hiroshima Sow Seeds of Peace*, 10 May 2012, available at: www.hiroshimapeacemedia.jp/?p=44902.

29 See “Junior Writers from Hiroshima Interview Japanese Foreign Minister in New York”, *Hiroshima Peace Media Center*, 10 May 2012, available at: www.hiroshimapeacemedia.jp/?p=44055.

30 See “Students from Japan Convey A-bomb Survivors’ Suffering at Youth Forum in New York”, *Hiroshima Peace Media Center*, 10 May 2012, available at: www.hiroshimapeacemedia.jp/?p=44152. Regarding the Youth Forum, hosted by Mayors for Peace, see the Facebook post by Mayors for Peace on 28 June 2015, available at: www.facebook.com/mayorsforpeace.

31 The Mayors for Peace website is available at: www.mayorsforpeace.org/english/index.html.

recognizing the suffering of other people and seeking to find commonality, they broadened their ability to express their views and hand down the memories of these events.

Communicating

Hiroshima's message of nuclear abolition and world peace to other parts of Japan and other nations of the world is an effort to spread this appeal horizontally, around the world. At the same time, handing down the memories of the atomic bombing to the next generation is an effort to convey the past vertically, across time.

Both efforts are an attempt to share the hope of the atomic bomb survivors that no other people on this planet should experience the same tragedy and endure the same suffering. For a regional newspaper, these are unique and ambitious pursuits.

A question often asked is: what makes the *Chugoku Shimbun* so earnest in these efforts? The answer is very simple: along with so many in Hiroshima, this newspaper company was hit hard by the atomic bombing. Our former headquarters was located about 900 metres to the east of the hypocentre, and 114 employees, or one third of our workforce at the time, lost their lives. The reporters who covered the news of the atomic bombing were, at the same time, survivors themselves.

Barbara Reynolds, an American peace activist and honorary citizen of Hiroshima, made great efforts to spread the wishes of Hiroshima across the world. She has said “I, too, am a *hibakusha*”,³² and “The *hibakusha* are the inspiration for all my peace efforts. My heart is always with Hiroshima.”³³ The reporters of the *Chugoku Shimbun* wholeheartedly agree with Ms Reynolds that people who understand and strive to convey the survivors' message are



Figure 9. A photograph of the *Chugoku Shimbun*'s older building in the aftermath of the atomic bomb. The newer building is visible in the background. Photo by Stanley Troutman, © *Chugoku Shimbun*, held in the collection of the US Library of Congress.

32 See “Memorial Monument for Barbara Reynolds”, available at: www.pcf.city.hiroshima.jp/virtual/VirtualMuseum_e/tour_e/ireihi/tour_57_e.html. Barbara Reynolds founded the Peace Resource Center at Wilmington College, where her papers are kept. Its website is available at: www.wilmington.edu/the-wilmington-difference/prc/. See also Tanya Maus, “The World Friendship Center’s 50th Anniversary”, November 2014, available at: www.wilmington.edu/wp-content/uploads/2014/11/IHF_Tanya-Maus-Trip.pdf; Charlotte Pack, “Peace Resource Center at Wilmington College (U.S.)”, *Peace Museums of the World*, 9 December 2008, available at: www.hiroshimapeacemedia.jp/mediacenter_d/w_museum/20081209115331627_en.html; Yoshifumi Fukushima, “NGO Activities and the Legacy of Barbara Reynolds”, *History of Hiroshima: 1945–1995*, 1995, available at: www.hiroshimapeacemedia.jp/?p=27592.

33 “Memorial Monument for Barbara Reynolds”, above note 32.



Figure 10. The Hiroshima Peace Memorial Park in spring. On the left is the Atomic Bomb Dome; the Hiroshima Peace Memorial Museum is visible in the background. The white building in the upper right corner is the *Chugoku Shimbun*'s headquarters. © *Chugoku Shimbun*.

hibakusha too, even if they or their parents or grandparents did not actually experience the atomic bombing.

Through listening to the experiences of the people who endured the terrible devastation on 6 August 1945, people come to understand how inhumane nuclear weapons are and begin to develop an awareness of themselves as *hibakusha*. The survivors see it as their responsibility, for the human race, to create a world free of nuclear arms and to put an end to the nuclear age that began in 1945. The spirit of Hiroshima awakens people to this responsibility.³⁴

Because of this responsibility, the staff of the *Chugoku Shimbun* newspaper can look out at the world “from under the mushroom cloud” and feel empathy for the survivors and citizens of Hiroshima. It is with this sense of honour and obligation that we have borne such weighty responsibility. The company motto, which includes “promoting world peace”, is taken to heart as our duty and our mission.

“Have the atomic bombs come to be known for their power, or for their human tragedy?”³⁵ We, the *Chugoku Shimbun*, ask the global community to consider this question by Toshihiro Kanai, who was a chief editorial writer for the newspaper from 1971 up to the time of his death in 1974. We must maintain our perspective as human beings, and should not merely view the aftermath of the atomic bombing from above the mushroom cloud or from a distance, which is the perspective of nations. This is the nature of the *Chugoku Shimbun*'s stance in covering the atomic bombing, as well as nuclear issues and peace issues.

³⁴ *Ibid.*

³⁵ See Masami Nishimoto, “Relative of the Late Toshihiro Kanai Donates 8,000 Documents to Hiroshima University”, *Hiroshima Peace Media Center*, 10 March 2010, available at: www.hiroshimapeacemedia.jp/?p=15007.

The efforts described above will be persistently pursued beyond the 70th anniversary of the atomic bombing. After the bombing, it was said that “nothing would grow in Hiroshima for 75 years”,³⁶ but the devastated land has been revived into a lush, green city by the citizens and supporters of Hiroshima. The *Chugoku Shimbun*, rooted right here, will continue its ongoing work to promote the abolition of nuclear weapons and lasting peace in the world.

36 See Masami Nishimoto, “Fumbling Efforts to Convey A-bombing’s Effects”, *Hiroshima Peace Media Center*, 10 May 2012, available at: www.hiroshimapeacemedia.jp/?p=24059. For more information, please refer to the Mayors for Peace website, available at: www.mayorsforpeace.org/english/index.html. See also Michiko Tanaka, “Students from Japan Convey A-bomb Survivors’ Suffering at Youth Forum in New York”, *Hiroshima Peace Media Center*, 12 May 2015, available at: www.hiroshimapeacemedia.jp/?p=44152.

VOICES AND PERSPECTIVES

Photo gallery: Ground zero Nagasaki

Akitoshi Nakamura

Akitoshi Nakamura is the Director of the Nagasaki Atomic Bomb Museum. He has received a number of Japanese literary awards under the pen name Yuichi Seirai, including most notably the Akutagawa prize in 2001 for *Holy Water*, set in Nagasaki.

Abstract

This selection of photos is meant as an appeal from the Nagasaki Atomic Bomb Museum to remember the atomic bombing of Nagasaki on 9 August 1945. It was compiled by museum director Akitoshi Nakamura based on the collection at the Nagasaki Atomic Bomb Museum.¹ Readers are invited to visit the Nagasaki Atomic Bomb Museum and spend some time viewing its collection of over 1,000 photographs and remnants from the city at that time to get a sense of what happened before and after the atomic bombing that summer seventy years ago, and how devastating the atomic bomb's destructive effects were.

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Figures 1 and 2, below, show the area of the hypocentre in northern Nagasaki two days prior to the atomic bombing and about one month after the bombing.

The meandering black line that cuts diagonally across each image from top to bottom is the Urakami River, which flows from the north to the south of the hypocentre. The oval near the centre is the track of an athletic field.

In the second photo, one can see that the formerly varied cityscape of tightly-packed buildings has almost completely disappeared. All that remains are the ruins of school buildings and structures that were made of strong concrete. The area around the hypocentre has become as desolate as the surface of the moon. Records describe the damage:

Those living in Nagasaki on the day the atomic bomb was dropped noted that air-raid alerts had been issued constantly since the night before. On the morning of 9



Figure 1. The hypocentre on 7 August 1945, two days prior to the atomic bombing of Nagasaki, photographed from the air by US pilots. US National Archives, RG 77-MDH.



Figure 2. The hypocentre one month after the atomic bomb was dropped on Nagasaki. US National Archives, RG 77-MDH.



Figure 3. A wall clock found at the site of the bombing, stopped at 11:02.

August, the alerts were lifted and people, machines and trains began to resume their daily activity. People lined up at food distribution points throughout the city. At the Nagasaki Medical College (now the Nagasaki University School of Medicine), lectures were started and the hospital received patients.²

An American aircraft dropped the atomic bomb on the Urakami district of northern Nagasaki at 11:02 a.m. on 9 August 1945. Nagasaki thus became the second city in human history to be attacked with an atomic bomb, following Hiroshima.

The Nagasaki bomb was a plutonium weapon possessing explosive power equivalent to 21 kilotons of trinitrotoluene (TNT), which gave it greater destructive capability than the Hiroshima bomb, a uranium weapon with the explosive power

- 1 For more information, see the museum's website, available at: www.city.nagasaki.lg.jp.e.jc.hp.transer.com/sisetsu/5090000/p011036.html (all internet references were accessed in November 2015).
- 2 *Nagasaki wa Kataritsugu* (digest version of the *Nagasaki Atomic Bomb Damage Records*), Nagasaki City, 1991, pp. 40–45. There is a similar description in the *Nagasaki Atomic Bomb Damage Records* (General Analysis Version), Vol. 1, Nagasaki City, 2006, p. 166. These records are currently in the process of being translated to English.



Figure 4. The fire lookout tower from Hamaguchi-machi.

of 15 kilotons of TNT.³ However, the city's size, the mountainous topography around the target, and other factors meant that the level of destruction in Nagasaki did not reach that of Hiroshima, where 220,000 people were killed or injured. Nonetheless, some 74,000 people lost their lives and 75,000 people suffered injury as a result of this one bomb. Of the 240,000 residents of Nagasaki at the time, approximately 150,000, or more than 60%, became casualties.⁴ Those who survived had to live their lives in constant fear of cancer and other radiation-caused diseases. Thus the atomic bomb brought to the world a new kind of horror, one that had theretofore been unknown in the human experience.

3 *Records of the Nagasaki Atomic Bombing and Wartime Damage*, Vol. 1, Part 4 (Nagasaki City Hall Version), 1984, p. 5; Samuel Glasstone (ed.), *The Effects of Nuclear Weapons*, revised ed., US Atomic Energy Commission, 1962; John A. Auxier, *Ichiban (Radiation Dosimetry)*, Energy Research and Development Administration, 1977; John A. Auxier, J.S. Cheka, F. F. Haywood, T. D. Jones and J. H. Thorngate, "Free-Field Radiation Dose Distribution from the Hiroshima and Nagasaki Bombings", *Health Physics*, Vol. 12, No. 3, 1966; Lord Penny, D.E.J. Samuels and G. C. Scorgie, "The Nuclear Explosive Yields at Hiroshima and Nagasaki", *Philosophical Transactions of the Royal Society of London*, Vol. 266, No. 1177, 1970.

4 These figures were released in July 1950 based on the estimation carried out by the Nagasaki City Atomic Bomb Records Preservation Committee. The City of Nagasaki has officially referred to these numbers since then. According to this estimation, 73,884 were dead and 74,909 were injured. Among the dead, 17,358 were autopsied right after the atomic bomb was dropped. *Records of the Nagasaki Atomic Bombing and Wartime Damage*, Vol. 1, Part 1 (Nagasaki Atomic Bomb Museum Version), 2006, p. 710.



Figure 5. The Ohashi bridge post.

The destructive force of an atomic bomb is comprised of three elements: radiation, heat rays and blast wave. Along with them comes a conflagration that causes even greater destruction. It is thought that approximately 50% of the Nagasaki bomb's explosive energy was released in the form of a blast wave, 35% as heat rays, and 15% as radiation.⁵

When the bomb detonated, the first thing to hit the people was a massive burst of radiation, including neutron radiation. This was followed by heat rays that heated the ground directly below the blast to a temperature somewhere between 3,000 and 4,000 degrees. Then came the blast wave, which reached a speed of 160 metres per second even one kilometre away. In truth, almost all of the destruction from radiation, heat rays and blast wave was over within three seconds after the flash of white light. After that, a conflagration continued throughout the day and night, resulting in desolation over a broader area and creating the dramatic, moon-like landscape seen in [Figure 2](#) above.

Among the many artefacts that survived the atomic bomb, one particularly striking object is available on display at the Nagasaki Atomic Bomb Museum: a wall clock that was discovered about one kilometre from the hypocentre. The clock is stopped at 11:02.

The clock, donated by Mr Tadahachi Kubo, was found in the ruins of a house near the Sanno Shinto Shrine located about 800 metres from the hypocentre of the

5 *Ibid.*, Vol. 4, pp. 13, 28.



Figure 6. A portion of the Urakami Cathedral, now housed in the Nagasaki Atomic Bomb Museum.

atomic explosion. It is assumed that the clock was stopped at 11:02 due to the impact of the blast, which destroyed the entire house.

Visitors to the museum will also see a repeating video of the mushroom cloud climbing into the sky. The video is from footage taken by the American aircraft that

dropped the bomb. In the darkness beneath the cloud, flames were rising, survivors were desperately trying to escape, and charred corpses lay under the rubble. One wonders if the crewmen who filmed the cloud could have imagined what was happening below it as it ascended to an altitude of over 10,000 metres.

The museum's first exhibit room displays items that remained following the bombing. There is an iron frame that is the twisted remains of a fire lookout tower from Hamaguchi-machi, which was located 250 metres from the hypocentre. The tower was ten metres tall. It received the force of the blast directly, bending the legs of the tower in the direction of the blast. This tower was under the supervision of the Nagasaki Fire Department, and was used by firemen to monitor the situation not only in times of fire but also during air raid alerts and shelling.

Another item in the same exhibit room is Ohashi bridge post. It was originally located at the south end of a bridge 500 metres north of the hypocentre. The post was blown into the river by the strong blast caused by the atomic bomb, despite weighing four tons. This and other physical articles show the force of the bomb blast, and even today silently speak of what happened under the mushroom cloud.

A restored brick wall that covers an entire side of the room is a destroyed sidewall from Urakami Cathedral. For approximately 250 years, the Urakami district in northern Nagasaki, an area that was destroyed by the bomb, was home to people who quietly maintained their Catholic faith even as Christianity was prohibited in Japan.

Although Japanese followers of Christianity were thought to have vanished as a result of severe oppression and persecution, some were discovered 150 years ago, in 1865. News of their discovery spread around the world and caused great excitement at the time. It was in this context that Urakami Cathedral was later built, brick by brick, over the course of twenty years by people who had held fast to their Catholic faith in spite of a very dark history, and it provided them with a place of comfort.⁶

6 “Supported by Christians in Urakami, the construction of the cathedral was completed in 1925. The brick neo-Romanesque building was the largest Catholic church in East Asia, with twin spires that stood 26 metres high. The atomic bomb destroyed the dome in a fraction of a second, and only the brick walls remained. The resultant collapse and heat-wave burned and buried all those present in the cathedral, including a few dozen parishioners and two priests, Mr Saburo Nishida and Mr Fusayoshi Tamaya. 2,482 *hyos* of rice (one *hyo* is 60 kilograms) and 1,000 boxes of noodles stored in the church as emergency food were also assumed to be burned instantly.” *Records of the Nagasaki Atomic Bombing and Wartime Damage*, Vol. 1, Part 1 (Nagasaki Atomic Bomb Museum Version), 2006, p. 710. Francis Xavier, Jesuit missionary, arrived Japan in 1549 to spread Christianity. Soon after, Portuguese ships started coming to Japanese ports. Opened in 1571, the Port of Nagasaki was developed as a trade centre with Portugal and was the base of the Japanese Christians. Although a part of Nagasaki was donated to the Jesuit Society, it was later disendowed by Hideyoshi Toyotomi, who longed to bring an end to the Warring States Period by unifying the country. While the entry of Portuguese ships was banned, the Tokugawa Shogunate in the Edo period permitted trade with two countries, the Netherlands and China, handled at the Port of Nagasaki. The Purge Directive Order to the Jesuits was issued by Hideyoshi Toyotomi to limit missionary activities in Japan and was further reinforced during the Tokugawa Shogunate, which completely banned Catholicism. As a result, many Japanese Christians were persecuted and became hidden Christians. Those hidden Christians were driven underground for about 250 years in Urakami. Urakami at that time was the so-called heart of hidden Christians. *Records of the Nagasaki Atomic Bombing and Wartime Damage*, Vol. 1, Part 1 (Nagasaki Atomic Bomb Museum Version), 2006, pp. 4–6.



Figure 7. A display showing some of the injuries suffered by survivors.

On 9 August 1945, the atomic bomb detonated in the air just 500 metres from the cathedral, completely destroying it. In the Urakami diocese, which had survived years of persecution, 8,500 of its 12,000 members perished.⁷ Thus, the bomb did more than take lives and destroy buildings; it also obliterated the community, history and neighbourhood connections that had been built in Urakami amid great hardship.

The museum also displays shocking photos of people who were injured by the bomb. These people wanted to raise awareness of the bomb's terrible effects by showing what had happened to them to as many people as possible.

Doctors and nurses immediately started treating the injured, but equipment and medical supplies were too scarce to even provide first aid. A temporary medical train was built to bring the injured from the hypocentre to medical facilities within and outside of Nagasaki prefecture.⁸ Before the atomic bomb, the population of Nagasaki was approximately 240,000 people. According to research carried out by the Atom Bomb Casualty Commission on 1 October 1950, the population of the city right after the atomic bomb detonation was 130,934 people.⁹

The boy featured in the photo in [Figure 7](#), lying on his stomach with a bloody back, is Mr Sumiteru Taniguchi. The man whose upper body is disfigured by keloids is Mr Senji Yamaguchi. The boy with the half-burned face who

7 Out of 20,000 of Christians who lived in the city of Nagasaki, around 15,000–16,000 lived in Urakami. Among them, 10,000 were victims of the atomic bomb. *Ibid.*, p. 308.

8 *Ibid.*

9 *Ibid.*, p. 710.



Figure 8. Nagasaki today.

appears in two photos is Mr Katsuji Yoshida. All three were gravely injured by the bomb when in their mid-teens but somehow survived. In the years following the war, they continued telling people about the horrors of the bomb and participating in peace activities that demanded the abolition of nuclear weapons.

Mr Taniguchi was a 16-year-old postman when the bomb fell. His experience was described in detail in the non-fiction book *Nagasaki no Yubinhaitatsu (The Postman of Nagasaki)*.¹⁰ This year, at the age of 86, he is the last remaining survivor of those pictured in the four photos. Mr Taniguchi visited the United Nations Headquarters in New York at the time of the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons. There he called on government representatives and NGO personnel to realize a world without nuclear weapons.

As a person who can personally relate the horrors of the atomic bomb, Mr Taniguchi speaks openly of his intention to continue calling for the abolition of nuclear weapons so long as he is physically able. He readily shows people his back that was so bloodied seventy years ago, burned by the extreme heat caused by the atomic bomb. He will even stand before TV cameras and undress to reveal his disfigured back. Many are left speechless when they see its smashed sweat glands and smooth, seemingly melted skin. Even now, the devastation that was a consequence of the bombing can be seen across Mr Taniguchi's body. More than anything else, his back tells a powerful story about his long and painful recuperation, a time made even more agonizing as his ribs became exposed from the bedsores, and his life as an A-bomb survivor in constant fear of the effects of radiation.

Today, more than seventy years since being blasted to rubble by the atomic bomb, Nagasaki has made an astonishing recovery. Nonetheless, the hopes of the survivors remain far from fulfilled, as more than 16,000 nuclear warheads exist in the world.¹¹ Moreover, the power of many of those warheads is tens of times greater than the weapons dropped on Nagasaki and Hiroshima. What would

10 Peter Townsend, *The Postman of Nagasaki*, Harper Collins, London, 1984.

11 For more on the number of nuclear weapons in existence today, see the article by Hans M. Kristensen and Matthew McKinzie in this issue of the *Review*.

happen if nuclear weapons were ever used again? The answer should be easily imaginable to anyone who knows what happened at Hiroshima and Nagasaki seventy years ago.

On 9 August 2014, the mayor of Nagasaki, Tomihisa Taue, said the following as part of a peace declaration presented at a memorial for the atomic bomb victims: “Nuclear weapons are a continuing danger that threatens the present and future of our entire world. The terror that they bring is not confined to Hiroshima and Nagasaki’s past.”¹² This statement embodies the thoughts of all atomic bomb survivors and residents of Nagasaki. In this same sense, the Nagasaki Atomic Bomb Museum is more than just a facility for historical reflection. It is also a place for profound thought on the present and future of the human species.

12 Tomihisa Taue, “Nagasaki Peace Declaration”, Nagasaki, 9 August 2014, available at: <http://nagasakipeace.jp/english/appeal.html>.

DISCUSSION

Seventy years after Hiroshima and Nagasaki: Reflections on the consequences of nuclear detonation



Jeff Cooke, ICRC

Peter Maurer, President of the International Committee of the Red Cross, and Tadateru Konoe, President of the International Federation of Red Cross and Red Crescent Societies and of the Japanese Red Cross Society.¹

In this interview, conducted after their visit to Hiroshima, President Peter Maurer and President Tadateru Konoe reflect on the human cost of nuclear weapons and present the perspective of the International Red Cross and Red Crescent Movement on the Conferences on the Humanitarian Impact of Nuclear Weapons in Oslo, Nayarit, Mexico and Vienna, and the challenges ahead for nuclear disarmament.

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2015 marks the seventieth anniversary of the detonation of the nuclear bombs in Hiroshima and Nagasaki. You have just been to Hiroshima, one of only two places in the world that have known a nuclear attack. The International Red Cross and Red Crescent Movement has been active in calling for the elimination of nuclear weapons, especially in recent times. Why is this so important now, seventy years later?

Tadateru Konoe: First of all, I highly appreciate this opportunity for the ICRC and the Federation to work together on such an important issue. From the very beginning, immediately after the bombing of Hiroshima, the ICRC was involved in bringing assistance to those in need.² More and more National Societies have also gotten involved over the years in various ways, including by visiting Hiroshima. We have made nuclear disarmament an issue for the entire Movement and will continue to work to take this further.

We are commemorating the seventieth anniversary of the atomic bombing of Hiroshima and Nagasaki this year. This is an important moment to remind the entire world about the scale of the humanitarian consequences of nuclear weapons. From these attacks we learned much about the destructive power of nuclear weapons caused by the heat and blast forces that they release. We also learned about the devastating and long-term impact of radiation, which is still affecting survivors today. The average age of survivors is now close to 80, and caring for them will become more and more difficult in the years to come. We can use the opportunity of this important anniversary to send a message to the entire world.



Peter Maurer and Tadateru Konoe pay tribute to the victims of the nuclear bomb in Hiroshima.

Peter Maurer: Seventy years after the nuclear bombs were dropped on Hiroshima and Nagasaki the commitment to disarm remains unfulfilled and, given the stockpiles of nuclear weapons today, it is particularly important to find a way to move from this commitment to concrete acts. In recent years, opportunities have arisen to advance

1 This discussion was conducted by Vincent Bernard, Editor-in-Chief of the *Review*, in Tokyo on 12 February 2015. President Maurer and President Konoe visited Hiroshima on 11 February 2015. President Konoe visited Nagasaki on 12 February 2015, accompanied by an ICRC delegation.

2 For an account by ICRC field delegate Dr Marcel Junod, the first foreign doctor to reach Hiroshima after the bombing, see Marcel Junod, “The Hiroshima Disaster”, *International Review of the Red Cross*, Vol. 22, No. 230, 1982; Marcel Junod, “The Hiroshima Disaster (II)”, *International Review of the Red Cross*, Vol. 22, No. 231, 1982.

nuclear disarmament. We must make the most of these opportunities, to find ways to translate existing commitments into real, meaningful action.

By focusing on the humanitarian impact of nuclear weapons and their implications under IHL, the ICRC and the Movement³ emphasize the rationale for action on nuclear weapons and lend force to the efforts to achieve a ban on their use and their total elimination. We know that this will not be accomplished overnight. But given the enormous humanitarian consequences that occur in the wake of nuclear detonation, which both the ICRC and the Japanese Red Cross Society witnessed in 1945, and the ongoing risks that such weapons may again be used in the future, it is crucial that we push all States to act.

To continue this work, what, then, would be the role of the Movement in the debate on nuclear disarmament, which is often perceived as highly political?

Tadateru Konoe: The atmosphere surrounding the nuclear disarmament debate has always been political, but it should not prevent us from making progress in the right direction. As the Movement has repeatedly emphasized, we are more concerned about the humanitarian consequences than the political implications. I think our strong humanitarian messages – namely, the severe



Kayoko Saito, ICRC

Peter Maurer and Tadateru Konoe listen to the testimony of Mr Sadao Yamamoto, who survived the explosion of the nuclear bomb in Hiroshima. Read his testimony and the testimony of other survivors in the “Voices and Perspectives” section of this issue of the *Review*.

human costs of nuclear weapons and our concerns about whether it is possible to adequately assist the victims of a nuclear detonation – are critical and can help change the mindset of decision-makers. We believe that these messages should inform decision-makers and influence the political agenda. In order to do so, the Movement must continue to

focus on the humanitarian consequences of any use of nuclear weapons. Many organizations are already working toward the goal of total disarmament, from

3 Editor’s note (all subsequent notes are from the editor): The International Committee of the Red Cross (ICRC), the International Federation of Red Cross and Red Crescent Societies (Federation), and the national Red Cross and Red Crescent societies (National Societies) of each country together form the International Movement of the Red Cross and Red Crescent (Movement).

various angles, and we as a Movement can enlarge the basis for working together towards this objective.

In 2011, the Movement resolved to work towards the elimination of nuclear weapons.⁴ What actions have been taken since 2011 by the ICRC, the Federation, and National Societies?

Peter Maurer: The ICRC has been focused on contributing to the conversation on some of the critical issues discussed at the three conferences on the humanitarian impact of nuclear weapons held in Oslo, Nayarit and Vienna. What struck me during the visit to Hiroshima were the accounts of survivors.⁵ When you listen carefully to these accounts, they prefigure all the elements of the humanitarian consequences discussed at these conferences.

The use of nuclear weapons is indiscriminate. We have seen the effects on the civilian population and militaries – women, children and soldiers – alike. Thanks to the conferences that I just mentioned, we now have a better idea of the ramifications more globally, especially their potential impact on food production and the environment. This has led us to reinforce our efforts as well as to re-examine our thinking on nuclear weapons within the framework of international humanitarian law.

Picking up on what President Kono said earlier, these conferences have allowed the ICRC and the Federation to bring our perspective into the debate about nuclear disarmament, which is based on the Movement's work in Japan in 1945 and in addressing the long-term needs of those who survived the atomic bombings. The information and perspectives that we as a Movement have brought to the table cannot be ignored.⁶ Given that, over the past decades, the discussion on nuclear disarmament has been primarily based on strategic military considerations, this humanitarian perspective creates the possibility for a different type of discourse.

In 2013, the Movement took an important step when it adopted a four-year action plan on nuclear weapons.⁷ The plan outlines activities that National Red Cross and Red Crescent Societies can undertake in their respective countries to raise awareness of the concerns on nuclear weapons. With this action plan, National Societies are becoming more active and involved. Many of them have

4 Council of Delegates of the International Red Cross and Red Crescent Movement, Resolution 1: Working Towards the Elimination of Nuclear Weapons, 26 November 2011, available at: www.icrc.org/eng/resources/documents/resolution/council-delegates-resolution-1-2011.htm.

5 See the survivors' testimony featured in the "Voices and Perspectives" section of this edition of the *Review*.

6 See, for example, ICRC, *The Effects of Nuclear Weapons on Human Health*, Information Note 1, ICRC, Geneva, February 2013, available at: www.icrc.org/eng/resources/documents/legal-fact-sheet/03-19-nuclear-weapons-human-health-1-4132.htm; ICRC, *Climate Effects of Nuclear War and Implications for Global Food Production*, Information Note 2, ICRC, Geneva, February 2013, available at: www.icrc.org/eng/resources/documents/legal-fact-sheet/03-19-nuclear-weapons-global-food-production-2-4132.htm.

7 Council of Delegates of the International Red Cross and Red Crescent Movement, Resolution: Working Towards the Elimination of Nuclear Weapons: Four-Year Action Plan, November 2013, available at: www.icrc.org/eng/assets/files/red-cross-crescent-movement/council-delegates-2013/cod13-r1-nuclear-weapons-adopted-eng.pdf.

been speaking to governments, to parliaments and to the press on this issue to create a climate in which the humanitarian impact is an accelerator for the nuclear disarmament discussion. The ICRC has been working closely with National Societies to support their efforts in this area.

Tadateru Konoe: I agree with President Maurer that nuclear weapons are an important issue for the Movement because of their indiscriminate nature and the severe destruction they cause, continuing to cause death and suffering over decades and even generations after detonation.

The use of nuclear weapons raises serious problems under international humanitarian law, but still there are people who insist that their use can be legally justified. I have a much different view, and even more so after hearing the testimonies of those who survived and lost loved ones in Hiroshima and Nagasaki and from seeing those who are still dealing with the impact on their health. It is clear that these weapons must be eliminated once and for all. Many people understand this in theory, but after visiting Hiroshima and Nagasaki and hearing the voices of survivors, perhaps others would better understand what we are talking about.

As the four-year action plan notes, the Federation's work to implement the resolution takes several forms. First, the Federation plays its usual role as coordinator to facilitate National Societies' endeavours as appropriate. The Federation has provided the platform for National Societies' involvement in multilateral meetings, such as the recent meeting in Vienna on the humanitarian consequences of nuclear weapons, and has ensured that their voices are heard, particularly regarding the absence of any adequate capacity or plans to provide humanitarian assistance in response to nuclear detonation. In continuing its close collaboration with the ICRC on this issue, the Federation will also vigorously support the international network of National Societies active in promoting the Movement's position on nuclear weapons. Moreover, the Federation ensures the timely exchange of information on action taken, past and upcoming events, and the work of specialized organizations in the field of nuclear weapons.

Looking to the possibility that the world may one day have to respond to another nuclear weapon detonation, what is the role of the Movement, globally, with regards to preparedness, response and recovery if such an event were to occur?

Tadateru Konoe: As I said earlier, it is just about impossible to be adequately prepared for even a single nuclear detonation. Regardless of response efforts, the casualties and damage in the immediate aftermath of a nuclear explosion would be so extensive that an effective humanitarian response is unrealistic. Infrastructure would be decimated. First responders in the vicinity are likely to be victims themselves, supplies and facilities would likely be destroyed, and the presence of radiation would largely rule out immediately sending responders into the contaminated area. Most States, and all humanitarian organizations that I am aware of, would be unable to cope with such a scenario.

Peter Maurer: This is an interesting discussion because the ICRC has expressed serious doubts as to whether the needs of victims could be adequately met in the aftermath of a nuclear detonation. The ICRC learnt much from its experience in Hiroshima, and we have sought to gain a better understanding of the current degree of preparedness of National Societies, organizations and States to respond to nuclear disaster.⁸ Over the past three years, through a series of studies, we have come to the conclusion that there is no existing capacity at the international level and in most States to adequately cope with the most likely scenarios of nuclear weapons use.

Some may question our assessment or believe that there is always a possibility to cope with such a major disaster, but underlying this view is an assumption that the nuclear weapon use will be very limited. President Kono and myself cannot foresee a scenario in which nuclear weapons would be used in such a limited way. The most realistic scenario is that if one nuclear bomb is used, more nuclear bombs will be used. One must have serious doubts whether this is the kind of scenario for which anyone can be prepared.



It is also very important not to create a situation where nuclear powers somehow place the responsibility for coping with the human impact of nuclear detonation on humanitarian organizations and say, “Our task is to have strategic military reflections, your task is to cope with the human impact.” We want to warn States that if this kind of weapon is going to be used, its destructive capacity, its long-term impact on health, food and the environment, will produce consequences for which it will be nearly impossible to be prepared to manage in any reasonable way.

You have heard the testimonies of survivors, and both the ICRC and the Japanese Red Cross assisted in the response to the attacks on Hiroshima and Nagasaki. What, based on your experience and from listening to the testimonies, are the lessons learned from this experience about the needs of the victims in these situations?

Peter Maurer: These survivors’ testimonies illustrate quite well what we have been talking about in more general terms. Each of the survivors describes part of the reality of the explosion itself: the heat, the pressure, the radiation, the difficulty in finding assistance. In particular, the ability to provide assistance was severely

8 See Robin Coupland and Dominique Loye, “International Assistance for Victims of Use of Nuclear, Radiological, Biological and Chemical Weapons: Time for a Reality Check?”, *International Review of the Red Cross*, Vol. 91, No. 874, 2009, available at: www.icrc.org/eng/resources/documents/interview/2013/03-04-nuclear-weapons-humanitarian-assistance.htm.

damaged because the helpers were killed and injured as much as everyone else. The inability to respond effectively was not due to a lack of will, it was because of a lack of capacity. The survivors' accounts included extremely graphic illustrations of how people sought assistance but the hospitals had been damaged, medical doctors and nurses were killed and medicine was contaminated. The testimonies underline the destructive nature of a nuclear bomb.

Tadateru Konoe: The difficulty in providing adequate medical care in the immediate aftermath is one very important lesson. In Hiroshima, the Japanese Red Cross Hospital happened to be very close to the epicentre of the bombing but, by chance, was one of the few hospitals to remain standing. The doctors and medical personnel who survived were mobilized. The same happened in Nagasaki. There, many nurses trained by the Red Cross were quickly dispatched to various different hospitals. Along with other medical personnel, they aided many people. Later, medics from neighbouring prefectures joined them to help save victims. But they had no knowledge about the impact of exposure to high levels of radiation. They worked without the necessary equipment or medicines and did not know how to treat the victims. So in that sense they were not prepared for this kind of event. They were full of goodwill and motivation but there was not much that they could do.

What surprised you most in listening to the stories of those who survived the explosion of the nuclear bomb in Hiroshima?

Tadateru Konoe: What we were told by survivors in both Hiroshima and Nagasaki is that everything happened within a few seconds. But for many of those who survived, those few seconds have had a life-long impact. In fact, it is still not entirely clear what all the long-term needs of the survivors are, because of the strong social stigma and the trauma that was carried on to the next generation or even generations, who may be unwilling to talk about their experience.

This morning a survivor told us that his parents were direct victims of the atomic bomb, but they did not want to tell him what had happened because they felt that if they told the truth their son would have difficulty getting married. There was some prejudice against victims of the atomic bomb because they might have been seriously affected by radiation.

Peter Maurer: This is a very interesting point because for a long time we were only focused on the physical impact of nuclear weapons. This is the most visible long-term effect. What strikes me when listening to survivors is the psycho-social impact – the psychological trauma that they went through during the war and



Jeff Cooke, ICRC

the discrimination they suffered afterwards. These are important elements that we have just started to discuss in the broader context of armed conflict. We have historically focused on the immediate physical injury of the war wounded, but increasingly my contact with survivors has brought into focus that another dimension that may be still be insufficiently addressed is the psycho-social impact of a specific weapon like a nuclear bomb.

A large number of States have raised concerns about the humanitarian consequences of nuclear weapons in the recent conferences and other fora. What concrete action would the Movement like to see States take to ensure nuclear weapons are never used again?

Peter Maurer: Today the best action States can take is to fulfil their existing obligations and engage in the negotiation of a legally binding agreement or set of agreements that would outlaw the use of nuclear weapons and at the same time lead to comprehensive disarmament. There are a variety of different approaches to achieving this, and if it is to be pragmatic, the process should aim to be as inclusive as possible. As a Movement we are not going to propose what such an agreement should look like, the time frame to achieve it or where it should be developed; that is the responsibility of States. But we stress and will continue to stress that any such instrument must result in banning the use of nuclear weapons and in their complete elimination.

It is no longer radical to call for “global zero”. Even the UN Security Council has confirmed its commitment to the goal of a world without nuclear weapons.⁹ The question is how we can we advance nuclear disarmament and get to a process which allows us to conclude an agreement. It is time for States to explore the different possibilities for the architecture of an agreement or series of agreements and set a time frame to achieve it.

Even before nuclear weapons are eliminated, States, especially nuclear-armed States and their allies, must do more to reduce the risk of a detonation. Greater efforts must be made to reduce the significance of nuclear weapons in military plans, doctrines and policies, and the number of warheads on high alert status can be reduced. Many of these steps derive from long-standing political commitments and in particular the 2010 NPT action plan, and should be followed through as a matter of urgency.

Tadateru Konoe: There are still some States which insist that nuclear weapons act as a deterrent and are a “necessary evil”, so to speak. But in my view, it would be quite difficult if not impossible to use such weapons without violating international humanitarian law. Thus, there is no point in keeping or producing nuclear weapons that violate the law, and a better approach is to work towards their elimination. Of course, the Movement plays a role in this by encouraging nations which possess nuclear weapons to consider the human cost of using them

⁹ See UN SC Res. 1887, 24 September 2009.

and to do all they can to advance nuclear disarmament, thereby enlarging the network of nuclear-free States.

What other important messages can the Movement pass on to the international community?

Peter Maurer: To pick up on President Konoe's point, we have an interest as a Movement in bringing the discussion on the humanitarian impact of nuclear weapons into the arena of concrete negotiations. We have done our homework on that impact and presented it to States. It is now up to States to take over, based on the information we and others have provided to them, and to negotiate a solution. We know what some of the options are: already we have test ban treaties, we have non-proliferation treaties, we have bilateral disarmament arrangements. It may not be one single measure that will bring about complete disarmament, but rather an intelligent combination of different approaches that could bring us forward. Given the efforts that more than 150 States and many civil society organizations put into the Conferences on the Humanitarian Impact of Nuclear Weapons over the past three years, we expect these concerns to be taken seriously as States, including those which possess nuclear weapons, reflect constructively on what measures or combination of measures will advance a process that leads to prohibition and total disarmament.

It's vital to avoid a fruitless stalemate where some talk about disarmament and others say that nuclear weapons are still useful, and we cannot actually move forward. We have by nature different perspectives and different approaches which may not be easily reconcilable, but as always in international politics, everything is about timing and motivation. When you disagree about the possibility of the final objective, you can always start with the first step. Every journey starts with a step. We should not aim for a perfect solution immediately. We should encourage more concrete actions that will bring us closer to our objective of total prohibition and disarmament.

Tadateru Konoe: We as a Movement have adopted resolutions and a plan of action, as an appeal to decision-makers to reach an agreement on the abolition of nuclear weapons. Perhaps our voices have not yet reached some decision-makers, and we are using National Societies to do this vis-à-vis their own governments. Some National Societies may consider this issue too sensitive, but this is an issue that is of concern to the entire Movement, and ownership of it must be shared by all the Movement's components. The Conferences on the Humanitarian Impact of Nuclear Weapons and other relevant fora have also been good occasions to attract the interest and attention of National Societies and governments at the same time.

Peter Maurer: It's important to recognize that there is no contradiction between engaging a specific humanitarian perspective on nuclear weapons and being pragmatic on how you can achieve their prohibition and elimination. National Societies, the Federation and the ICRC do not pretend that we have the only



perspective, but as humanitarian organizations we have to work on the side of humanity. It is unfortunate that progress thus far has been hindered by those who say that from a security perspective we cannot eliminate nuclear weapons because the world is too insecure, because others have them, because they are useful as a deterrent, because terrorists may acquire them, and so on. I respect those arguments. These are the arguments that militaries have to make. But we have done our homework and know from experience the reality of the humanitarian impact of nuclear weapons. What I expect from the world's political leaders is that they seriously consider the humanitarian consequences of nuclear weapons, particularly in light of the new information and research presented at the conferences held in Oslo, Nayarit and Vienna; that they reassess these weapons in legal and policy terms; and that they take concrete steps to advance nuclear disarmament.

Tadateru Konoe: The argument against disarmament in light of deterrence, still used by some States, was perhaps justified during the Cold War years, when both sides insisted that they needed to defend themselves from each other by possessing nuclear weapons. But now that the Cold War has ended and we are in a much different world where nuclear technology is spreading and there are concerns about the acquisition of nuclear weapons by non-State actors, it is time to treat the prohibition and elimination of nuclear weapons as an urgent international priority. Our Movement can play an important role in emphasizing the humanitarian perspective to further advance the worldwide mobilization to ban nuclear weapons.

Nuclear arsenals: Current developments, trends and capabilities

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Abstract

In this article, the highly destructive potential of global nuclear arsenals is reviewed with respect to nuclear force structures, evolution of nuclear capabilities, modernization programmes and nuclear war planning and operations. Specific nuclear forces data is presented for the United States, the Russian Federation, Great Britain, France, China, Pakistan, India, Israel and North Korea. Hypothetical, escalatory scenarios for the use of nuclear weapons are presented, including the calculated distribution of radioactive fallout. At more than seventy years since the atomic bombings of Hiroshima and Nagasaki and twenty-five years since the end of the Cold War, international progress on nuclear arms control and disarmament has now nearly stalled, with the emphasis shifting to modernizing and maintaining large inventories of nuclear weapons indefinitely. This perpetuates a grave risk to human health, civil society and the environment.

Keywords: nuclear weapons, nuclear war, nuclear arms control and disarmament.



Introduction

The Russian Federation and the United States have made enormous progress in reducing the sizes of their Cold War nuclear arsenals over the last decades. Britain and France have also reduced their arsenals. The pace of reduction is slowing, however, and the arms control process has become less restrictive and has so far failed to produce limits on many categories of nuclear weapons.

Instead, the world's nine nuclear-armed States – the United States, the Russian Federation, China, France, the United Kingdom, India, Pakistan, Israel and North Korea – are each making significant investments in maintaining and modernizing their nuclear forces, in most cases increasing nuclear military capabilities and, in the case of China, Pakistan, India, and North Korea, even increasing the sizes of their arsenals. These modernization programmes effectively plan for the sustaining of large nuclear arsenals further into the future than the nuclear era has lasted so far.

In addition to reaffirming their intention to retain nuclear weapons, the nuclear-armed States and many of their allies frequently emphasize the importance of nuclear weapons to national and international security. To maintain and demonstrate this role, nuclear weapon systems are periodically test-launched and nuclear exercises are frequently conducted in order to practice offensive strike plans against potential adversaries. Russia and the United States have both increased the profile and operations of their nuclear-capable forces since the Ukraine crisis.

The technical capabilities of the nuclear arsenals – delivery vehicles such as aircraft and missiles, the nuclear warheads they can deliver, and the structure of nuclear forces – influence many aspects of nuclear deterrence and war-fighting strategies between countries today, as well as the forms that nuclear warfare could assume. More advanced arsenals stimulate development of more ambitious nuclear war-fighting strategies that go beyond basic deterrence.

Although a surprise nuclear first strike is viewed as highly unlikely, the United States, Russia, Britain and France keep large numbers of nuclear warheads on alert, capable of being launched on short notice. Maintaining nuclear forces on alert increases the risk of accidents and incidents and fuels adversarial and competitive policies and worst-case planning. Moreover, the highly alerted nuclear postures of the United States, Russia, Britain and France may help motivate smaller nuclear-armed States such as China, India and Pakistan to increase the readiness level of their nuclear forces as well, thereby significantly increasing nuclear risks for all.¹

1 Chinese military officials have reportedly recommended increasing the readiness of Chinese nuclear forces, and India is developing a “canistered” launcher for its long-range nuclear missiles to increase their responsiveness. For reports about these developments, see Gregory Kulacki, *China's Military Calls for Putting Its Nuclear Forces on Alert*, Union of Concerned Scientists, January 2016, available at: www.ucsusa.org/sites/default/files/attach/2016/02/China-Hair-Trigger-full-report.pdf (all internet references were accessed in March 2016); Defence Research and Development Organisation (DRDO), “DRDO Test-Fires Canisterised Agni 5 ICBM”, *DRDO Newsletter*, Vol. 35, No. 3, 2015, available at: http://drdo.gov.in/drdo/pub/newsletter/2015/Mar_15.pdf.



Figure 1. Estimated global nuclear warhead inventories, 1945–2016. The global inventory (grey) of nuclear warheads (stockpiled plus those that are retired but still intact) has decreased significantly since the Cold War peak in 1986. The US stockpile (blue) peaked in 1967, while the Russian stockpile (red) peaked in 1986. As of early 2016, the world’s nine nuclear-armed States possess an estimated 15,400 weapons. Source: Hans M. Kristensen and Robert S. Norris, “Status of World Nuclear Forces”, Federation of American Scientists (FAS), 26 May 2016, available at: <http://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>.

Nuclear modernization programmes and operations are intended to maintain a State’s ability to inflict massive destruction on an adversary. Despite the end of the Cold War more than two decades ago, the destructive potential of current nuclear arsenals remains at a very high level, capable of widespread and horrific devastation on a continental scale, with the potential to harm hundreds of millions of people directly from blast, fire and radioactive fallout, and billions more indirectly from climatic effects and famine.

Status of nuclear forces

Compared with the situation during the Cold War, the world has made substantial progress in reducing the number of nuclear weapons. The worldwide inventory of nuclear weapons (counting both warheads in military stockpiles and those that are retired, but still intact) peaked in 1986 at an estimated 70,300 warheads.² Since then, retirement and dismantlement of excess weapons have eliminated more than 50,000 warheads, reducing the remaining inventory to an estimated 15,400 warheads (see Figure 1).

Of those 15,400 warheads, an estimated 10,100 are in military stockpiles and earmarked for potential use by a wide variety of delivery systems, including land- and sea-based long-range ballistic missiles, heavy bombers, fighter-bombers,

2 Hans M. Kristensen and Robert S. Norris, “Global Nuclear Weapons Inventories, 1945–2013”, FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 69, No. 5, 2013, p. 76, available at: <http://bos.sagepub.com/content/69/5/75.full.pdf+html>.

Table 1. *Estimated worldwide nuclear warhead inventories, 2016*

Country	Deployed*	Stockpiled**	Retired	Inventory
Russia	1,790	4,500	2,800	7,300
United States	1,930	4,500	2,500	7,000
France	280	300		300
China		260	Low	260
Britain	120	215	Low	215
Pakistan		110–130		110–130
India		100–120		100–120
Israel		80		80
North Korea		(~10)		(~10)
Total	4,120	~10,100	5,300	~15,400

* A deployed warhead is defined as either deployed on a launcher or at a base with operational launchers.

** Stockpiled warheads are those in the custody of the military and available for use by launchers. The number includes spares, but not retired but still intact warheads awaiting dismantlement.

Source: Hans M. Kristensen and Robert S. Norris, “Status of World Nuclear Forces”, FAS, 1 March 2016, available at: <http://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>.

air- and sea-launched cruise missiles, air- and missile-defence interceptors, torpedoes, and depth bombs. An estimated 4,000 warheads are deployed on or with operational delivery systems, and roughly 1,800 of those are ready for use at short notice (see Table 1).³

More than 90% of this current inventory of 15,400 nuclear warheads are in the possession of just two countries: Russia and the United States. These two countries each retain nuclear arsenals that are vastly bigger than any other nuclear-armed State is either capable of producing or considers necessary for national security; none of the world’s seven other nuclear-armed States (Britain, China, France, India, Israel, North Korea and Pakistan) have more than a few hundred warheads.

The significant differences in the size and composition of the nuclear arsenals shown in Table 1 indicate that different nuclear-armed States have different plans for the potential use of nuclear weapons. Yet all nuclear arsenals are designed to inflict specific, calculated damage on potential adversaries. This ranges from the use of a few nuclear weapons against more vulnerable or “soft” targets such as a city to the simultaneous or highly orchestrated employment of many hundreds of weapons against military forces, including damage-resistant or “hardened” missile silos and underground command and control centres.

3 For an overview and additional documentation on the status of global and national nuclear arsenals, see Hans M. Kristensen and Robert S. Norris, “Status of World Nuclear Forces”, FAS, 26 May 2016, available at: <http://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>.

The use of just a single or a few nuclear weapons would decimate a city, with horrific humanitarian consequences, and a large-scale nuclear war using hundreds or even thousands of nuclear weapons would, even if the weapons were used only against military facilities, cause tens of millions of civilian casualties from blast effects, fires and radioactive fallout;⁴ there is no such thing as acceptable or humanitarian use of nuclear weapons. Civilian suffering caused by longer-term climatic effects would be even greater.

A 2001 study by scientists from the United States and India concluded that the use of only ten nuclear weapons on five Indian and five Pakistani cities (airburst) would kill 2.9 million people, with an additional 1.5 million severely injured.⁵ These were calculated as effects from airburst detonations over the cities, which create limited radioactive fallout. A follow-up study by the Natural Resources Defense Council (NRDC) on the effects of ground-burst detonations found that in addition to immediate deaths from blast effects and fires, the use of twenty-four ground-burst weapons on fifteen Indian and Pakistani cities would expose 22.1 million people to lethal radiation doses of 600 rem or more in the first two days after the attack. Another 8 million people would receive a radiation dose of 100 to 600 rem, causing severe radiation sickness and potentially death, especially for the very young, old or infirm.⁶

Humanitarian effects would not be limited to blast effects, fires and radioactive fallout. A 2012 study by International Physicians for the Prevention of Nuclear War (IPPNW) found that detonation of as few as 100 nuclear weapons – less than 1% of the global nuclear weapons inventory – would disrupt the global climate and agricultural production so severely that the lives of more than 2 billion people would be in jeopardy.⁷ A large-scale nuclear war would have long-lasting consequences on a global scale that make any talk of winning such a war meaningless.

Five of the nuclear-armed States (Britain, China, France, Russia and the United States) have committed themselves, under the nuclear Non-Proliferation Treaty (NPT), “to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control”.⁸ Negotiations resulting in arms control treaties have taken place intermittently since the NPT entered into force, but

4 Matthew G. McKinzie, Thomas B. Cochran, Robert S. Norris and William M. Arkin, *The U.S. Nuclear War Plan: A Time for Change*, NRDC, June 2001, available at: www.nrdc.org/sites/default/files/us-nuclear-war-plan-report.pdf.

5 Matthew G. McKinzie, Zia Mian, A. H. Nayyar and M. V. Ramana, “The Risk and Consequences of Nuclear War in South Asia”, in Smitu Kothari and Zia Mian (eds), *Out of the Nuclear Shadow*, Rainbow Publishers, New Delhi, 2001.

6 Matthew G. McKinzie, *The Consequences of Nuclear Conflict between India and Pakistan*, NRDC, 2003.

7 Ira Helfand, *Nuclear Famine: Two Billion People at Risk? Global Impacts of Limited Nuclear War on Agriculture, Food Supplies, and Human Nutrition*, 2nd ed., IPPNW and Physicians for Social Responsibility, November 2013, available at: www.ippnw.org/pdf/nuclear-famine-two-billion-at-risk-2013.pdf.

8 UN Department for Disarmament Affairs, “The Treaty on the Non-Proliferation of Nuclear Weapons (NPT)”, United Nations, 2000, available at: www.un.org/en/conf/npt/2005/npttreaty.html.

none are happening at time of writing. And while an arms race as it materialized during the Cold War is no longer taking place, a technological nuclear competition is in full swing.

None of the five nuclear weapons States party to the NPT, which combined possess 98% of the world's nuclear weapons, have presented plans for a treaty on general and complete disarmament or outlined how they plan to "get to zero". Some of them argue that a step-by-step approach of gradual reductions is a better approach than a ban,⁹ but the pace of reductions has slowed considerably compared with the 1990s. The long-term modernization plans and nuclear policies of all five nuclear weapons States party to the NPT indicate that they intend to keep sizeable nuclear arsenals for the foreseeable future.

Meanwhile, as discussed in further detail below, all nine nuclear-armed States have significant and expensive nuclear weapons modernization programmes under way and appear determined to retain nuclear weapons for the indefinite future. These modernization programmes continue to make nuclear weapons more capable and effective, and are accompanied by continuous refinement of strike plans for their potential use.

Evolution of nuclear capabilities

The posture and strategy behind the possession and potential use of nuclear weapons are greatly influenced by their capability, which has evolved significantly since the first nuclear weapons were deployed in the 1940s, although details may vary considerably from country to country.

The first nuclear weapons were delivered by large bombers, so strike planning involved lengthy preparation and long sorties from base to target. As ballistic missiles were added to the arsenals, the time required to deliver nuclear weapons to targets decreased from hours to minutes. Initial liquid-fuel missiles, which took hours to prepare for launch, were soon replaced with solid-fuel missiles that could be launched in a few minutes. The transition from slow to fast delivery systems shortened the fuse of nuclear war planning and prompted development of response plans that could launch weapons before they were destroyed by attacking nuclear weapons launched on missiles. Today, approximately 1,800 US, Russian, British and French nuclear warheads are still deployed and ready for use at short notice.¹⁰

Early delivery systems had very poor accuracy, so planners compensated by using warheads with very large explosive yields to ensue destruction of the target. As accuracy improved and warhead designs became more compact and lighter in

9 See, for example, Robert A. Wood, Ambassador, "Statement by the United States to the NPT Review Conference Main Committee I", US Department of State, 1 May 2015, available at: www.state.gov/t/isn/rls/rm/2015/241401.htm.

10 Hans M. Kristensen and Matthew G. McKinzie, *Reducing Alert Rates of Nuclear Weapons*, United Nations Institute for Disarmament Research, Geneva, 2012, available at: www.unidir.org/files/publications/pdfs/reducing-alert-rates-of-nuclear-weapons-400.pdf.

weight, each bomber aircraft was able to carry more weapons and each missile more warheads. This trend led to the vast build-up of deployed strategic nuclear warheads on fast-flying ballistic missiles that came to symbolize the Cold War arms race. By the end of the 1980s, the United States and Soviet Union each had more than 10,000 nuclear warheads deployed on ballistic missiles and heavy bombers.¹¹ By comparison, currently the United States, Russia, Britain and France combined deploy an estimated 3,440 warheads on ballistic missiles.¹²

The nuclear arsenals of the nine nuclear-armed States today vary considerably depending on each State's history, strategy and technological capabilities (see Table 2). As a result, the dynamics between different nuclear-armed States can vary significantly, as can the ambition of nuclear planning and the potential consequences of nuclear use.

The United States and Russia have very large arsenals consisting of a "triad" of long-range strategic nuclear forces, meaning intercontinental ballistic missiles (ICBMs), sea-launched ballistic missiles and nuclear-capable aircraft, backed up by shorter-range tactical nuclear forces. China, France, India, Israel and Pakistan each have a "dyad", meaning two out of three elements of a triad, of medium-and/or long-range forces. China and India (and possibly Pakistan) are transitioning to triads, and there are rumours that Israel may have a triad. Pakistan and India also have short-range weapons. North Korea appears to be focused on land-based missiles but is also developing a sea-based missile.¹³

The original five nuclear-armed States (Britain, China, France, Russia and the United States) all have thermonuclear warheads with high yields of hundreds of kilotons that were developed in extensive live nuclear testing programmes before these countries ceased test explosions of nuclear weapons between 1990 and 1996.¹⁴ The warheads of these countries have been miniaturized via these research and test programmes in order to allow missiles to carry multiple warheads that can be independently aimed at different targets.

The newer nuclear-armed States (India, Israel, North Korea and Pakistan) have simpler warhead designs with lower yields estimated to be in the range of a few kilotons to a few tens of kilotons.¹⁵ These countries have each conducted only a handful of nuclear tests, which is probably insufficient to develop advanced thermonuclear warheads with higher yields, although they may have researched

11 For strategic nuclear forces loadings, see NRDC, "Table of US Strategic Offensive Force Loadings", 25 November 2002, available at: www.nrdc.org/nuclear/nudb/datab1.asp; and "Table of USSR/Russian Strategic Offensive Force Loadings", 25 November 2002.

12 The estimate of 3,440 warheads deployed on ballistic missiles assumes roughly 1,670 warheads on Russian missiles, approximately 1,410 warheads on US missiles, about 240 warheads on French missiles, and 120 warheads on British missiles. More than 1,500 weapons could be loaded on bombers within days.

13 For overviews of the arsenals of the different nuclear-armed States, see the FAS Nuclear Notebook series published in the *Bulletin of the Atomic Scientists*, available at: <http://bos.sagepub.com/cgi/collection/nuclearnotebook>.

14 Warhead yield estimates are derived from the FAS Nuclear Notebook series, *ibid*. For a chronology of nuclear weapon tests, see Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization, "Nuclear Testing 1945–Today", available at: www.ctbto.org/nuclear-testing/history-of-nuclear-testing/nuclear-testing-1945-today/.

15 *Ibid*.

Table 2. Comparing nuclear capabilities

Type	US	Russia	France	China	Britain	Pakistan	India	Israel	DPRK	Total
Bomber	✓	✓		✓						3
ICBM	✓	✓		✓					(✓)	3(4)
SLBM	✓	✓	✓	✓			(✓)		(✓)	5(7)
DCA	✓	✓	✓	?*		✓	✓	✓		6
IRBM				✓			(✓)	(✓)	(✓)	1(4)
MRBM				✓		(✓)	✓	✓	(✓)	3(5)
SRBM		✓		(✓)		✓	✓		(✓)	3(5)
ALCM	✓	✓	✓	(✓)		(✓)	(✓)			3(6)
GLCM		(✓)		(✓)		✓	(✓)			1(4)
SLCM		✓		(✓)		(✓)		(✓)		1(3)
ASW		✓								1
SAM		✓								1
ABM		✓								1
H-bomb	✓	✓	✓	✓	✓					5
MIRV	✓	✓	✓	✓	✓		(✓)			5(6)
Alert	✓	✓	✓		✓					4
Total	8	13(14)	6	7(10)	4	3(6)	3(8)	2(4)	(5)	

Check marks in parenthesis indicate capabilities in development or uncertain status.

* The Chinese nuclear test conducted on January 7, 1972, involved a bomb delivered by a Q-5 dual-capable fighter-jet.

Key:

ABM: anti-ballistic missile

ALCM: air-launch cruise missile

Alert: warheads mounted on missiles configured to launch at short notice

ASW: anti-submarine warfare

DCA: dual-capable aircraft (fighter-bomber)

GLCM: ground-launched cruise missile

H-bomb: hydrogen (thermonuclear) warhead design

MIRBM: medium-range ballistic missile

ICBM: intercontinental ballistic missile

IRBM: intermediate-range ballistic missile

MIRV: multiple independently targeted re-entry vehicle

MRBM: medium-range ballistic missile

SAM: surface-to-air missile

SLBM: sea-launched ballistic missile

SLCM: sea-launched cruise missile

SRBM: short-range ballistic missile

Source: data are derived from the FAS Nuclear Notebook series in the *Bulletin of the Atomic Scientists*, available at: <http://bos.sagepub.com/cgi/collection/nuclearnotebook>.

thermonuclear designs. Instead, they may have developed so-called boosted warhead designs that use a radioactive gas (tritium) to increase the yield of single-stage fission warhead designs. Their ballistic missiles can each carry a single and relatively heavy warhead, although deployment of nuclear-capable cruise missiles (in the case of Pakistan and possibly China and Israel) indicates success in miniaturizing warheads.

The United States, Russia, France and Britain all have nuclear weapons on alert, with ballistic missiles deployed and loaded with warheads and ready for use at short notice. This type of posture was created during the Cold War and puts high demands on the capability of command and control systems and the scope of strike plans. Countries with nuclear weapons on alert tend to have nuclear strategies focused on counterforce targeting, where nuclear weapons are used to hold at risk difficult and hardened targets such as other nuclear forces and command and control facilities. Counterforce strategy requires larger arsenals and more advanced weapons than other targeting strategies, and alert forces increase the risk of accidents and misunderstandings.¹⁶

Counterforce strategy also requires nuclear weapons that are more accurate, in order to be able to destroy smaller or hardened targets. The Trident II D5 sea-launched ballistic missile, which is deployed by the United States and Britain, can from 10,000 kilometres away place a warhead within a circle with a diameter smaller than the length of an Ohio-class ballistic missile submarine (130–180 metres, possibly less).¹⁷ The weapon is capable of holding at risk the full range of targets, including the most hardened. A nuclear cruise missile can have an accuracy of as little as 10–30 metres,¹⁸ which can also provide hard-target kill capability with sufficient yield.

The remaining nuclear-armed States (China, India, Israel, North Korea and Pakistan) are thought to store nuclear warheads separate from delivery vehicles under normal circumstances. In a crisis, the warheads would first have to be mated with their delivery vehicles. In general, the lower readiness of these countries' nuclear forces requires less capable nuclear command and control capabilities and less ambitious employment strategies. Countries with de-alerted nuclear forces tend to have nuclear strategies focused on countervalue targeting, where nuclear weapons are used to hold at risk enemy cities, large military bases, and industry. Such countervalue postures tend to require smaller arsenals and less advanced weapons, and are less prone to accidents and do not post a first-strike threat to other nuclear-armed States.

All nuclear-armed States have developed short- or medium-range nuclear weapons, which tend to represent one of the first stages of developing a nuclear arsenal. During the Cold War, short-range nuclear weapons were developed as

16 For a review of nuclear alert postures, see H. M. Kristensen and M. G. McKinzie, above note 10.

17 G. P. Nanos, Rear Admiral, US Navy, Director, Strategic Systems Programs, "Strategic Systems Update", *The Submarine Review*, Naval Submarines League, April 1997, available at: <https://fas.org/wp-content/uploads/sites/4/W76nanos.pdf>.

18 Thomas B. Cochran, William M. Arkin and Milton M. Hoenig, *Nuclear Weapons Databook*, Vol. 1: *U.S. Nuclear Forces and Capabilities*, Ballinger, Cambridge, MA, 1984, p. 177.

battlefield weapons. Most of these weapons have been retired (Britain has entirely dismantled its tactical nuclear stockpile), but some have been retained. Russia has a large and diverse stockpile of tactical nuclear weapons for use by its navy, air defence, air force and army. The United States and France have tactical weapons for fighter-bombers, although France calls its short-range air-launched cruise missile (ALCM) a strategic weapon.¹⁹

China conducted a nuclear test from a fighter-bomber in 1972, although it is unknown if nuclear bombs are currently available for Chinese dual-capable fighter-bomber aircraft. The US Central Intelligence Agency concluded in 1993 that China “almost certainly” had developed a warhead for the DF-15 short-range ballistic missile, and projected that deployment of “nuclear-armed” DF-15s would begin in 1994;²⁰ however, it is not known whether China ever produced and fielded the warhead. Pakistan is developing a short-range (60 kilometres) NASR missile which is intended for sub-strategic scenarios.

Continued modernization of nuclear forces

Some have recently warned that Russia and the United States are now on the brink of a new “arms race”.²¹ Although an arms race similar to the one that characterized the Cold War – a race to build the most nuclear weapons – fortunately does not seem imminent, there is no doubt that the souring of East–West relations, growing military posturing and more or less overt threats, combined with the extensive nuclear modernization programmes discussed here, have the potential to create demands for more or new types of nuclear weapons.

What is in full swing, therefore, is a nuclear technological arms race. All the nuclear-armed States have extensive modernization programmes under way for their nuclear forces, and some of these programmes will further modify or enhance their nuclear targeting capabilities. And in South Asia, the nuclear modernization programmes of India and Pakistan do have worrisome signs of a regional nuclear arms race in the traditional sense.

Although bilateral US–Russian arms control treaties place limits on how many nuclear weapons can be deployed or, in the case of the 1987 Intermediate-Range Nuclear Forces Treaty, ban land-based missiles with certain ranges, these treaties do not limit modernization of nuclear forces in general. Arms control has traditionally focused on strategic stability in numbers but has ignored instability

19 For overviews of the arsenals of the different nuclear-armed States, see the FAS Nuclear Notebook series, above note 13.

20 US Central Intelligence Agency, Office of Scientific and Weapons Research, “China’s Nuclear Weapons Testing: Facing Prospects for a Comprehensive Test Ban”, Intelligence Memorandum, 93-20044C M, 30 September 1993, p. 5, available at: www.foia.cia.gov/sites/default/files/document_conversions/89801/DOC_0000996367.pdf.

21 See, for example, Aaron Mehta, “Former SecDef Perry: US on ‘Brink’ of New Nuclear Arms Race”, *Defense News*, 3 December 2015, available at: www.defensenews.com/story/defense/policy-budget/2015/12/03/former-secdef-perry-us-brink-new-nuclear-arms-race/76721640/.

resulting from unconstrained modernization. Under the New START Treaty,²² for example, both Russia and the United States can (and do) develop and deploy new and improved nuclear launchers and warheads as long as they do not exceed the treaty limits for launchers and deployed warheads. None of the other seven nuclear-armed States are restrained in their nuclear modernization programmes or postures by any arms control treaty.

The United States

President Barack Obama took office with a strong public commitment to reducing the number of nuclear weapons and the role they serve in US security strategy. After an energetic beginning with a Prague speech that re-energized the hopes and aspirations of the international arms control community by promising to “put an end to Cold War thinking”,²³ and the New START Treaty with Russia,²⁴ the Obama administration appears to have since shifted its focus to modernization of the entire nuclear arsenal and the infrastructure that supports it.²⁵

New presidential guidance issued in 2013 did order adjustments to nuclear weapons employment strategy,²⁶ and President Obama said the United States had “narrowed the range of contingencies under which [it] would ever use or threaten to use nuclear weapons”.²⁷ But since the military and defence contractors have largely succeeded in preventing significant changes to the nuclear force structure and the overall strategy continues to focus on holding at risk Russian and Chinese nuclear forces, these modifications appear to be modest in scope. Instead of significantly changing US nuclear strategy, the guidance retained the existing posture with a triad of strategic nuclear weapons backed up by non-strategic weapons, reaffirmed long-held planning principles such as counterforce targeting while rejecting less ambitious targeting strategies such as countervalue and

22 US Department of State, Bureau of Arms Control, Verification and Compliance, “New START”, available at: www.state.gov/t/avc/newstart/index.htm.

23 The White House, Office of the Press Secretary, “Remarks by President Barack Obama in Prague as Delivered”, 5 April 2009, available at: www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered.

24 US Department of State, above note 22.

25 For an overview of the US modernization programme and weapon details, see Hans M. Kristensen and Robert S. Norris, “US Nuclear Forces, 2015”, FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 71, No. 2, 2015, available at: <http://bos.sagepub.com/content/71/2/107.full.pdf+html>.

26 For public statements on the 2013 nuclear weapons employment strategy, see The White House, Office of the Press Secretary, “Fact Sheet: Nuclear Weapons Employment Strategy of the United States”, 19 June 2013, available at: www.whitehouse.gov/the-press-office/2013/06/19/fact-sheet-nuclear-weapons-employment-strategy-united-states; US Department of Defense, Office of the Secretary of Defense, *Report on Nuclear Employment Strategy of the United States, Specified in Section 491 of 10 U.S.C.*, 12 June 2013, available at: www.defense.gov/Portals/1/Documents/pubs/ReporttoCongressonUSNuclearEmploymentStrategy_Section491.pdf.

27 The White House, Office of the Press Secretary, “Remarks by President Obama at Hankuk University”, 26 March 2012, p. 3, available at: www.whitehouse.gov/the-press-office/2012/03/26/remarks-president-obama-hankuk-university.

minimum deterrence, and retained the existing readiness level with large numbers of nuclear weapons on alert.²⁸

As a result, after nearly eight years in office, the Obama administration has little to show in public that demonstrates that it has significantly reduced the number of nuclear weapons or curtailed the role they serve in US national security strategy. The Obama administration has achieved only a modest reduction of deployed strategic warheads and launchers under the New START Treaty, despite the fact that the administration has concluded that after New START is implemented in 2018, the military will still have up to one third more strategic nuclear warheads deployed than is needed for national and international security commitments.²⁹ Moreover, the administration has achieved the smallest stockpile reduction of any post-Cold War presidency (so far only a reduction of about 700 warheads).³⁰

The Obama administration also pledged that the United States “will not develop new nuclear warheads or pursue new military missions or new capabilities for nuclear weapons”,³¹ yet some life-extension and modernization programmes will introduce improved or new military capabilities to these weapon systems. For example, the life-extension programme for the B61 gravity bomb will add a guided tail kit to one of the existing B61 types to increase its accuracy. The new type, known as the B61-12, will be able to strike targets more accurately with less explosive yield, thereby reducing the radioactive fallout from a nuclear attack. The enhanced B61-12 will be capable of covering all the missions of the existing nuclear gravity bombs, but instead of these capabilities being available only with certain weapons on certain aircraft, the B61-12 will make all capabilities available on all aircraft, regardless of whether they are considered strategic or non-strategic. Some of the B61-12s will be deployed in Europe with the stealthy new F-35A fighter-bomber, providing a significant enhancement of NATO’s nuclear posture.³²

28 For analysis of the Obama administration’s nuclear weapons employment strategy, see Hans M. Kristensen, “New Nuclear Weapons Employment Guidance Puts Obama’s Fingerprint on Nuclear Weapons Policy and Strategy”, *FAS Strategic Security Blog*, 20 June 2013, available at: <http://fas.org/blogs/security/2013/06/nukeguidance/>.

29 US Department of Defense, above note 26, p. 6.

30 For analysis of the Obama administration’s performance on nuclear warhead reductions, see Hans M. Kristensen, “US Nuclear Stockpile Numbers Published Enroute to Hiroshima”, *FAS Strategic Security Blog*, 26 May 2016, available at: <http://fas.org/blogs/security/2016/05/hiroshima-stockpile/>; William Broad, “Reduction of Nuclear Arsenal Has Slowed under Obama, Report Finds”, *New York Times*, 27 May 2016, available at: www.nytimes.com/2016/05/27/science/nuclear-weapons-obama-united-states.html.

31 The White House, Office of the Press Secretary, “Statement by President Barack Obama on the Release of Nuclear Posture Review”, 6 April 2010, available at: www.whitehouse.gov/the-press-office/statement-president-barack-obama-release-nuclear-posture-review.

32 For an analysis of the capability of the new B61-12 guided nuclear bomb, see Hans M. Kristensen and Matthew G. McKinzie, “Video Shows Earth-Penetrating Capability of B61-12 Nuclear Bomb”, *FAS Strategic Security Blog*, 14 January 2016, available at: https://fas.org/blogs/security/2016/01/b61-12_earth-penetration/; Hans M. Kristensen, “B61 LEP: Increasing NATO Nuclear Capability and Precision Low-Yield Strikes”, *FAS Strategic Security Blog*, 15 June 2010, available at: <http://fas.org/blogs/security/2011/06/b61-12/>.

Similarly, nuclear warhead life-extension programmes currently under way will add new and improved fuses to re-entry vehicles on ballistic missiles that appear to increase the targeting efficiency of the weapon. The new Mk4A re-entry vehicle for the W76-1 warhead, for example, will make the weapon more capable, and a new fuse under development for the W87 warhead deployed on the US Air Force's Minuteman III ICBM may increase its performance as well.³³

The US National Nuclear Security Administration (NNSA) plans to develop a series of interoperable warheads that could be used on both land- and sea-based ballistic missiles.³⁴ Since the interoperable warheads use components from existing or previously tested designs, government officials insist that the interoperable warheads are not new. Yet there currently are no interoperable warheads in the stockpile, and the new types would significantly alter the design of existing nuclear warheads. The interoperable warheads would therefore be new.

To increase performance margins, the interoperable warheads will probably have reduced yields and require increased accuracy or enhanced fusing options to compensate. Although the components of interoperable warheads have all been tested, they have not all been tested together in the new design and could therefore potentially introduce uncertainties about reliability and performance into the stockpile. These uncertainties could, in turn, increase the risk that the United States would need to conduct a nuclear test explosion in the future and thus break the testing moratorium that has been in place for two decades. This would likely trigger a cascade of nuclear tests in other nuclear-armed countries.

Life-extended or new missiles are likely to have improved capabilities as well. The US Navy's Trident II D5 missile, for example, is undergoing an extensive upgrade to extend its service through the 2040s. The missile will get a new guidance system and a twin-star stellar sighting capability that are designed to "provide flexibility to support new missions" and make the missile "more accurate", according to the US Navy and the defence contractor.³⁵ Similarly, the Air Force plans to replace its current air-launched cruise missile with a new and

33 For documentation on this development, see Theodore A. Postol, Hans M. Kristensen and Matthew G. McKinzie, "How Nuclear Force Modernization is Undermining Strategic Stability", *Bulletin of the Atomic Scientists*, forthcoming 2016; Theodore A. Postol, "How the Obama Administration Learned to Stop Worrying and Love the Bomb", *The Nation*, 10 December 2014, available at: www.thenation.com/print/article/192633/how-obama-administration-learned-stop-worrying-and-love-bomb; Hans M. Kristensen, "Small Fuze – Big Effect", *FAS Strategic Security Blog*, 14 March 2007, available at: http://fas.org/blogs/security/2007/03/small_fuze_-_big_effect/.

34 US Department of Energy, NNSA, *Fiscal Year 2016 Stockpile Stewardship Management Program*, March 2015, pp. 1-2-1-4, available at: http://nnsa.energy.gov/sites/default/files/FY16SSMP_FINAL%203_16_2015_reducedsize.pdf.

35 US Naval Surface Warfare Center, Crane Division, "Underwater Wonder, Submarines: A Powerful Deterrent", *Warfighter Solutions*, Autumn 2008, p. 14; Draper Laboratory, "Keeping Trident Ever Ready", *Explorations*, Spring 2006, p. 8.

enhanced long-range standoff ALCM that provides improved military capabilities³⁶ and can be carried on more bomber types than the current ALCM.

Moreover, major new weapon systems such as the new long-range strike bomber and the next-generation ballistic missile submarine will have enhanced capabilities. The new bomber will be much more stealthy than the B-1 and B-52H bombers it replaces, and unlike the B-1 will be capable of carrying nuclear weapons. The new submarine will be equipped with a new electric drive propulsion system that will make it harder to detect.³⁷

According to the US Congressional Budget Office, the United States plans to spend approximately \$348 billion over the next decade to maintain and modernize its nuclear arsenal,³⁸ an increase of \$137 billion from the \$213 billion the administration projected in 2011.³⁹ Over the next three decades, the total cost of the nuclear weapons enterprise might reach as much as \$1 trillion,⁴⁰ although some programmes may be curtailed due to fiscal constraints.

These maintenance and modernization efforts will sustain and enhance the nuclear weapons capabilities that underpin the US counterforce targeting strategy as most recently reaffirmed by the Obama administration's nuclear weapons employment strategy from June 2013.⁴¹

The Russian Federation

In February 2012, then prime minister (now president) Vladimir Putin stated that the military would receive “more than 400 advanced ground and sea-based intercontinental ballistic missiles” over the coming decade, or an average of forty missiles per year.⁴² In his formal remarks to the Defence Ministry Board in late 2014, Putin declared that “the strategic nuclear forces will receive more than 50 intercontinental ballistic missiles” in 2015.⁴³

This missile production is part of a wider modernization programme that started two decades ago, aimed at replacing all Soviet-era strategic nuclear weapon systems with new ones – albeit at a lower overall force level for Russia. This

36 Stephen Young, “Commentary: The US Is More Secure without New, Nuclear-Armed Cruise Missile”, *Defense News*, 13 January 2016, available at: www.defensenews.com/story/defense/commentary/2016/01/13/why-is-the-obama-administration-promoting-the-long-range-standoff-weapon/78693312/.

37 Kris Osborn, “Ohio Replacement Subs to Shift to Electric Drive”, *DefenseTech*, 27 September 2013, available at: www.defensetech.org/2013/09/27/ohio-class-subs-to-shift-to-electric-drive/.

38 US Congressional Budget Office, *Projected Costs of U.S. Nuclear Forces, 2015–2024*, 22 January 2015, p. 4, available at: www.cbo.gov/sites/default/files/cbofiles/attachments/49870-NuclearForces.pdf.

39 James Miller, statement before the Senate Committee on Armed Services Subcommittee on Strategic Forces, 4 May 2011, p. 5, available at: www.dod.mil/dodgc/olc/docs/testMiller05042011.pdf.

40 Jon B. Wolfsthal, Jeffrey Lewis and Marc Quint, *The Trillion Dollar Nuclear Triad: US Strategic Modernization over the Next Thirty Years*, James Martin Center for Nonproliferation Studies, January 2014, p. 11, available at: http://cns.miis.edu/opapers/pdfs/140107_trillion_dollar_nuclear_triad.pdf.

41 US Department of Defense, above note 26, p. 4.

42 Vladimir Putin, “Being Strong: National Security Guarantees for Russia”, *Russiiskaya Gazeta*, 20 February 2012, English translation available at: <http://rt.com/politics/official-word/strong-putin-military-russia-711>.

43 Vladimir Putin, remarks at the Expanded Meeting of the Defence Ministry Board, 19 December 2014, available at: <http://eng.kremlin.ru/transcripts/23410>.

transition has now reached its halfway point, and the last Soviet-era ICBMs are scheduled to be withdrawn from service around 2022.⁴⁴ To replace the Soviet-era SS-18, SS-19 and SS-25 ICBMs, Russia is deploying several versions of the SS-27 ICBM and developing a new “heavy” ICBM known as the RS-28 (Sarmat).⁴⁵

As part of this modernization programme, Russia is developing a new hypersonic payload that may be capable of manoeuvring to ensure penetration of US ballistic missile defence systems. The hypersonic vehicle, known as Project 4042 or Yu-71, has been test-flown several times on the SS-19 ICBM and is probably intended for deployment on the new RS-28.⁴⁶

Many have described the Russian modernization programme as a nuclear “build-up”, but that is not what is happening. The Russian ICBM force has already declined from 650 ICBMs in 2003 to just over 300 missiles in 2016, and will likely drop further to fewer than 300 missiles over the next decade (see [Figure 2](#)). This obviously depends on production and deployment performances, both of which are likely to be affected by Russia’s current financial crisis.

The Russian nuclear modernization programme will have important implications for Russian strategy and US–Russian strategic stability. With 100 fewer ICBMs than the United States, Russian planners are appearing to try to maintain some level of nuclear parity with the United States by maximizing the warhead loading of the new ICBMs and deploying a greater share of the warheads on mobile-launcher missiles that are considered less vulnerable to a surprise attack. By the mid-2020s, multiple independently targeted re-entry vehicle (MIRV) missiles could make up 70% of the ICBM force, compared with 45% today. And while no mobile launchers carried MIRVs a decade ago, all will do so by 2024 (see [Figure 3](#)).

With a greater Russian share of MIRVs based on mobile launchers in the future, the importance of the mobile ICBM force will increase because one attacking nuclear warhead could destroy multiple warheads mounted on one missile. Such MIRVed missiles will therefore be more important for Russia to protect and more important for Russia’s potential adversaries to target; Russian planners would thus likely order Russia’s mobile ICBMs to leave their garrisons *earlier* in a conflict in order to protect as many of them as possible from attack. This could increase instability and trigger escalation of the crisis if an adversary determined that the dispersal was preparation for an attack.

Russia’s sea-based strategic force is also being modernized. After more than two decades of development, the first three of the new Borei (Dolgorukiy)-class sub-surface ballistic nuclear (SSBN) submarines have entered service with the

44 “Relocation of Russian Strategic Missile Troops Academy Explained”, *Interfax-AVN*, 16 December 2015, translated from Russian by BBC Monitoring.

45 For further details of the Russian ICBM modernization programme and missile types, see Hans M. Kristensen and Robert S. Norris, “Russian Nuclear Forces, 2016”, FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 72, No. 3, 2016, available at: www.tandfonline.com/doi/pdf/10.1080/00963402.2016.1170359.

46 Olga Bozhyev, “Источники: Россия успешно испытала новое ракетное супероружие” (“Sources: Russia Successfully Tested a New Missile Superweapon”), *MKRU*, 20 April 2016, available at: www.mk.ru/print/article/1426570/.

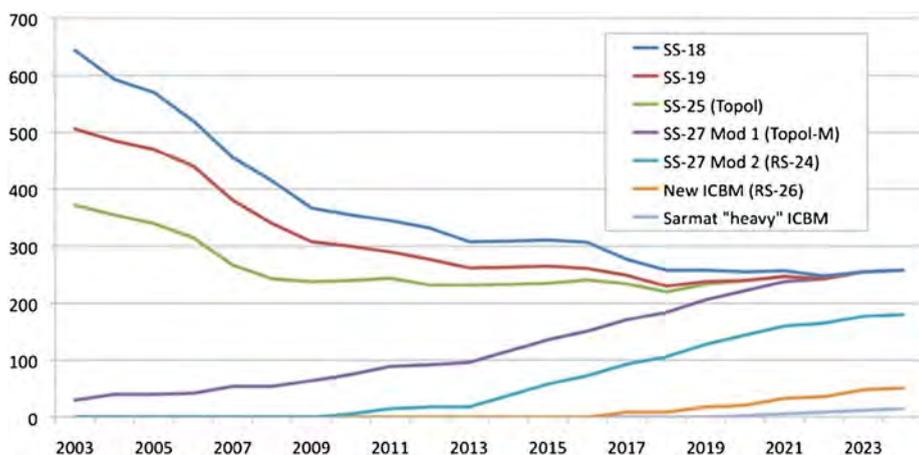


Figure 2. Estimated Russian ICBM force levels, 2003–24. At the current modernization rate, all Soviet-era ICBMs are expected to be phased out by 2022 and replaced with three versions of the SS-27 and a new “heavy” ICBM known as the RS-28 (Sarmat). As a result, the Russian ICBM force might level out below 300 missiles. Source: Hans M. Kristensen and Robert S. Norris, “Russian Nuclear Forces, 2016”, FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 72, No. 3, 2016, available at: www.tandfonline.com/doi/pdf/10.1080/00963402.2016.1170359.

new SS-N-32 (Bulava) sea-launched ballistic missile (SLBM). Eight Borei subs have been ordered, of which the last four will feature an improved design.⁴⁷

Because the Bulava SLBM can carry more warheads than the SS-N-18 and SS-N-23 SLBMs that it will be replacing, Russian SSBNs in the future will be able to hold significantly more targets at risk than today, and probably with greater accuracy. This additional capacity means that it will be more important for Russia to protect its SSBNs, and that potential adversaries will likely spend more effort trying to find these submarines in order to be able to hold them at risk in a war.⁴⁸

Nuclear-capable aircraft, the third leg of the Russian strategic nuclear triad, are also being modernized. Some of the existing Tu-160 Blackjack and Tu-95MS Bear bombers are receiving various upgrades to extend their service life through the 2020s. A new air-launched nuclear cruise, known as Kh-102, has been in development for quite some time and appears to have been deployed. It will

47 For an overview of Russian nuclear forces, see Hans M. Kristensen and Robert S. Norris, “Russian Nuclear Forces, 2015”, FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 71, No. 3, 2015, available at: <http://bos.sagepub.com/content/early/2015/04/13/0096340215581363.full.pdf+html>.

48 The increased warhead capacity of the Borei SSBN force also raises another issue: although the future ICBM force will probably carry fewer warheads than today (approximately 750), increasing the warhead load on the SSBNs to maximum would, by the early 2020s, bring Russia into conflict with the New START limit of 1,550 deployed strategic warheads. Therefore, it is likely that Russia plans to create a hedge of non-deployed warheads, similar to the US practice of keeping most of its strategic warheads in non-deployed storage (and thus non-accountable under the terms of the New START Treaty). For an overview of Russian nuclear forces, see H. M. Kristensen and R. S. Norris, above note 45.

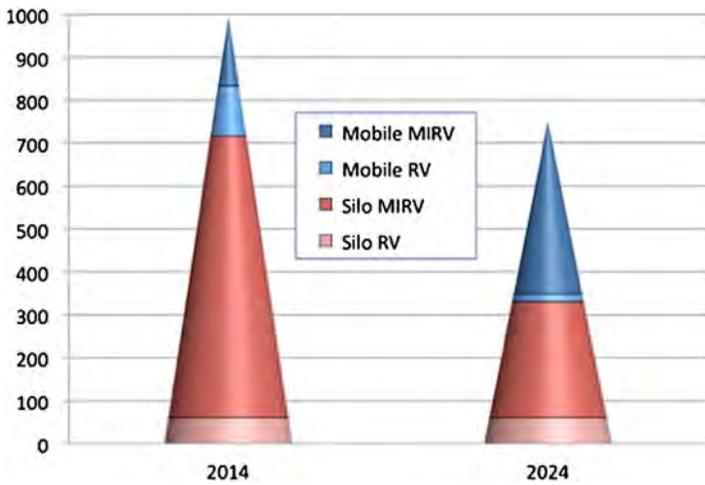


Figure 3. Estimated Russian ICBM warhead distribution. The future Russian ICBM force will have a greater portion of MIRVs deployed on road-mobile launchers compared with today. “RV” denotes a single re-entry vehicle for a missile.

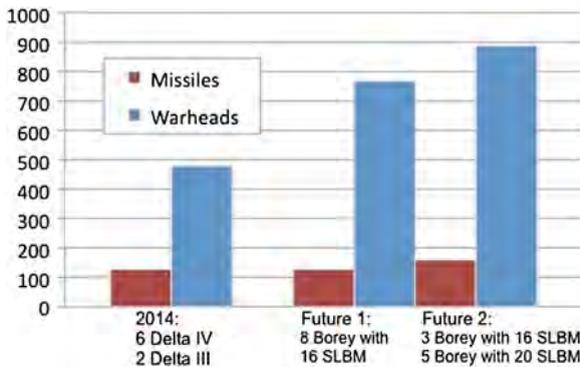


Figure 4. A comparison of numbers of warheads and missiles on eight Delta SSBNs v. eight Borei SSBNs. Eight Borei-class SSBNs, each with sixteen Bulava SLBMs, will be able to carry 40% more warheads than the current fleet of eight Delta SSBNs. If the rumour about the fourth and subsequent subs each carrying twenty missiles is true, then the Borei fleet would be able to carry 46% more warheads.

probably replace the existing AS-15 Kent, which has been in service for more than thirty years.⁴⁹

Russia has announced that it intends to resume production of the 1980s-era Tu-160 bomber, an indication that it has encountered problems developing a new long-range bomber, known in Russia as the PAK-DA. Under current plans, the

49 For an overview of Russian nuclear forces, see *ibid.*

PAK-DA will begin to enter service in the early 2020s and will eventually replace all of Russia's current strategic bombers.⁵⁰ Overall, the heavy bomber fleet will likely decline, probably to around fifty aircraft.

Since Russia has already reduced its missile force to well below the New START Treaty limit of 700 deployed strategic launchers, the Russian strategic modernization plan is not constrained by the Treaty. Yet because of Russia's financial difficulties, the plan faces many challenges and uncertainties that are likely to reduce the scope of the next defence armament program. Nonetheless, the Russian government places great importance on funding modernization of its strategic nuclear forces, and if the current trend continues, the post-Cold War trend of a decline in Russian strategic nuclear forces may be coming to an end by the early 2020s.

In addition to its strategic weapons, Russia also maintains significant non-strategic nuclear forces. The Russian non-strategic forces are diverse, including naval cruise missiles, torpedoes, depth bombs for warships, submarines and maritime aviation, army short-range ballistic missiles, interceptors for air and ballistic missile defences, and bombs and cruise missiles for tactical air forces. The Russian military continues to attribute importance to non-strategic nuclear weapons, partly to compensate for Russia's conventional forces, which are seen by some as inferior to US and NATO conventional forces on the western borders of Russia, and to Chinese nuclear forces on Russia's Siberian and Far East borders.⁵¹ Another effect of Russia's non-strategic nuclear arsenal is that it helps keep overall parity with the United States in terms of total nuclear warheads.

There is great uncertainty about just how many non-strategic nuclear weapons Russia has. In this article we estimate that Russia's non-strategic nuclear arsenal includes approximately 2,000 nuclear warheads earmarked for potential use by mainly dual-capable non-strategic forces. Unlike warheads for strategic forces, however, all non-strategic warheads are in central storage facilities normally, and are not deployed with their delivery vehicles.

Russia's non-strategic forces are also being modernized. This includes the SS-26 (Iskander-M) short-range missile replacing the SS-21 (Tochka), the Su-34 (Fullback) fighter-bomber replacing the Su-24M, and the SS-N-30A (Kalibr) land-attack cruise missile replacing the SS-N-21 (Samson) on select attack submarines. This effort is less comprehensive and more opaque than the strategic force modernization but essentially also involves phasing out Soviet-era weapons and replacing them on a less-than-one-for-one basis with newer but fewer weapons.⁵²

50 "Russia's New Generation Strategic Bomber to Make First Flight in 2019 – Air Force", *ISAR-TASS*, 13 February 2015, available at: <http://tass.ru/en/russia/777542>.

51 For an overview of Russian and US non-strategic nuclear forces, see Hans M. Kristensen, *Non-Strategic Nuclear Weapons*, FAS Special Report No. 3, May 2012, available at: http://fas.org/_docs/Non-Strategic_Nuclear_Weapons.pdf.

52 For an overview of the status and trend of Russian non-strategic nuclear forces, see H. M. Kristensen and R. S. Norris, above note 45; H. M. Kristensen, above note 51.

As non-nuclear tactical weapon systems become more effective, however, some Russian non-strategic nuclear weapons will likely be phased out in the foreseeable future. One example is the SS-N-19 (Granit) sea-launched cruise missile on the Oskar-class guided-missile submarines, the single Kuznetsov-class aircraft carrier, and the Kirov-class nuclear-powered cruisers. These and other vessels might be converted to carry non-nuclear weapons such as the SS-N-26 (Onyx), the SS-N-27 (Sizzler) and the conventional version of the SS-N-30 (Kalibr). In late 2015 and early 2016, Russia demonstrated the capability of its new long-range conventional cruise missile capability by launching several attacks against targets in Syria from bombers, submarines and surface ships.

One of the unique characteristics of most non-strategic nuclear forces⁵³ is that they tend to be dual-capable – that is, they can be armed with either conventional or nuclear weapons. This raises important questions about intentional and unintentional signals and the risk that nuclear weapons may accidentally get pulled into a crisis and exacerbate the threat perception. This is to some extent already occurring in response to the unfolding Ukraine crisis, where Russian deployment of non-strategic nuclear-capable forces to Crimea has been noted by NATO⁵⁴ and where US rotational deployments of nuclear-capable, non-strategic aircraft to Poland⁵⁵ have been noted by Russia.⁵⁶

China

Modernization of China's nuclear forces is progressing at a slow pace. The effort has been under way for two decades and includes deployment of new land-, sea- and air-based nuclear delivery vehicles. China is the only one of the five NPT-declared nuclear weapons States that is increasing its nuclear arsenal, which is currently estimated at around 260 warheads.⁵⁷

53 For reviews of non-strategic nuclear weapons, see Amy Woolf, *Nonstrategic Nuclear Weapons*, Congressional Research Service, 23 February 2015, available at: www.fas.org/sgp/crs/nuke/RL32572.pdf; Hans M. Kristensen and Robert S. Norris, "Nonstrategic Nuclear Weapons, 2012", FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 68, No. 5, 2012, available at: <http://bos.sagepub.com/content/68/5/96.full.pdf+html>.

54 "Russian Forces 'Capable of Being Nuclear' Moving to Crimea, NATO Chief Aays", *CBS News*, 11 November 2014, available at: www.cbsnews.com/news/russian-forces-capable-of-being-nuclear-moving-to-crimea-nato-chief-says/, cited in Hans M. Kristensen, "Rumors about Nuclear Weapons in Crimea", *FAS Strategic Security Blog*, 18 December 2014, available at: <http://fas.org/blogs/security/2014/12/crimea/>.

55 See Scramble Intelligence Service, *SIS-Summary*, Vol. 16, No. 735, 22 May 2016; Piti Spotter Club Verona, "Fabrizio Berni @ Steadfast Noon 2014 – Ghedi AB", November 2014, available at: www.pitispotterclub.it/foto-manifestazioni-e-trasferte/2014/2014-steadfast-noon-2014-ghedi/, cited in Hans M. Kristensen, "Polish F-16s NATO Nuclear Exercise in Italy", *FAS Strategic Security Blog*, 27 October 2014, available at: <http://fas.org/blogs/security/2014/10/steadfastnoon/>.

56 "Russia Expresses Concern over NATO Expanded Nuclear-Capable Pilot Training", *Sputnik*, 24 December 2014, available at: <http://sputniknews.com/military/20141224/1016203427.html>.

57 For an overview of Chinese nuclear forces, see Hans M. Kristensen and Robert S. Norris, "Chinese Nuclear Forces, 2015", FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 71, No. 4, 2015, available at: <http://bos.sagepub.com/content/71/4/77.full.pdf+html>.

The Chinese government attributes great significance to its nuclear forces as a deterrent and protector of Chinese security, but its nuclear strategy and doctrine are much less offensively oriented than those of United States and Russia. China officially ascribes to a minimum deterrence policy that includes a no-first-use policy, a pledge not to attack non-nuclear countries with nuclear weapons, and forces operating at a low readiness level with de-mated warheads in central storage.⁵⁸

Even so, China is deploying new nuclear weapon systems that are much more capable than the ones they replace, and there is a vibrant debate within the Chinese military community about the circumstances under which China might consider using nuclear weapons, including whether the no-first-use policy is valid.⁵⁹ So far there are no signs that these discussions have influenced the Chinese leadership's views on its nuclear use policy, but they may influence the future direction of Chinese nuclear policy and strategy.

China's long-range land-based missile force is slowly expanding with deployment of the solid-fuel, road-mobile DF-31 and DF-31A missiles. The older silo-based, liquid-fuel DF-5A is being upgraded. China currently has between fifty and seventy-five ICBM launchers,⁶⁰ including thirty to forty DF-31/31As and also about eighty nuclear DF-21 medium-range missiles. After several decades of rumours about China working on developing MIRV capability, the Pentagon reported in 2015 that China has equipped a portion of its DF-5 ICBMs to carry MIRV payloads. China is apparently also working to develop MIRV capability for a new mobile ICBM known as the DF-41.⁶¹ The main motivation for enhancing the capability of the Chinese mobile ICBM force is to ensure that it can survive ever more capable US and Russian offensive nuclear and conventional forces, and the addition of MIRVs appears to be a response to the US deployment of new ballistic missile defence systems in the Pacific region.

China is also building a small fleet of Jin-class ballistic missile submarines equipped with the JL-2 SLBM. The new weapon system is a significant improvement in both range and accuracy over the old Xia/JL-1 weapons system, which never became fully operational.⁶² The role of the emerging Chinese SSBN fleet is officially to provide a secure retaliatory nuclear strike capability in case all land-based missiles are destroyed⁶³ (this is how other nuclear-armed States operate their SSBNs), but that mission is only possible if the Jin fleet is stealthy enough to operate undetected and China has a nuclear command and control system that is

58 For a review of Chinese nuclear and military strategy, see Gregory Kulacki, *The Chinese Military Updates China's Nuclear Strategy*, Union of Concerned Scientists, March 2015, available at: www.ucsusa.org/sites/default/files/attach/2015/03/chinese-nuclear-strategy-full-report.pdf.

59 See, for example, Gregory Kulacki, *China's Military Calls for Putting Its Nuclear Forces on Alert*, Union of Concerned Scientists, January 2016, available at: www.ucsusa.org/sites/default/files/attach/2016/02/China-Hair-Trigger-full-report.pdf.

60 US Department of Defense, Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China 2016*, Annual Report to Congress, May 2016, p. 109, available at: www.defense.gov/Portals/1/Documents/pubs/2016%20China%20Military%20Power%20Report.pdf.

61 Hans M. Kristensen, "Pentagon Report: China Deploys MIRV Missile", *FAS Strategic Security Blog*, 11 May 2015, available at: <http://fas.org/blogs/security/2015/05/china-mirv/>.

62 For a description of the Chinese SSBN force, see H. M. Kristensen and R. S. Norris, above note 57.

63 Hans M. Kristensen, private conversation with Chinese officials.

capable of transmitting the launch order to the submarines. In a crisis, loss of communication between the SSBNs and the Chinese leadership could potentially be misinterpreted as loss of an SSBN to enemy action and result in mistaken escalation.

The Jin-class subs have noisy engines compared with US and Russian SSBNs, and given the geographical constraints and the superiority of US attack submarines, it would probably be a challenge for China to ensure survival of its SSBNs in a war.⁶⁴ Moreover, the Chinese leadership is thought to be reluctant to hand over control of nuclear warheads to the military, much less deploy them on delivery systems, except in a crisis. Unless the Chinese leadership changes this policy, which would be a significant development, the SSBNs would first have to be loaded with their missiles in port before they could sail out to sea in a crisis, which would expose them to enemy surveillance or destruction.

Chinese H-6 intermediate-range bombers do not have an active nuclear role, but we believe they have a secondary nuclear capability: Chinese bombers were used in at least twelve of China's nuclear tests in the 1960s and 1970s. A small number of the H-6 bombers probably have a secondary nuclear mission. More recently, the H-6 has been modified to carry air-launched cruise missiles, including the CJ-20 (DH-20), which US Air Force Global Strike Command in 2013 listed as a nuclear-capable weapon.⁶⁵

China has also deployed the DH-10 ground-launched cruise missile, which US Air Force intelligence describes as a "conventional or nuclear" weapon. This is the same designation that is used to describe the Russian nuclear-capable AS-4 ALCM, which is known to be capable of carrying a nuclear warhead.⁶⁶

Finally, China might also have developed nuclear capability for the DF-15 short-range ballistic missile. During the nuclear testing series in the 1990s, an internal US Central Intelligence Agency memorandum concluded that China "almost certainly" had developed a nuclear warhead for the DF-15 and deployment was expected soon.⁶⁷

Despite these official US intelligence sources, it should be emphasized that there is considerable uncertainty about whether China has fully developed and fielded warheads for its cruise missiles or short-range ballistic missiles. Chinese weapons designers could potentially have developed the design and capability to produce the warheads, but without the Chinese leadership having explicitly approved and ordered production and deployment of nuclear versions of the

64 Hans M. Kristensen, "China's Noisy Nuclear Submarines", *FAS Strategic Security Blog*, 21 November 2009, available at: <http://fas.org/blogs/security/2009/11/subnoise/>.

65 For a copy of the Air Force Global Strike Command briefing, see Hans M. Kristensen, "Air Force Briefing Shows Nuclear Modernizations but Ignores US and UK Programs", *FAS Strategic Security Blog*, 29 May 2013, available at: <http://fas.org/blogs/security/2013/05/afgsc-brief2013/>.

66 US Air Force, National Air and Space Intelligence Center, *Ballistic Missile and Cruise Missile Threat*, June 2013, p. 29.

67 US Central Intelligence Agency, Office of Scientific and Weapons Research, "China's Nuclear Weapons Testing: Facing Prospects for a Comprehensive Test Ban", Intelligence Memorandum, 93-20044C M, 30 September 1993, p. 5, available at: www.foia.cia.gov/sites/default/files/document_conversions/89801/DOC_0000996367.pdf.

missiles. If China has fielded nuclear versions of these missiles, however, it would represent an important expansion of the Chinese nuclear posture, particularly in light of Beijing's stated adherence to a doctrine of minimum deterrence.⁶⁸

Policy aside, China's new ICBMs and SLBMs are likely significantly more accurate than the old systems they replace, such as the DF-4 and JL-1. The new capabilities inevitably must trigger considerations within the Chinese military about how to most appropriately or effectively plan the nuclear counter-strike mission that the Chinese leadership wants. Yet there is no official indication yet that China has formally abandoned its minimum deterrence doctrine or no-first-use policy because of the new weapons.

France

France is in the final phase of a comprehensive modernization of its nuclear forces that is intended to extend the arsenal into the 2050s. Most significant is the deployment during the 2010–18 span of the new M-51 SLBMs on the Triumphant-class submarines. The new missile has greater range, payload capacity and accuracy than its predecessor, the M-45. Moreover, in 2016 the current TN75 warhead will be replaced with the new TNO (*Tête Nucléaire Océanique*) warhead. The warhead loadout on some of the SLBMs on France's submarines has probably been reduced, in order to improve planning for potential limited strikes against regional adversaries.⁶⁹

The modernization of the sea-based leg of the arsenal follows the completion in 2011 of the deployment of the new 500-km-range ASMPA (*Air-Sol Moyenne Portée Améliorée*). The missile has been integrated onto two fighter-bomber squadrons: on Mirage 2000N K3 aircraft at Istres Air Base on the Mediterranean coast, and Rafale F3 aircraft at Saint Dizier Air Base northeast of Paris. By 2018, the Istre wing will also be upgraded to Rafale. Moreover, a naval version of the Rafale deployed on the *Charles de Gaulle* aircraft carrier has also been equipped with the ASMPA, although warheads are not deployed on the carrier in peacetime. The ASMPA carries the new TNA (*Tête Nucléaire Aéroportée*) warhead, and the military has already begun to research a future replacement for the missile.⁷⁰

68 The Chinese minimum deterrence strategy contrasts with the mutual assured destruction strategy of the United States and the Soviet Union during the Cold War, as well as the flexible response strategy that has guided US nuclear planning since the 1960s. For a description of China's current military strategy, see G. Kulacki, above note 58.

69 For an overview of French nuclear forces, see Hans M. Kristensen, "France", in *Assuring Destruction Forever: 2015 Edition*, Reaching Critical Will, 2015, available at: http://fas.org/wp-content/uploads/2014/05/2015_France_AssuringDestructionForever_ReachingCriticalWill.pdf.

70 *Ibid.*

The United Kingdom

Of all the nuclear-armed States, Britain has limited its nuclear arsenal the most and is probably the nuclear power that has most seriously considered whether to eliminate its nuclear weapons. Nonetheless, Britain is planning to build a new class of four ballistic missile submarines, scheduled to replace the current class of four Vanguard-class subs. The current stockpile of nearly 215 nuclear warheads is scheduled to decline to about 180 by the mid-2020s; the reduction is already under way.⁷¹ Britain leases its Trident II D5 SLBMs from the United States, and the missiles are being equipped with a modified W76-1/Mk4A re-entry body (with a slightly British-modified nuclear explosive package), an enhanced nuclear payload with improved targeting capabilities.⁷²

India

India has entered an important new phase of its nuclear modernization that is focused on developing missiles with ranges longer than what is needed to target Pakistan and which appear intended to improve targeting of China. India's first nuclear-powered ballistic missile submarine has been launched and is undergoing sea trials. It is to be followed by two to four additional boats with a new 7,400-km-range SLBM. A longer-range SLBM is under development.⁷³

India's nuclear weapons production complex is undergoing important upgrades, including construction of a new plutonium production reactor as well as un-safeguarded fast-breeder reactors capable of generating more fissile fuel than the material they consume, which can increase India's stockpile of weapons-grade plutonium. Moreover, as an outcome of the US–India nuclear deal, eight of India's nuclear power plants are not under international safeguards. India's un-safeguarded reprocessing facilities are also being upgraded. India currently has 100–120 warheads in its nuclear stockpile.⁷⁴

Pakistan

Pakistan probably has the world's most rapidly growing nuclear stockpile, increasing at a slightly faster rate than India's inventory. New systems under development or deployment include the Shaheen III medium-range ballistic missile, Ra'ad air-launched cruise missile, Babur ground-launched cruise missile,

71 For an overview of British nuclear forces, see Robert S. Norris and Hans M. Kristensen, "The British Nuclear Stockpile, 1953–2013", FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 69, No. 4, 2013, available at: <http://bos.sagepub.com/content/69/4/69.full.pdf+html>.

72 Hans M. Kristensen, "British Submarines to Receive Upgraded US Nuclear Warhead", *FAS Strategic Security Blog*, 1 April 2011, available at: <http://fas.org/blogs/security/2011/04/britishw76-1/>.

73 For an overview of Indian nuclear forces, see Hans M. Kristensen and Robert S. Norris, "Indian Nuclear Forces, 2015", FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 71, No. 5, 2015, available at: <http://bos.sagepub.com/content/71/5/77.full.pdf+html>.

74 Hans M. Kristensen, "India's Missile Modernization beyond Minimum Deterrence", *FAS Strategic Security Blog*, 4 October 2013, available at: <http://fas.org/blogs/security/2013/10/indianmirv/>.

NASR short-range rocket and Abdali short-range ballistic missile. Infrastructure upgrades include a fourth plutonium production reactor and upgrades to uranium enrichment and spent fuel reprocessing facilities. Pakistan's current arsenal is estimated at around 110–130 weapons.⁷⁵

The Shaheen II medium-range missile has been in the process of introduction with the Pakistan Army for some time, but slow progress might be a sign of technical difficulties. Moreover, in 2015 Pakistan announced it had test-launched a longer-range Shaheen known as the Shaheen III.⁷⁶ Although India has embarked on a ballistic missile submarine programme, there is – so far – no indication that Pakistan is following the same course. Instead, Pakistan is possibly developing a nuclear sea-launched cruise missile for its attack submarines.

Perhaps the most significant new development in the Pakistani nuclear arsenal is the NASR short-range missile, whose estimated range of only 60 kilometres makes it a tactical weapon system. The weapon appears intended for potential sub-strategic use in the early phases of a military conflict, a development that could lower the nuclear threshold in a Pakistan–India conflict and potentially reduce nuclear warning and crisis decision-making to a matter of minutes.⁷⁷

Israel

The Israeli government has never publicly confirmed that it has developed nuclear weapons, yet is widely assumed to have developed a nuclear arsenal while adhering to a policy that has been described as “nuclear opacity”.⁷⁸ This arsenal is estimated to include less than 100 bombs, possibly around eighty, for delivery by land-based Jericho ballistic missiles and F-16 and possibly F-15 aircraft. There are also persistent rumours that Israel may have converted a cruise missile to nuclear capability for deployment on its new Dolphin-class attack submarines, although the status of that weapon is unclear. Israeli warheads are not thought to be fully deployed or assembled under normal circumstances.⁷⁹

75 For an overview of Pakistani nuclear forces, see Hans M. Kristensen and Robert S. Norris, “Pakistani Nuclear Forces, 2015”, FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 71, No. 6, 2015, available at: <http://bos.sagepub.com/content/early/2015/10/06/0096340215611090.full.pdf+html>.

76 Pakistani Ministry of Defence, Inter Services Public Relations, Press Release No. PR378/2015-ISPR, 11 December 2015, available at: www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2015/12/11.

77 Hans M. Kristensen, “Pakistan’s ‘Shoot and Scoot’ Nukes: FAS Nukes in Newsweek”, *FAS Strategic Security Blog*, 17 May 2011, available at: <http://fas.org/blogs/security/2011/05/pakistan/>.

78 For a groundbreaking study of Israel’s nuclear weapons policy, see Avner Cohen and William Burr, *Israel and the Bomb*, Columbia University Press, New York, 1998, description and supporting documents available at: <http://nsarchive.gwu.edu/israel/>; this and other declassified record collections are available in the National Security Archive Nuclear Vault at: <http://nsarchive.gwu.edu/nukevault/ebb/index.htm>.

79 Hans M. Kristensen and Robert S. Norris, “Israeli Nuclear Weapons, 2014”, FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, November 2014, available at: <http://bos.sagepub.com/content/70/6/97.full.pdf+html>.

North Korea

North Korea continues to improve its missile force that could potentially be used to deliver nuclear warheads. Suspected nuclear-capable missiles include the Scud C and Nodong (Rodong) short-range missiles, the Musudan medium-range missile, and the Hwasong-13 (KH-08) and Taepo Dong long-range missiles. The Musudan suffered several spectacular failures in early 2016; the Taepo Dong has been successfully flown only as a space launch vehicle. Although North Korea has conducted four nuclear tests, there is no open-source evidence that it has test-flown a re-entry vehicle intended to deliver a nuclear warhead, or weaponized its nuclear test devices for delivery by a ballistic missile.⁸⁰

NATO

Although NATO is a nuclear alliance, it does not own or produce nuclear weapons. Instead it relies on the nuclear weapons possessed by its three nuclear-armed members: mainly the United States, Britain, and to some extent France. NATO's Strategic Concept, adopted in 2010, and the *Deterrence and Defence Posture Review* from 2012 reaffirmed that NATO as a nuclear alliance will continue to rely on nuclear weapons for as long as nuclear weapons exist.⁸¹

Some non-nuclear weapons States in NATO are heavily involved in detailed nuclear planning and even equip their national aircraft to deliver US nuclear weapons.⁸² Approximately 180 US nuclear B61 bombs are currently deployed at six bases in five European countries (Belgium, Germany, Italy, the Netherlands and Turkey). These weapons are all slated to be returned to the United States in the early 2020s and replaced with the new B61-12 guided standoff nuclear bomb. The B61-12 will initially be back-fitted onto existing F-15E, F-16 and Tornado NATO aircraft, but gradually the stealthy F-35A fighter-bomber is intended take over the non-strategic nuclear strike role in NATO.⁸³

About half of the bombs in Europe are earmarked for delivery by the national aircraft of five non-nuclear weapons States: Belgium, Germany, Italy, the Netherlands and possibly Turkey. Nevertheless, all of these non-nuclear weapons States are parties to the NPT and are therefore obliged "not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear

80 For an overview of North Korean nuclear capabilities, see US Department of Defense, Office of the Secretary of Defense, *Military and Security Developments Involving the Democratic People's Republic of Korea*, Report to Congress, January 2015, available at: www.defense.gov/Portals/1/Documents/pubs/Military_and_Security_Developments_Involving_the_Democratic_Peoples_Republic_of_Korea_2015.PDF.

81 NATO, *Active Engagement, Modern Defence: Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organization*, November 2010, available at: www.nato.int/strategic-concept/pdf/Strat_Concept_web_en.pdf; NATO, *Deterrence and Defence Posture Review*, 12 May 2012, available at: www.nato.int/cps/en/natolive/official_texts_87597.htm.

82 Robert S. Norris and Hans M. Kristensen, "US Tactical Nuclear Weapons in Europe, 2011", FAS Nuclear Notebook, *Bulletin of the Atomic Scientists*, Vol. 67, No. 1, 2011, available at: <http://bos.sagepub.com/content/67/1/64.full.pdf+html>.

83 H. M. Kristensen and R. S. Norris, above note 25.

explosive devices or of control over such weapons or explosive devices directly, or indirectly”.⁸⁴ In peacetime the weapons at the national bases are under the control of a US Air Force munitions support squadron, but in wartime the United States would hand over control of the weapons to the national pilots who would deliver the weapons, and would at that moment effectively violate the NPT.

The combination of a B61-12 guided standoff nuclear bomb and an F-35A fifth-generation stealthy fighter-bomber will significantly enhance the military capability of NATO’s nuclear posture in Europe. The upgrade contradicts the Obama administration’s pledge that life-extension programmes “will not ... pursue new military missions or new capabilities for nuclear weapons”,⁸⁵ and NATO’s conclusion that “the Alliance’s nuclear force posture *currently meets the criteria* for an effective deterrence and defence posture”⁸⁶ (emphasis added).

Nuclear war planning and operations

All the nuclear-armed States have developed strike plans for potentially employing nuclear weapons against adversaries and periodically conduct strike exercises to verify or improve these plans. Strike plans can vary significantly from country to country, depending on the size and capability of the nuclear arsenal and the policy for its potential use.

Planning for the potential employment of US nuclear weapons is dominated by Operations Plan (OPLAN) 8010-12, entitled *Strategic Deterrence and Force Employment* – the central strategic war plan of US Strategic Command (STRATCOM) – and a number of smaller strike plans for the regional commands (Central Command, European Command and Pacific Command). OPLAN 8010-12, which is now being updated to reflect the Obama administration’s nuclear employment policy issued in 2013, is the nuclear combat employment portion of a larger plan that incorporates other non-nuclear aspects of national military power. Rather than a single strike plan, OPLAN 8010-12 is actually a family of plans, each of which consists of a variety of different strike options intended to achieve different objectives against different adversaries in different scenarios. The regional plans include various contingency plans that can be made fully operational if needed.⁸⁷

84 Treaty on the Non-Proliferation of Nuclear Weapons, 729 UNTS 161, 1 July 1968 (entered into force 5 March 1970), Art. 1, available at: www.iaea.org/sites/default/files/publications/documents/infcircs/1970/infcircl40.pdf.

85 The White House, above note 31.

86 NATO, *Deterrence and Defence Posture Review*, above note 81, para. 8. The extension and modernization of the US nuclear deployment in Europe also competes with scarce resources needed for more important conventional forces and operations that would be much more credible than tactical nuclear weapons in providing security assurance to Eastern NATO allies. But the crisis fuelled by the Russian invasion of Ukraine has stalled ideas about reducing or withdrawing US non-strategic nuclear weapons from Europe for now.

87 For reviews of US strategic nuclear planning, see Hans M. Kristensen, “US Nuclear War Plan Updated Amidst Nuclear Policy Review”, *FAS Strategic Security Blog*, 4 April 2013, available at: <http://fas.org/blogs/security/2013/04/oplan8010-12/>; Hans M. Kristensen, *Obama and the Nuclear War Plan*, FAS, February 2010, available at: <http://fas.org/programs/ssp/nukes/publications1/WarPlanIssueBrief2010.pdf>.

OPLAN 8010-12 is directed against six potential adversaries: Russia, China, North Korea, Iran, Syria (status unclear), and non-State actors threatening the United States with nuclear or other weapons of mass destruction. Part of a broader plan involving all aspects of national military power, OPLAN 8010-12 contains a range of strike options to provide the National Command Authority with responses that vary in size and objectives based on the circumstances. The nuclear options consist of emergency response options, selective attack options, basic attack options and directed/adaptive planning capability options. The size of the options ranges from hundreds of warheads, in pre-planned options that take months to modify, to a few warheads in adaptive options for crisis scenarios that can be drawn up or changed within a few hours. Not all of the plans are fully executable, but those that are not can be “worked up” to executable status if needed. The plan is currently under revision to absorb the changes directed by the Obama administration’s nuclear weapons employment strategy guidance from June 2013.⁸⁸

The US military has long conducted exercises to practice execution of its nuclear strike plans. Since Russia’s military intervention in Ukraine in 2014, however, these exercises and operations have been modified in response to deteriorating East–West relations. This includes an increased role and visibility of nuclear-capable bombers in Europe as part of “maintaining the US nuclear deterrent with NATO” in order to provide the “supreme guarantee of the security of the Allies”, according to US European Command (EUCOM).⁸⁹ Under Operation Atlantic Resolve, a new series of exercises established in response to a “revanchist Russia”, EUCOM says it has “forged a link between STRATCOM Bomber Assurance and Deterrence missions [and] NATO regional exercises”.⁹⁰

An early example of this change occurred in April 2015, when four nuclear-capable B-52H bombers took off from their bases in the United States and flew over the North Pole and North Sea on an exercise known as Operation Polar Growl.⁹¹ The Air Force was vague about the purpose of the exercise at the time, but military officials later privately explained that it included a simulated nuclear attack against Russia and that the bombers proceeded to the launch points from which they would have fired the missiles in a war.⁹² The B-52Hs were not carrying nuclear missiles on the exercise, but the four bombers could have delivered up to eighty highly accurate nuclear cruise missiles with a combined explosive yield equivalent to 1,000 Hiroshima bombs.

Polar Growl followed on the heels of STRATCOM’s annual Global Lightning 15 nuclear command and control exercise, which for the first time was

88 *Ibid.*

89 General Philip Breedlove, Commander, US Forces Europe, prepared statement before the House Armed Services Committee, 25 February 2015, p. 24, available at: <http://docs.house.gov/meetings/AS/AS00/20150225/103011/HHRG-114-AS00-Wstate-BreedloveUSAFP-20150225.pdf>.

90 *Ibid.*

91 “POLAR GROWL Strengthens Allied Interoperability, Essential Bomber Navigation Skills”, US Strategic Command Public Affairs, 1 April 2015, available at: www.afgsc.af.mil/News/ArticleDisplay/tabid/2612/Article/629284/polar-growl-strengthens-allied-interoperability-essential-bomber-navigation-ski.aspx.

92 Hans M. Kristensen, personal communication with US military officials.

held in conjunction with EUCOM's exercise Austere Challenge 15.⁹³ And shortly after the B-52Hs returned from Polar Growl, they participated in Constant Vigilance at Minot Air Force Base, which involved loading of a dozen B-52Hs with their complement of nuclear cruise missiles.⁹⁴ Other nuclear operations at the time included the launch of two nuclear-capable Minuteman III intercontinental ballistic missiles in only four days, an unusually rapid pace, with one of the missiles travelling further than any other US ICBM ever tested. And in September 2015, the ballistic missile submarine USS *Wyoming* (SSBN-742) arrived at Faslane Submarine Base in Scotland in the first visit to a foreign port by a US ballistic missile submarine since 2003. The submarine was on a strategic deterrence patrol with nuclear-tipped missiles on board, and the visit was intended "to demonstrate [the United States'] capability, flexibility and continued commitment to [its] allies" – a subtle reminder to Russia, and apparently the first of more frequent SSBN visits to foreign ports in the future.⁹⁵

The subtle changes in US nuclear exercises and operations follow changes to Russian nuclear exercises over the past decade. Although nuclear exercises are a normal part of Russian military operations, the range, scope and frequency of such exercises have increased. The most visible change has been the resumption of long-range bomber exercises over northern European waters, the Mediterranean Sea, the western Atlantic Ocean, central and South America, and the Pacific Ocean.

Russian bomber operations often coincide with test launches of ICBMs or SLBMs, or exercises involving nuclear-capable fighter-bombers or short-range ballistic and cruise missiles near NATO countries.⁹⁶ In early February 2015, for example, more than thirty ICBM regiments from twelve regions participated in a large-scale exercise that involved both silo-based and road-mobile ICBMs.⁹⁷ During such exercises, the mobile launchers, each of which carries one nuclear-armed ICBM, will leave their garrisons at night to disperse and hide in Russia's vast forests. A regiment with nine launchers will operate for twenty to thirty days, during which it will set up camp for two to five days and then move to the next location at night to set up camp for another two to five days, repeating this pattern throughout its field deployment.

93 "U.S. Strategic Command Concludes Command, Control Exercise", US Strategic Command Public Affairs, 27 March 2015.

94 Carla Pampe, "Exercise Tests Command's Deterrent Capabilities", Air Force Global Strike Command Public Affairs, 13 May 2015, available at: www.afgsc.af.mil/News/ArticleDisplay/tabid/2612/Article/629252/exercise-tests-commands-deterrent-capabilities.aspx.

95 Robert Work, Assistant Secretary of Defence, speech to 60th annual fleet ballistic missile program anniversary, 14 January 2016, available at: www.defense.gov/Video?videoId=426449#VhUh8O2nVGo.facebook; Michael Melia, "Port Visits Resume for Nuclear-Armed Navy Subs", Associated Press, 21 December 2015, available at: <http://news.yahoo.com/apnewsbreak-port-visits-resume-nuclear-armed-navy-subs-135612125.html>; "SSBN Arrives at Her Majesty's Naval Base Clyde for Port Visit", US Strategic Command Public Affairs, 19 September 2015, available at: www.stratcom.mil/news/2015/577/SSBN_Arrives_at_Her_Majestys_Naval_Base_Clyde_for_Port_Visit/.

96 For an example of a multi-service exercise, see "Russia Holds Military Drills to Repel Nuclear Strike", *Russia Today*, 8 May 2014, available at: www.rt.com/news/157644-putin-drills-rocket-launch/.

97 "Russia Holding Major ICBM Exercise", *Interfax-AVN*, 12 February 2015, translated from Russian by BBC Monitoring.

In an interview in 2012, the deputy commander of the Russian ICBM force, Lieutenant-General Valeriy Mazurov, explained the different missions of silo-based versus road-mobile missiles. The primary mission of a silo-based missile, he said, “is to act by way of launch-under-attack operations”, a high-alert posture intended to enable the missile to be launched before it can be destroyed in a surprise attack. A missile on a road-mobile launcher, in contrast, “moves around and is highly survivable”, so “it, together with our strategic nuclear forces’ other components [sea- and air-based weapons]”, conducts “the kind of operations that is the most unfavorable for us, namely retaliatory actions”.⁹⁸ ICBMs on mobile launchers would, at least in theory, survive a first strike so that they could be used to retaliate against the attacker at a later time.

Russia and the United States also have shorter-range, so-called non-strategic or tactical nuclear weapons that are intended for use in limited attacks without having to use strategic weapons.⁹⁹ By escalating to limited nuclear use, so the theory goes, a nuclear-armed State would hope to dissuade an adversary from escalating further. But any use of a nuclear weapon would be a highly strategic act, and it is by no means certain that it would prevent further escalation. The United States no longer considers non-strategic nuclear weapons as militarily necessary and has largely phased out its inventory of such weapons. Only a relatively small number of about 500 tactical gravity bombs remain for use by US and NATO fighter-bombers. That said, the distinction between tactical and strategic bombs will largely disappear over the next decade, as all tactical and strategic bombs are to be replaced with one multi-purpose bomb (the B61-12).

Russia, on the other hand, possesses a much larger and more diverse non-strategic nuclear arsenal that it feels is needed to offset the US/NATO superiority in conventional weaponry. Use of tactical nuclear weapons is occasionally simulated in Russian military exercises and could also be used to coerce an adversary in a limited conflict. Moreover, Russian officials have made several more or less explicit nuclear threats over the past several years, creating concern in NATO that the Russian leadership may have a lower threshold for potential nuclear weapons use. The threats have included statements that NATO missile defence facilities could be potential targets for nuclear weapons, and that nuclear weapons might be put on alert or even used if NATO were to use military force to return Crimea to Ukraine.¹⁰⁰ And in 2013, according to NATO, Russia conducted a simulated

98 “Russian Strategic Missile Troops General’s TV Talk: Arms, Training, Structure”, *Russia 24*, 2 November 2012, translated from Russian by Open Source Center via World News Organization.

99 For an overview of US and Russian non-strategic nuclear weapons, see H. M. Kristensen, above note 51.

100 For reports of Russian officials referring to hypothetical nuclear weapons use, see “Russia Delivers Nuclear Threat to Denmark”, *The Local* (Denmark), 2 April 2015, available at: www.thelocal.dk/20150321/russia-threatens-denmark-with-nuclear-attack; Ian Johnston, “Russia Threatens to Use ‘Nuclear Force’ over Crimea and the Baltic States”, *The Independent*, 2 April 2015, available at: www.independent.co.uk/news/world/europe/russia-threatens-to-use-nuclear-force-over-crimea-and-the-baltic-states-10150565.html; Thomas Grove, “Putin Says Russia Was Ready for Nuclear Confrontation Over Crimea”, *Reuters*, 15 March 2015, available at: www.reuters.com/assets/print?aid=USKBN0MB0GV20150315; Harry de Quetteville and Andrew Pierce, “Russia Threatens Nuclear Attack on Poland over US Missile Deal”, *The Telegraph*, 15 August 2008, available at: www.telegraph.co.uk/news/worldnews/europe/russia/2566005/Russia-threatens-nuclear-attack-on-Poland-over-US-missile-shield-deal.html.

nuclear strike against Sweden using two nuclear-capable Tu-22M3 Backfire bombers,¹⁰¹ possibly deploying from Shaykovka Air Base in western Russia.

The smaller nuclear-armed States also exercise their nuclear forces and carry out test launches of nuclear weapons in order to improve their capabilities and signal to potential adversaries that the weapons are operational and therefore constitute a credible deterrent. British SSBN operations are closely coordinated with those of the United States, which shares nuclear targeting data with Britain in support of NATO. French nuclear force operations include occasional bomber strike exercises and SLBM test launches.¹⁰² China deploys its road-mobile missile launchers on exercises far from their garrisons, occasionally test-fires ballistic missiles, and has recently started deploying missile submarines at sea to develop and demonstrate operational procedures for its new SSBN force.¹⁰³

India and Pakistan also conduct test launches of nuclear-capable forces, and both countries have nuclear weapons that fall into the category of non-strategic nuclear weapons. Since the two countries officially went nuclear in 1998, each has called all of its nuclear weapons “strategic”, whether short, medium, or long range. Yet Pakistan has recently developed a missile with a very short range (only 60 kilometres) that is described as a weapon intended for use below the strategic level, apparently in an effort to counter India’s conventional military superiority.¹⁰⁴

Humanitarian effects of hypothetical nuclear weapons use

The destructive power of nuclear weapons is beyond that of any other weapon created by human beings. Employment of just a few nuclear weapons, even against purely military targets, would cause widespread collateral damage and large numbers of civilian casualties. Curiously, it is fear of the same destructive power that motivates nuclear proponents to argue *for* nuclear weapons and nuclear opponents to argue *against* nuclear weapons.

Nuclear weapons have not been employed in battle since 1945, when two nuclear bombs were used to destroy two Japanese cities: Hiroshima and Nagasaki. Tens of thousands of people died instantly in those attacks, and tens of thousands died later as a result of heat and radiation effects and injuries from the nuclear blast waves.¹⁰⁵ Back then, few of the unique or long-term effects of nuclear weapons were known. Since World War II, knowledge about radiation health

101 NATO, *The General Secretary’s Annual Report 2015*, January 2016, p. 19, available at: www.nato.int/nato_static_fl2014/assets/pdf/pdf_2016_01/20160128_SG_AnnualReport_2015_en.pdf.

102 For a report on a French nuclear strike exercise, see French Ministry of Defence, “Démonstration réussie pour les Forces aériennes stratégiques” (“Successful Demonstration of the Strategic Air Forces”), 11 June 2015, available at: www.defense.gouv.fr/salle-de-presse/communiqués/ministère/demonstration-reussie-pour-les-forces-aeriennes-strategiques.

103 For a report on a Chinese nuclear missile exercise in February 2016, see “China – Rocket Force/Spring Festival”, CCTV+, 6 February 2016, available at: <http://news.cctvplus.tv/Newjsp/news.jsp?fileId=340436>

104 For an overview of Pakistan’s nuclear forces, see H. M. Kristensen and R. S. Norris, above note 75.

105 For survivor accounts, see the testimony featured in the “Voices and Perspectives” section of this issue of the *Review*.

physics and the effects of nuclear weapons has increased significantly – as has the effectiveness of nuclear weapons and the ability to deliver them from a wide range of launchers.

Depending on the weapon characteristics, employment scenario and strategy of the nuclear-armed State in question, modern nuclear planning in the larger nuclear-armed States is thought to favour flexible capabilities that provide the national leadership with a wide range of strike options, spanning from a limited attack involving use of only one or a few nuclear weapons to progressively bigger attacks that involve hundreds or even thousands of nuclear warheads.¹⁰⁶ If deterrence fails, one strategy is to “turn up the heat” by threatening gradually increased damage until the aggressor realizes that the benefits of continuing to escalate are outweighed by the consequences.

An initial or limited attack could, hypothetically, be a ground-burst attack of a single 200-kiloton weapon used against the US Air Force base at Aviano in northeast Italy.¹⁰⁷ Although nuclear strike planners would consider such an attack limited, the collateral damage and humanitarian effects of even such a limited attack would be considerable. Modelling of the radioactive fallout from such a limited attack, using US Defense Department Hazard Prediction and Assessment Capability (HPAC) software, shows that the fallout would spread far and quickly. Local fallout doses could potentially force Austrians living in Vienna approximately 400 kilometres away to seek shelter from radiation exposure (see [Figure 5](#)).

Climatic effects, primarily precipitation, would further exacerbate public exposure to radionuclides. Using flexible particle dispersion model (FLEXPART) software to calculate specific, detailed precipitation data for Europe from 9 to 11 October 2014, it was shown that a wall of intense rain spanned Europe from southwest to northeast during that period. This would have limited the westward extent of fallout from the Aviano attack, but FLEXPART also revealed the formation of Cesium-137 “hot spots” of radioactive fallout, which would be deposited in Slovakia and to a reduced extent in the Baltic States. These levels are much lower than those deposited from the Chernobyl reactor accident in 1986, but comparable levels would occur immediately downwind of Aviano Air Base (see [Figure 6](#)).

If this initial and limited attack failed to convince an adversary to back down, the next level of a possible escalation of nuclear use could hypothetically involve the use of 200-kiloton ground-burst attacks against five NATO nuclear weapons bases in Western Europe. These attacks would spread radiation over large portions of central Europe. Using HPAC software to calculate the total

106 For descriptions of US nuclear war planning, see M. G. McKinzie, T. B. Cochran, R. S. Norris and W. M. Arkin, above note 4.

107 Matthew G. McKinzie, Erwin Polriech, Dèlia Arnold, Christian Maurer and Gerhard Wotawa, “Calculating the Effects of a Nuclear Explosion at a European Military Base”, presentation made to the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8 December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abbruestung/HINW14/Presentations/HI_NW14_S1_Presentation_NRDC_ZAMG.pdf.

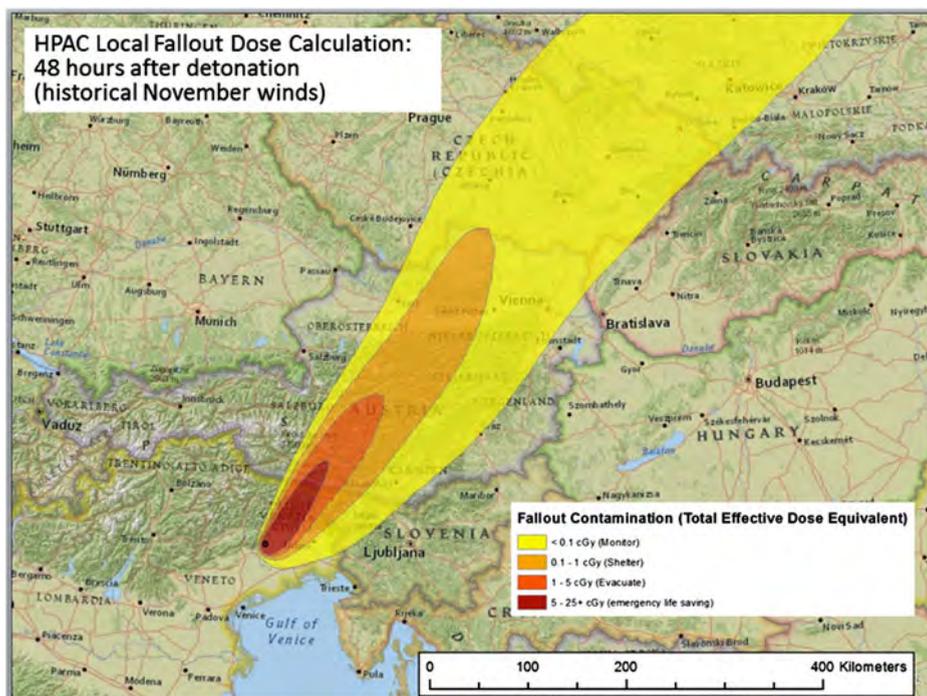


Figure 5. Fallout contamination from 200-kiloton attack on Aviano Air Base, Italy. HPAC software calculations of local fallout from a hypothetical limited nuclear strike involving a 200-kiloton surface detonation at Aviano Air Base, with historical wind data for the month of November forty-eight hours after the nuclear detonation.

effective dose equivalent shows that strikes on the three nuclear weapons bases in Belgium (Kleine Brogel Air Base), Germany (Büchel Air Base) and the Netherlands (Volkel Air Base) would force evacuation of large parts of central Germany. Strikes on the two bases in northern Italy (Aviano and Ghedi) would force evacuation of large parts of northern Italy and Austria. Similarly, using HPAC software to calculate the effects of hypothetical 200-kiloton ground-burst attacks on six Russian nuclear weapon storage sites shows that such attacks would force evacuation of large parts of downwind areas and would require the use of shelters in large stretches of western Russia (see [Figure 7](#)).

If these or similar tactical nuclear attacks still failed to dissuade an adversary, a nuclear-armed State might decide to escalate further, to strategic-level nuclear weapons. This would involve using long-range strategic nuclear forces to attack the adversary's central nuclear force structure. Doing so would significantly increase the stakes and intensity of the war and would immensely exacerbate collateral damage and human casualties. If there were to be an attack on all 450 Minuteman III ICBM silos in the United States, a pure counterforce

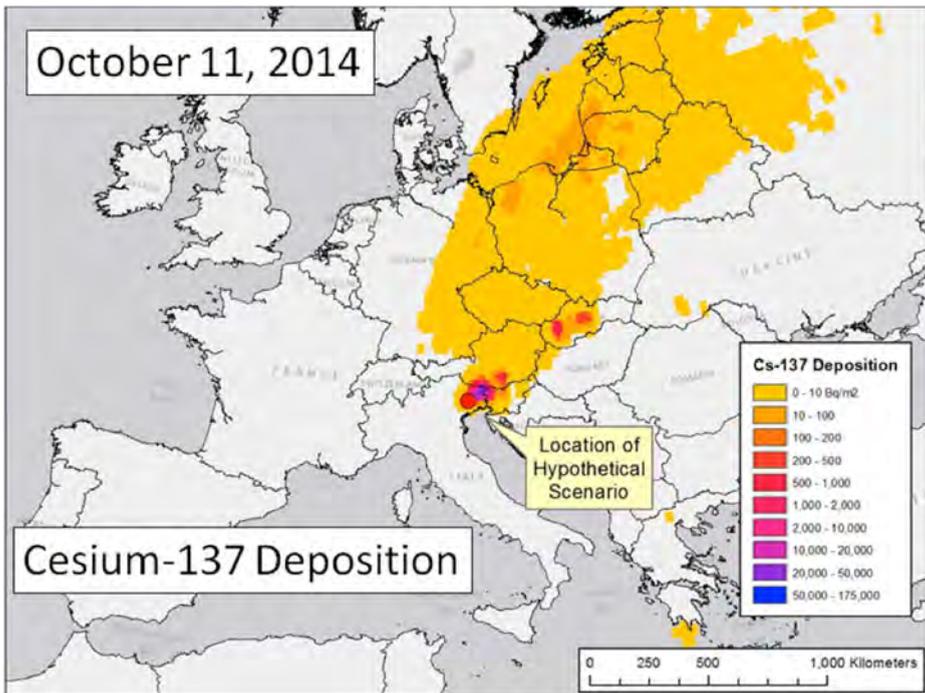


Figure 6. Cesium-137 disposition from 200-kiloton attack on Aviano Air Base, Italy. Precipitation data showing Cesium-137 deposition in Europe forty-eight hours after a simulated 200-kiloton nuclear ground-burst attack on Aviano Air Base in northern Italy, based on FLEXPART calculations.

attack that did not target civilians directly, this would cause intense radioactive fallout over large parts of the north-central United States and southern Canada and kill millions of civilians (see [Figure 8](#)).

In the final phase of this hypothetical nuclear escalation in which a nuclear-armed State's land-based nuclear forces are being decimated and the survival of the State itself is at risk, the State could use its surviving nuclear forces to strike back at the attacker's unused nuclear forces and cities. At this more indiscriminate phase of escalation, the degree of civilian casualties would increase significantly. A single US Ohio-class ballistic missile submarine with twenty-four Trident II D5 sea-launched ballistic missiles, for example, carries enough firepower to destroy all major cities in western Russia and could destroy Russia as a functioning society. Russian missile submarines have a similar capability against US cities. In the scenario illustrated below, HPAC software was used to simulate the use of 192 475-kiloton W88 warheads in airburst attacks on as many Russian cities. The simulation showed that over a third of all Russians could be killed or severely injured by what is actually but a small fraction of today's arsenal (see [Figure 9](#)).¹⁰⁸

108 *Ibid.*, pp. 113–128.

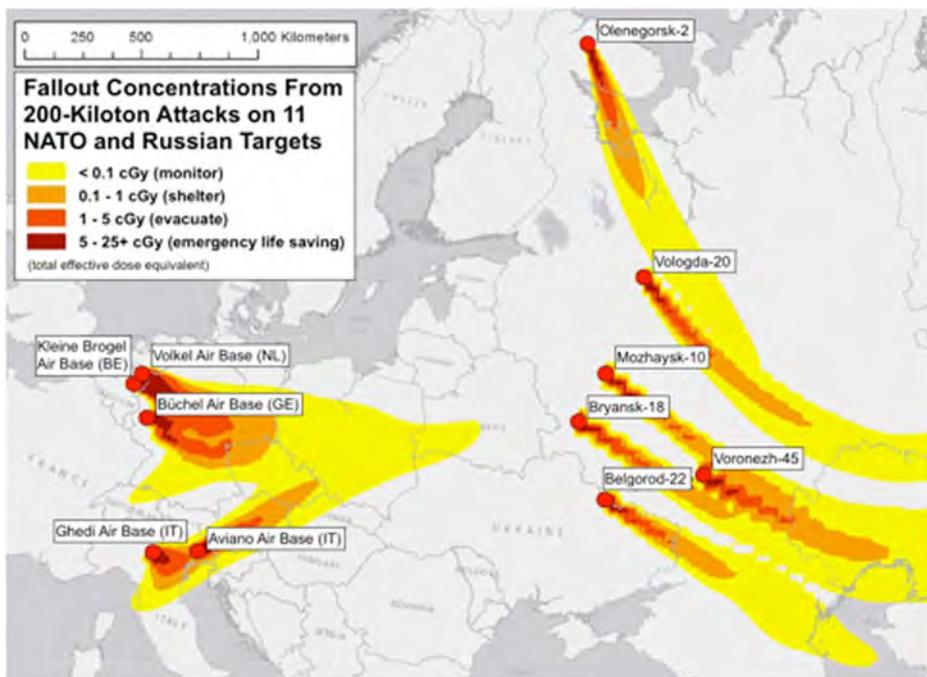


Figure 7. Simulated fallout from 200-kiloton attacks on eleven NATO and Russian facilities. Even limited nuclear strikes against half a dozen military targets in Western Europe or western Russia would cause widespread radioactive fallout of vast areas and force evacuation and sheltering of millions of civilians, according to HPAC calculations.

In addition to these direct blast, heat and radiation effects from nuclear weapons use, several studies show that detonation of even a limited number of nuclear weapons would have significant secondary effects on climate and food production. Even the use of a few dozen or hundred nuclear weapons in a limited regional war could cause widespread famine and result in enormous civilian casualties.¹⁰⁹

Conclusions

The year 2015 marked the seventieth anniversary of the atomic bombings in Japan. The destruction of the two cities of Hiroshima and Nagasaki resulted in loss of life in the order of 100,000 casualties per nuclear warhead used by one nuclear-armed State. Although global nuclear arsenals have been reduced significantly compared

109 For studies on the climatic effects of nuclear war, see I. Helfand, above note 7; Alan Robock, Luke Oman, Georgiy L. Stenchikov, Owen B. Toon, Charles Bardeen and Richard P. Turco, "Climatic Consequences of Regional Nuclear Conflicts", *Atmospheric Chemistry and Physics*, Vol. 7, 2007, available at: <http://climate.envsci.rutgers.edu/pdf/acp-7-2003-2007.pdf>.

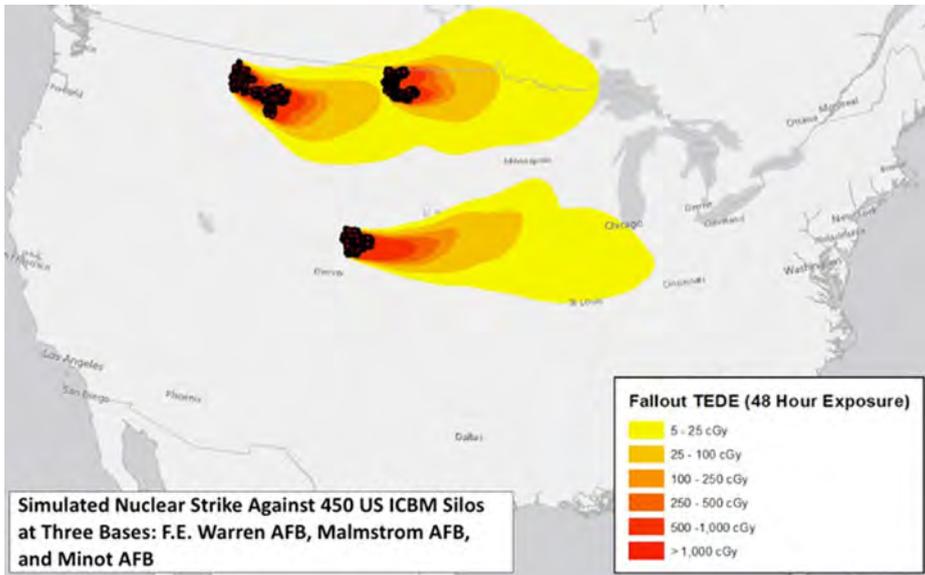


Figure 8. Simulated fallout from 200-kiloton attacks on 450 US ICBM silos. Nuclear attacks on strategic forces would significantly increase the level of civilian casualties, even in a pure counterforce attack where civilians were not explicitly targeted. Calculations were performed using the HPAC computer model.

with such arsenals during the Cold War, there are still approximately 15,400 nuclear warheads in the possession of nine nuclear-armed States, including roughly 1,800 that can be used at short notice.¹¹⁰

The atomic bombs that inflicted the damage on the two Japanese cities had explosive yields in the 10- to 20-kiloton range; most nuclear weapons today have a yield ten or more times higher. If targeted at cities, these weapons could result in a greater loss of life than extrapolated from Hiroshima and Nagasaki due to higher population densities in cities today and due to the potentially widespread impact of radioactive fallout.

Even purely counterforce strategies, where nuclear weapons are only used to attack military facilities, would not prevent civilian casualties. As we have demonstrated in this article, radioactive fallout from even limited use of nuclear weapons would cause considerable collateral damage and civilian casualties and would force evacuation of large populated areas. Moreover, because many military targets are near or inside cities, even a pure counterforce strategy is no guard against civilian casualties. The suggestion that a counterforce strategy is more humane than a countervalue strategy is flawed; there is no such thing as a “clean” nuclear attack.

110 H. M. Kristensen and R. S. Norris, above note 3; H. M. Kristensen and M. G. McKinzie, above note 10.

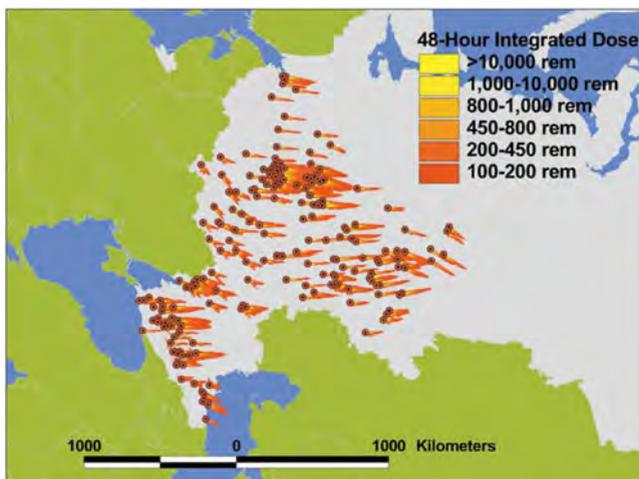


Figure 9. Simulated fallout from one Trident submarine attack on western Russian cities. A single Ohio-class ballistic missile submarine with twenty-four Trident II D5 SLBMs carries enough firepower to destroy all major cities in western Russia. These computer calculations employed HPAC fallout models. Source: Matthew G. McKinzie, Thomas B. Cochran, Robert S. Norris and William M. Arkin, *The U.S. Nuclear War Plan: A Time For Change*, Natural Resources Defense Council, June 2001, p. 122, available at: www.nrdc.org/nuclear/warplan/Index.asp.

In addition to the primary and secondary blast, heat and radiation effects on human beings, new research in climate science has predicted that even a limited, regional nuclear war could impact the global climate, reducing temperatures, sunlight and crop growing seasons so as to cause famine and suffering on a global scale.

Despite seventy years of international appeals and efforts to reduce and eliminate nuclear weapons, the world's nuclear-armed States and their allies continue to attribute great value and importance to the possession of these weapons. In fact, despite progress in reducing Cold War nuclear force levels, all the nuclear-armed States are modernizing their remaining nuclear forces and plan to retain sizeable nuclear arsenals for the indefinite future.

With the slowing down of nuclear reductions, the stalling of nuclear arms control negotiations, continued nuclear modernizations, a deepening of the crisis between NATO and Russia, a full-fledged nuclear arms race in South Asia, and rising tension in Northeast Asia, it is clear that nuclear forces continue to pose an urgent and persistent threat to humanity that requires new arms control initiatives and global political leadership. What is missing is not ideas about how to limit nuclear forces and reliance on them, but the political will and leadership to make that happen.

Pursuing “effective measures” relating to nuclear disarmament: Ways of making a legal obligation a reality

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Abstract

This paper argues that pursuing negotiations in good faith on effective measures for nuclear disarmament is a legal obligation, not a foreign policy option. Drawing on the New Agenda Coalition paper of April 2014, which identified some pathways by which nuclear disarmament might be pursued, this paper identifies and analyzes international legal issues raised by each of those pathways. The paper concludes by explaining why legal analysis and discussion are important even in the absence of a settled political commitment to nuclear disarmament.

Keywords: nuclear disarmament, nuclear non-proliferation, NPT Article VI, effective measures, New Agenda Coalition.

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Introduction

The increasing political attention being paid to the humanitarian consequences of nuclear weapons is an important and timely reframing of the debates about nuclear weapons generally. It draws our attention to why nuclear disarmament is essential and underscores and strengthens the already existing taboo against the use of nuclear weapons.¹ While the humanitarian discourse explains why nuclear disarmament is desirable, this paper focuses on nuclear disarmament as a matter for legal analysis. It does so in two ways. First, it argues that pursuing negotiations in good faith on effective measures for nuclear disarmament is a legal obligation, not an optional foreign policy choice. Second, it explores the legal aspects of the different proposals that are being put forward as ways of advancing towards that goal.

While there has been some discussion on whether there is a legal obligation to pursue negotiations in good faith, it is time to renew a serious discussion about how that might happen and what legal tools are available to that end. Thus, having briefly traversed the legal obligation assumption, this paper goes on to draw on the Working Paper prepared by Ireland on behalf of the New Agenda Coalition in April 2014, which set out four possible pathways by which effective measures towards nuclear disarmament might be pursued.² This essay, based on an earlier presentation at the United Nations (UN) hosted by New Zealand, explores these pathways and draws out some thoughts on the potential legal issues involved in each pathway.

Finally, the paper sets out some reflections on why a legal discourse is important at this point, and how it acts as a complement to the humanitarian discourse. For seventy years, since the birth of nuclear weapons,³ there has been a policy debate on whether we should pursue nuclear disarmament. For the past thirty-five years, the legal obligation to focus on disarmament in the NPT has been woefully neglected. I set out the reasons here why a legal framework of analysis is important even in the absence of a settled political commitment.

Pursuing “effective measures” as a legal obligation

Article VI of the 1968 Nuclear Non-Proliferation Treaty (NPT) provides that:

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early

1 See Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons since 1945*, Cambridge University Press, Cambridge, 2007. See also Maria Rost Rublee, *Nonproliferation Norms: Why States Choose Nuclear Restraint*, University of Georgia Press, Athens, GA, 2009.

2 “Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons: Working Paper Submitted by Ireland on Behalf of the New Agenda Coalition (Brazil, Egypt, Ireland, Mexico, New Zealand and South Africa)”, NPT/CONF.2015/PC.III/WP.18, 2 April 2014 (WP.18), para. 29.

3 In fact, the debate preceded the actual advent of the bomb. See Andrew Brown, *Keeper of the Nuclear Conscience: The Life and Work of Joseph Rotblat*, Oxford University Press, Oxford and New York, 2012.

date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective control.⁴

Looking at the language of this provision, it is clear that States Parties undertake to pursue negotiations in good faith to achieve three different but related objectives (cessation of the nuclear arms race at an early date, nuclear disarmament, and a treaty for “general and complete disarmament”).⁵ The focus of this paper is on the obligation to pursue negotiations in good faith on effective measures relating to nuclear disarmament. Much ink has been spilt on what, precisely, it means to “pursue negotiations in good faith”.⁶ For present purposes, the important point is that Article VI uses the expression “undertakes”. The *Oxford Dictionary of Law* defines an “undertaking” as a “promise, especially in legal proceedings, that creates an obligation”.⁷ Thus, pursuing negotiations in good faith on effective measures relating to nuclear disarmament is a promise, a legal obligation.⁸

The NPT States Parties have repeatedly affirmed this legal obligation. In 1995, in agreeing to extend the Treaty beyond its initial twenty-five-year term, the Conference of the States Parties affirmed the need to attain the ultimate goal of complete elimination of nuclear weapons.⁹ In 2000, the States Parties agreed to 13 practical steps for systematic and progressive efforts towards disarmament.¹⁰ The 2010 Review Conference affirmed that all States needed “to make special efforts to establish the necessary framework to achieve and maintain a world without nuclear weapons”.¹¹ To that end, they adopted by consensus a set of Conclusions and Recommendations for Follow-on Actions, now commonly

4 Treaty on the Non-Proliferation of Nuclear Weapons, 729 UNTS 161, 1 July 1968 (entered into force 5 March 1970) (NPT), Art. 6.

5 And see Daniel Joyner, *Interpreting the Nuclear Non-Proliferation Treaty*, Oxford University Press, New York, 2011, p. 99. Cf. Christopher Ford, “Debating Disarmament: Interpreting Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons”, *Non-Proliferation Review*, Vol. 14, No. 3, 2007, p. 403.

6 For discussion, see D. Joyner, above note 5; see also Paul M. Kiernan, “‘Disarmament’ under the NPT: Article VI in the 21st Century”, *Michigan State University Journal of International Law*, Vol. 20, No. 2, 2012; David A. Koplow, “Parsing Good Faith: Has the United States Violated Article VI of the Nuclear Non-Proliferation Treaty?”, *Wisconsin Law Review*, March/April 1993.

7 Jonathan Law and Elizabeth A. Martin, *A Dictionary of Law*, 7th ed., Oxford University Press, 2013.

8 For a recent discussion of the meaning of the good faith requirement in Article VI, see United States Court of Appeals, *Republic of the Marshall Islands v. United States of America et al.*, Ninth Circuit, Brief of Amicus Curiae Lawyers Committee on Nuclear Policy Supporting Appellant and Reversal, pp. 9–18. Cf. United States Supreme Court, *Medellin v. Texas*, 128 S. Ct. 1346 (2008), No. 06-984, 2008, in which the Supreme Court held that the expression “undertakes to comply” in Article 94 of the UN Charter was only “a commitment on the part of U.N. Members to take future action through their political branches”.

9 “Extension of the Treaty on the Non-Proliferation of Nuclear Weapons”, *1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons: Final Document*, NPT/CONF.1995/32, Part I, Annex, Decision 3, pp. 12–13.

10 “Article VI and Eighth to Twelfth Preambular Paragraphs”, *2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons: Final Document*, NPT/CONF.2000/28, Parts I and II, pp. 14–15.

11 “Conclusions and Recommendations for Follow-on Actions”, *2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons*, NPT/CONF.2010/50, Vol. 1, pp. 19–24.

known as the 2010 Action Plan.¹² The first twenty-two action points relate to nuclear disarmament.

Outside of the framework of the NPT, there has also been acknowledgement of the binding legal obligation by the International Court of Justice (ICJ). In a unanimous finding in the Nuclear Weapons Advisory Opinion in 1996, all fifteen of the judges expressed the view that there exists an “obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control”.¹³

In 2008, the UN Secretary-General presented a five-point plan for achieving a nuclear weapon-free world, the first point of which called on all parties to the NPT to fulfil their obligation under Article VI of the Treaty to undertake negotiations on effective measures leading to disarmament.¹⁴

It should be noted that this legal obligation is not one that is imposed on nuclear weapons States alone, but rather is an obligation on all States party to the NPT. This is in no doubt from the terms of the NPT itself (Article VI does not confine itself to any category of State; rather, it is expressed in general terms), but it is also the experience of other multilateral disarmament treaties. Once in place, a legal regime might well create differentiated obligations (as indeed the NPT does), but the obligation to negotiate in good faith is one that applies to all parties. For example, during the negotiations within the Conference on Disarmament for the Chemical Weapons Convention (CWC), it was clear that only a handful of States would be declaring possession of chemical weapons, but it was nonetheless understood that the international community as a whole shared responsibility to build the regime against those weapons.¹⁵ While the CWC does not perpetuate the division between possessor and non-possessor States in the same way as the NPT, it nevertheless stands as an example of all States Parties accepting disarmament obligations, while the practical impact of the obligation will differ from State to State.

Pathways to nuclear disarmament

In April 2014, pursuant to the obligation to negotiate effective measures towards nuclear disarmament, Ireland submitted a proposal on behalf of the New Agenda

¹² *Ibid.*

¹³ ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996*, para. 105(2)(f). The issue is again being considered by the ICJ in the pending cases *Marshall Islands v. United Kingdom (Obligations concerning Negotiations relating to Cessation of the Nuclear Arms Race and to Nuclear Disarmament)*, *Marshall Islands v. Pakistan (Obligations concerning Negotiations relating to Cessation of the Nuclear Arms Race and to Nuclear Disarmament)*, and *Marshall Islands v. India (Obligations concerning Negotiations relating to Cessation of the Nuclear Arms Race and to Nuclear Disarmament)*.

¹⁴ UN Secretary-General, “The United Nations and Security in a Nuclear-Weapon-Free World”, address to the East-West Institute, New York, 24 October 2008, available at: www.un.org/disarmament/WMD/Nuclear/sg5point (all internet references were accessed in December 2015).

¹⁵ Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, 1974 UNTS 317, 13 January 1993 (entered into force 29 April 1997) (CWC).

Coalition (Working Paper on Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons, or WP.18) to the Third Session of the Preparatory Committee for the 2015 Review Conference of the NPT.¹⁶ The paper was an attempt to think about ways in which States might sidestep the seemingly irreconcilable difference between those States that advocated an incremental approach towards eventual nuclear disarmament and those States that advocated a more immediate and comprehensive approach. The aim of the paper was to set out the different ideas and offer some reflections on each. Thus, the Working Paper outlined four possible options, or pathways, which could be explored as a means of achieving these effective measures. This paper seeks to further develop those ideas by exploring the various pathways from an international legal perspective.

First pathway: A comprehensive nuclear weapons convention

The first pathway identified in WP.18 is that States should explore the modalities of a comprehensive nuclear weapons convention.¹⁷ Such a treaty would include a set of comprehensive prohibitions relating to the use, development and possession of nuclear weapons, and would create a system of verification to be conducted by a specially created inter-governmental agency.¹⁸ Thus, the treaty would put in place a process for legally binding, time-bound, irreversible and verifiable nuclear disarmament. Such a concept has been around for quite some time; see, for example, the draft convention tabled by Costa Rica and Malaysia.¹⁹

A number of important legal issues are raised by such a proposal. The following comments are directed generally towards the idea of a comprehensive nuclear weapons convention, rather than at any specific proposal.

Substantive overlap with other regimes or obligations

There is no legal difficulty with, or constraint against, exploring additional treaties, protocols or agreements in furtherance of achieving effective measures towards nuclear disarmament. As has been pointed out previously,²⁰ the NPT does not require that those “effective measures” of Article VI be advanced under its umbrella. Further, it is clear that *any* instrument, no matter how broadly or narrowly drawn, would be at least an advance on the *status quo* and therefore compatible not only with Article VI of the NPT but more broadly with the object

16 WP.18, above note 2. The New Agenda Coalition is a group of countries currently comprising Brazil, Egypt, Ireland, Mexico, New Zealand and South Africa. Established in 1998, the aim of the Coalition was to inject fresh momentum and thinking into the nuclear disarmament process. See New Agenda Coalition, *Towards a Nuclear-Weapons-Free World: The Need for a New Agenda*, Joint Declaration, A/53/138, Annex, 9 June 1998.

17 WP.18, above note 2, para. 29(1), and detailed in Annex I.

18 For instance, along the lines of the Organization for the Prohibition of Chemical Weapons, created by Article VIII of the CWC.

19 Letter dated 17 December 2007 from the Permanent Representatives of Costa Rica and Malaysia to the UN Secretary-General, A/62/650, 18 January 2008.

20 WP.18, above note 2, para. 32.

and purpose of the NPT as a whole. Concluding a comprehensive, verifiable nuclear disarmament treaty would be the gold standard – a full implementation of this aspect of the obligation set out in Article VI of the NPT.

That being said, consideration does need to be given to some complexities that may arise. Any such new comprehensive treaty will sit within a mosaic of treaties and agreements relating to nuclear weapons, including the NPT and the 1996 Comprehensive Test Ban Treaty (CTBT). Thus, for many States, there may be an overlap between the obligations in the new legal instrument and their existing substantive obligations. The potential overlaps will depend on the nature of the new proposed instrument, the particular States in question and their nuclear status, and the precise treaty obligation being considered. To give one simple example, non-nuclear-weapon States party to the NPT must not “manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices”.²¹ The CTBT prohibits nuclear weapons test explosions.²² The prohibitions set out in a comprehensive prohibition treaty would almost certainly capture these prohibitions as well.

This raises no legal difficulties – indeed, repeating the prohibition in different treaty regimes gives additional normative support. Any potential overlap would strengthen, not undermine, the existing legal obligations. Indeed, reiteration is a familiar dynamic in other areas of international law. For example, in the human rights field, the right to life is enshrined in a series of human rights treaty regimes, many of which overlap.²³ The reiteration of this right, in different contexts, serves to strengthen the underlying norm. In the disarmament sphere, a clear example of how reiterations of a prohibition strengthen a norm is the way in which the prohibition against using chemical or biological weapons in the Geneva Protocol of 1925 laid the normative foundations for the CWC and the Biological Weapons Convention (BWC). The Geneva Protocol remains in force, even with the creation of the two more elaborate regimes.²⁴

While it is clear that substantive overlap will give rise to greater normativity, regime overlap nevertheless poses some important issues that will

21 NPT, above note 4, Art. 2.

22 Comprehensive Nuclear Test Ban Treaty, 10 September 1996 (not in force) (CTBT), Art. 1.

23 Starting with Universal Declaration of Human Rights, UN Doc. A/810, 10 December 1948, Art. 3, the right to life is also protected in the International Covenant on Civil and Political Rights, 999 UNTS 171, 16 December 1966 (entered into force 23 March 1976), Art. 6; the African Charter on Human and Peoples’ Rights, 1520 UNTS 217, 27 June 1981 (entered into force 21 October 1986), Art. 4; the Convention for the Protection of Human Rights and Fundamental Freedoms, 213 UNTS 222, 4 November 1950 (entered into force 3 September 1953) (European Convention on Human Rights), Art. 2; and the American Convention on Human Rights, 1144 UNTS 123, 22 November 1969 (entered into force 18 July 1978), Art. 4. There are also related provisions in the Convention on the Rights of the Child, 1577 UNTS 3, 20 November 1989 (entered into force 2 September 1990), Art. 6; and the Convention on the Rights of Persons with Disabilities, UN Doc. A/61/49, 13 December 2006 (entered into force 3 May 2008), Art. 10.

24 See CWC, above note 15, Art. XIII. Note that Article XVI of the CWC provides that the withdrawal of a State Party from the Convention does not affect the duty of States to continue fulfilling the obligations assumed under the 1925 Protocol. Similarly, see Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, 1015 UNTS 163, 10 April 1972 (entered into force 26 March 1975) (BWC), Art. VIII.

need to be addressed. This is particularly the case when membership differs across the different treaty regimes. In addition, were there to be overlapping inspection or verification regimes, it is possible that there may be less than consistent results from any inspection or verification activity. Similarly, overlapping dispute resolution or enforcement mechanisms may produce conflicting outcomes and decisions.²⁵ There might also be resource implications, if two regimes are working separately to resolve a compliance concern. None of these are reasons to preclude the creation of overlapping regimes or substantive obligations; rather, they are factors that need to – and can – be managed.²⁶

In the context of nuclear disarmament and non-proliferation, a potential solution would be for the regimes to work cooperatively. One recent example of this happening was with the chemical weapons inspections carried out by the Organisation for the Prohibition of Chemical Weapons (OPCW)–UN Joint Mission in Syria.²⁷ There would also be lessons to be learnt from the UN Special Commission and International Atomic Energy Agency mandates in Iraq in the 1990s. While such a cooperative framework will very much depend on political will, it will be important to ensure that the legal framework allows for the transfer of information across regimes, particularly in situations where the membership of each regime is different.

Particular issues with the Comprehensive Test Ban Treaty

The question of overlap with the CTBT gives rise to a different complexity because the Treaty is not yet in force. While this is not complicated in terms of the substantive obligation not to test a nuclear device (as discussed above), the fact that the CTBT has not yet entered into force raises interesting questions regarding the *de facto* implementation of the International Monitoring System (IMS), particularly in light of Article 18 of the 1969 Vienna Convention on the Law of Treaties.²⁸ Ideally, any new treaty would be able to draw on the data being

25 Repetition of substantive obligations across regimes and overlapping dispute resolution processes is far from unusual. In the context of international trade law, the US–Canada softwood lumber dispute illustrates the potential difficulties and possible solutions nicely. This trade dispute concerning imports of Canadian softwood into the United States was litigated extensively in both the World Trade Organization and under the dispute resolution procedures of the North American Free Trade Agreement, with the decisions pointing in completely different directions. For a discussion of the two regimes in this context, see Greg Anderson, “Can Someone Please Settle This Dispute? Canadian Softwood Lumber and the Dispute Settlement Mechanisms of the NAFTA and the WTO”, *The World Economy*, Vol. 29, No. 5, 2006. In the end, a political settlement was reached between the two States.

26 See International Law Commission Study Group, *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, UN Doc. Z/CN.4/L.682, 13 April 2006; International Law Commission Study Group, “Conclusions of the Work of the Study Group on the Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law”, in International Law Commission, Report on the Work of the 58th Session, UN Doc A/61/10, 1 May–9 June and 3 July–11 August 2006.

27 UNSC Res. S/Res/2118(2013), 27 September 2013; OPCW Executive Council, *Decision: Destruction of Syrian Chemical Weapons*, EC-M-33/DEC.1, 27 September 2013.

28 This Article provides that a State which has signed or ratified a treaty that is not yet in force has an obligation to refrain from acts which would defeat the object and purpose of the treaty.

gathered by the IMS, instead of duplicating what is already a highly effective monitoring system.²⁹ One way to achieve this would be to explore whether the CTBT could be applied on a provisional basis.³⁰ This approach would avoid duplication and would build on, rather than hollow out, the extensive system already in place.³¹

Leaving aside the political issues involved in such a process, international law on the provisional application of treaties has a long pedigree, and today is governed by Article 25 of the Vienna Convention on the Law of Treaties. Article 25 allows for provisional application of a treaty, provided that the treaty (that is, in this case, the CTBT) itself provides for this, or failing that, if the negotiating States have agreed. The CTBT does not provide for provisional application, and therefore consideration needs to be given as to whether the negotiating States might agree to provisional application. There are a number of examples of modern practice that might provide some guidance; for example, the 1982 UN Convention on the Law of the Sea (UNCLOS) and the 1947 General Agreement on Tariffs and Trade.³²

Dispute resolution

A common feature of treaties, including in the context of arms control, is the inclusion of dispute resolution provisions. Generally speaking, there is a graduated system attempting to resolve the issue through the organs of the relevant organization, but with the ultimate option of referring the situation to the UN, and to the Security Council, should the issue constitute a threat to international peace and security.

In drafting the proposed comprehensive nuclear weapons convention, this pattern of a graduated response leading to the ultimate sanction of Security Council referral needs careful consideration. It would be uncertain in the early phases of the treaty's life whether all, or even any, of the permanent members of the Security Council would participate. As such, while it would be legally possible to replicate the typical dispute resolution clause, it is likely to be unacceptable politically to allow non-participants in a regime to have a decisive role in dispute resolution within that regime. In light of this, it may be more productive in the short term to consider a broad range of options for dispute settlement.³³

29 See generally the studies discussed in Anthony Aust, Masahiko Asada, Edward Ifft, Nicholas Kyriakopoulos, Jenifer Mackby, Bernard Massinon, Arend Meerburg and Bernard Sitt, *A New Look at the Comprehensive Nuclear-Test-Ban Treaty (CTBT)*, Netherlands Institute of International Relations, Clingendael, September 2008, Chapter 3, pp. 9 ff.

30 For an accessible and up-to-date overview of the law on provisional application of treaties, see Robert E. Dalton, "Provisional Application of Treaties", in Duncan B. Hollis (ed.), *The Oxford Guide to Treaties*, Oxford University Press, Oxford, 2012. For a discussion on provisional application in the specific context of arms control treaties, see Andrew Michie, "The Provisional Application of Arms Control Treaties", *Journal of Conflict and Security Law*, Vol. 10, No. 3, 2005.

31 Consideration could then be given to the question of whether the Preparatory Commission for the Comprehensive Test Ban Treaty Organization could enter into an information-sharing arrangement with a newly created agency.

32 Discussed by R. E. Dalton, above note 30, pp. 234–245.

33 Accepting, of course, that by virtue of the UN Charter, the Security Council would have the mandate, in any event, to deal with any issues threatening international peace and security, regardless of what the treaty provided.

One option would be to consider whether arbitration could be a mode of dispute settlement.³⁴ Although not a feature of today’s arms control treaties, historically such mechanisms did feature in some draft treaties from the League of Nations era.³⁵ Consideration could also be given to dispute resolution mechanisms which exist outside of the arms control sphere. For example, in the World Trade Organization (WTO) system, there is a carefully crafted and extremely successful dispute resolution system with stages moving progressively towards compulsory and binding dispute resolution. Importantly, in the WTO system, there is scope for participation by interested third parties in the process.³⁶ The model provided by UNCLOS (whereby States Parties have a “menu” of dispute resolution options to choose from) could also be considered.³⁷

Verification – legal issues

Although primarily a technical area, creating a system of verification raises a number of legal questions.³⁸ The verification system of the CWC has been in operation since the Convention’s entry into force in 1997 and, accordingly, there is a wealth of information on verification practices and related legal issues.³⁹ There are obvious differences in weapons type and therefore verification technologies, but there will be legal similarities across the regimes. It would be useful to engage in a “legal lessons learnt” process for negotiation of the verification system of the comprehensive nuclear weapons convention.

Implementation – legal issues

Similarly, there will be a number of legal questions to be addressed when considering the way in which the treaty should be implemented.⁴⁰ Many of these questions will have been addressed in the context of the implementation of the CWC. In all treaty negotiations, there is a tension between, on the one hand, the imperative to have fixed, time-bound obligations and, on the other, the need to allow sufficient

34 James D. Fry, “Arbitrating Arms Control Disputes”, *Stanford Journal of International Law*, Vol. 44, No. 2, 2008.

35 *Ibid.*, p. 372.

36 Agreement Establishing the World Trade Organization, 1994, Annex 2, “Understanding on Rules and Procedures Governing the Settlement of Disputes”, Art. 10.

37 UN Convention on the Law of the Sea, 1833 UNTS 3, 10 December 1982 (entered into force 16 November 1994), Art. 287.

38 For discussion in the context of the CWC, see generally Walter Krutzsch, Eric Myjer and Ralf Trapp (eds), *The Chemical Weapons Convention: A Commentary*, Oxford University Press, Oxford, 2014. For particular issues relating to verification, see Walter Krutzsch and Ralf Trapp (eds), *Verification Practice under the Chemical Weapons Convention: A Commentary*, Kluwer Law International, The Hague, London and Boston, 1999.

39 See, for example, Ralf Trapp, “The Chemical Weapons Convention a Decade after its Entry into Force”, *Japanese Yearbook of International Law*, Vol. 52, 2009, p. 149.

40 For a range of issues, see Rodrigo Yepes-Enriquez and Lisa Tabassi (eds), *Treaty Enforcement and International Cooperation in Criminal Matters with Special Reference to the Chemical Weapons Convention*, TMC Asser Press, The Hague, 2002.

flexibility for unexpected difficulties encountered by States acting in good faith and attempting to fully implement the treaty.⁴¹

In the event that the current possessor States remain outside the system (at least in the beginning), the legal provisions governing accession to the treaty will need careful consideration. It will be important not to put in place legal barriers to participation by possessor States. Thus, due regard needs to be given as to the relationship between any *bilateral* disarmament obligations that might exist, and this new multilateral obligation.

Ultimately, all of these implementation issues will be resolved by political agreement during the negotiations. However, that process can be facilitated by providing clear legal advice as to the options available to negotiating States and setting out examples and illustrations of how other regimes have managed, and solved, comparable issues.

Second pathway: A nuclear weapons ban treaty

The second pathway outlined in WP.18 is to explore the option of a nuclear weapons ban treaty. As articulated in WP.18, the essential difference between the comprehensive convention and a ban treaty is that the first pathway is directed towards time-bound, verifiable elimination of all nuclear weapons, whereas this second pathway is aimed at achieving a comprehensive ban on nuclear weapons, which would pave the way for their eventual elimination. That might be a simple ban on use, or it may extend to a much more comprehensive prohibition, as discussed in the paragraph below.⁴² A number of specific legal considerations that arise in the context of a ban treaty are considered below.

Scope of the prohibition

The scope of the prohibition contained in such a treaty could vary considerably from a simple ban on actual use, or threat of use, of nuclear weapons to encompassing more comprehensive prohibitions on the development, manufacturing, control, possession, testing, stationing or transporting of any nuclear explosive device.⁴³

While the narrower ban on use only would not be overly ambitious in scope, it would still have immediate normative impact. Both the CWC and the BWC grew out of an earlier (modest) ban on use, in the form of the 1925 Geneva

41 For example, the CWC specified an absolute deadline by which destruction of all chemical weapons stockpiles had to be achieved (no later than fifteen years after entry into force). Due to unforeseen complications (including radically different environmental regulations in force than when the treaty was negotiated), and notwithstanding the efforts of the United States and the Russian Federation, those deadlines were unable to be met, with the result that both States are now in technical non-compliance with the treaty.

42 Ray Acheson, Thomas Nash and Richard Moyes, *A Treaty Banning Nuclear Weapons: Developing a Legal Framework for the Prohibition and Elimination of Nuclear Weapons*, Article 36 and Reaching Critical Will, 2014, p. 4.

43 For a fuller discussion, see *ibid.*, Chapter 1.

Protocol.⁴⁴ Attention would have to be paid to the need to avoid any implication that a use-only ban would explicitly or impliedly legitimize the *possession* of nuclear weapons.

If a more comprehensive ban were to be considered, there are a number of models that could be drawn on for inspiration. The CWC, for example, provides:

Each State Party to this Convention undertakes never under any circumstances:

- (a) To develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone;
- (b) To use chemical weapons;
- (c) To engage in any military preparations to use chemical weapons;
- (d) To assist, encourage or induce, in any way, anyone to engage in any activity prohibited to a State Party under this Convention.⁴⁵

The Model Nuclear Weapons Convention presented to the General Assembly articulates a range of prohibitions, including those relating to nuclear weapons delivery vehicles, and funding or conducting nuclear weapons research.⁴⁶ It would also be a useful exercise to map the prohibitions set out in the various Nuclear Weapons Free Zones against the aims of a ban treaty in this context and so identify which of those prohibitions could usefully be included.⁴⁷

A ban treaty could even extend to destruction or disabling obligations, which would move it very close, in terms of its substantive obligations, to the first (comprehensive convention) pathway. The broader the scope of the prohibition, the closer the ban treaty option comes to the comprehensive pathway. In this sense, the first two pathways are best considered not as separate ideas but rather as pathways on a spectrum from, on the one end, a fully verifiable treaty

44 And indeed, it should be noted that even this prohibition on use was hollowed out by “no first use” reservations made by States Parties at that time.

45 CWC, above note 15, Art. 1. See also Article 1 of the BWC, with its slightly different articulation (“develop, produce, stockpile or otherwise acquire or retain”), and note that the BWC does not explicitly ban the “use” of biological weapons. However, the States Parties to the Convention subsequently confirmed that this was intended in the formulation. See Fourth Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, Final Declaration, BWC/CONF.IV/9/PART II, Geneva, 25 November–6 December 1996, para. 3. For discussion, see Treasa Dunworth, Robert J. Mathews and Timothy L.H. McCormack, “National Implementation of the Biological Weapons Convention”, *Journal of Conflict and Security Law*, Vol. 11, No. 1, 2006, p. 103.

46 International Association of Lawyers against Nuclear Arms, International Network of Engineers and Scientists against Proliferation and International Physicians for the Prevention of Nuclear War, *Securing Our Survival (SOS): The Case for a Nuclear Weapons Convention*, International Physicians for the Prevention of Nuclear War, Cambridge, MA, 2007, p. 48 (proposed Article 1). In some respects the prohibitions in the Model Convention were based on the CWC.

47 There are five Nuclear Weapons Free Zones currently in existence. See, generally, Michael Hamel-Green, “Peeling the Orange: Regional Paths to a Nuclear-Weapon-Free World”, *Disarmament Forum*, No. 2, 2011. For a mapping of existing Zones, see International Law and Policy Institute (ILPI), “Nuclear-Weapon-Free-Zones”, ILPI Nuclear Weapons Project, Nutshell Paper No. 1, 2012. For discussion and comparative evaluation focusing on the Southeast Asian Nuclear Weapon-Free Zone, see Lionel Yee Woon Chin, “Nuclear Weapon-Free Zones: A Comparative Analysis of the Basic Undertakings in the SEANWFZ Treaty and their Geographical Scope of Application”, *Singapore Journal of International and Comparative Law*, Vol. 2, 1998.

requiring time-bound disarmament of all nuclear weapons arsenals, through to less comprehensive prohibitions with little or no verification. While this would be a departure from modern practice in the context of arms control treaties, which have generally placed importance on verification mechanisms, a treaty with a weak or even non-existent verification system would still have some normative significance.

*Forum for negotiation*⁴⁸

Although the obligation to pursue effective measures towards nuclear disarmament is founded in Article VI of the NPT, there is no obligation to pursue those measures within the NPT system itself. Indeed, the CTBT, seen as a key step towards creating the necessary framework to consider nuclear disarmament, was negotiated within the Conference on Disarmament (CD) before it was shifted to the UN General Assembly (UNGA) at a point when it became clear that the CD would block its adoption.⁴⁹ Given the seemingly intractable deadlock in that body, it does not seem useful to consider the CD as an appropriate forum for negotiation.

The UNGA offers a viable multilateral approach. One option would be an *ad hoc* committee of the UNGA, drawing on the approach used for the Convention on Nuclear Terrorism.⁵⁰ Most recently, negotiations for the Arms Trade Treaty (which had their genesis in a Group of Governmental Experts followed by an Open Ended Working Group) took place under the auspices of a UNGA Negotiating Conference. Working within the General Assembly would be a logical next step following the convening in 2013 of the Open Ended Working Group to carry forward multilateral nuclear disarmament negotiations.⁵¹

There are also a number of arms control initiatives that have taken place outside the formal, institutional, multilateral system but which are not considered to have threatened the multilateral system. The most well-known examples are the 1997 Anti-Personnel Landmines Convention and the 2008 Cluster Munitions Convention. Because the negotiations for a ban treaty would be an important step towards nuclear disarmament, far from being a threat to the multilateral system, such initiatives would complement both Article VI of the NPT and the spirit and purpose of the CTBT. In fact, it is not inconceivable that separating these negotiations from the NPT, particularly in light of the failure of the 2015 Review

48 See the useful overview of UN-related forums in United Nations Institute for Disarmament Research (UNIDIR), *The Treatment of the Issue of Nuclear Disarmament in Relevant Forums Established by the United Nations*, UNIDIR, 2013.

49 For more detailed discussion, see Rebecca Johnson, *Unfinished Business: The Negotiation of the CTBT and the End of Nuclear Testing*, UNIDIR, 2009, Chapter 6.

50 R. Acheson, T. Nash and R. Moyes, above note 42, p. 20.

51 For an overview of the work of the Open Ended Working Group, see Christian N. Ciobanu, Esteban Ramirez Gonzalez, Jana Jedlickova and Alyn Ware, *Open the Door to a Nuclear Free World: Manual for Governments on the UN Working Group on Nuclear Disarmament*, Edition 1.0, Abolition 2000 Task Force on the Open Ended Working Group, Basel, 2010. See also Note by the Secretary-General, "Proposals to Take Forward Multilateral Nuclear Disarmament Negotiations for the Achievement and Maintenance of a World without Nuclear Weapons, UN Doc. A/68/514, 9 October 2013 (transmitting the report of the Working Group to the General Assembly)."

Conference to reach agreement on an Outcome Document, might enhance the possibility of the four non-NPT States participating in such negotiations.

Verification

If this pathway were understood as not including a verification system, that may mean that achieving agreement is easier than under the first pathway. After all, as mentioned above, for most States (though, of course, not *all*) this treaty would be a reiteration of existing obligations. A ban treaty without a compliance or verification system would still be an important contribution to the nuclear disarmament effort because of its contribution to the normative force of the prohibition against nuclear weapons, whether or not a verification system were in place. There are many examples of disarmament agreements that do not have verification procedures in place but which are generally understood to have contributed in a meaningful way to the norm against the weapons in question. For example, neither the 1925 Geneva Protocol nor the 1972 BWC provided for verification, and yet there is international consensus that there is a binding prohibition on all States against the use of biological weapons.⁵² That is not to say that it is ideal, or even sufficient, to have no treaty verification system in the BWC, but only that even without such a system, the treaty is important in terms of building the norm against the use and possession of biological weapons.

The CTBT presents us with a slightly different example. While it has an elaborate verification system, the Treaty is not yet in force, and therefore compliance with its terms cannot be verified in terms of legal determinations. That being said, it is generally accepted that the “treaty in waiting” has already contributed in a meaningful way to the norm against nuclear testing.⁵³

Relationship with the other regimes

As with the first, comprehensive pathway discussed above, a nuclear weapons ban treaty will sit within a mosaic of regimes dealing with nuclear weapons and international security. Thus, many of the same complexities arise as set out in the discussion under the comprehensive pathway discussed earlier.

Third pathway: A framework approach

The third pathway suggested by WP.18 is that of a framework arrangement, whereby a series of mutually supporting instruments addressing different aspects of what is necessary in order to have a nuclear weapons-free world could be formulated.⁵⁴

52 Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005, Rule 73 (“The use of biological weapons is prohibited”).

53 Lisa Tabassi “The Nuclear Test Ban: *Lex Lata* or *Lege Ferenda*?”, *Journal of Conflict and Security Law*, Vol. 14, No. 2, 2009.

54 WP.18, above note 2, Annex III.

A framework approach to building an international regime is a relatively recent development and is most common in the area of international environmental law. A framework approach involves negotiating a type of legally binding “umbrella” treaty that sets out broad commitments and a governance system which are then expanded upon in a further instrument or series of instruments that provide more detailed technical, legal and other arrangements.⁵⁵ Perhaps the best-known framework agreement is the UN Framework Convention on Climate Change (UNFCCC)⁵⁶ and its Kyoto Protocol.⁵⁷ There are many existing examples,⁵⁸ and others are being proposed.⁵⁹ In the weapons context, the 1980 Convention on Conventional Weapons, which now has five protocols, is an important model.⁶⁰

The framework approach can be useful where there is a significant difference of interests between States and where, therefore, it is better to agree to an initial broad framework and then fill in the details at a later stage.⁶¹ In other words, framework agreements are useful where parties are prepared to make general, broadly expressed legal commitments, but to defer the making of specific obligations to subsequent instruments or protocols. The initial substantive obligation can be quite vague (for example, asking for “appropriate measures” as in the Ozone Convention), but it will be combined with provisions setting up a conference of the parties (COP) as a forum for negotiations of future protocols, as well, perhaps, as a secretariat, dispute resolution provisions and decision-making rules.⁶²

In the specific context of nuclear disarmament, contemplating a framework approach raises a number of legal questions.

55 Nele Matz-Luck, “Framework Agreements”, in *Max Planck Encyclopedia of Public International Law*, 2011, para. 1, available at: <http://opil.ouplaw.com/view/10.1093/law/epil/9780199231690/law-9780199231690-e703?prd=EPIL>.

56 United Nations Framework Convention on Climate Change, UNGA Res. A/RES/48/189, 20 January 1994 (UNFCCC).

57 Kyoto Protocol to the United Nations Framework Convention on Climate Change, 2303 UNTS 148, 11 December 1997 (entered into force 16 February 2005).

58 Such as: Framework Convention on Tobacco Control, 2302 UNTS 229, 21 May 2003 (entered into force 27 February 2005); European Framework Convention for the Protection of National Minorities, 2151 UNTS 243, 10 November 1995 (entered into force 1 February 1998); Basel Convention on Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1673 UNTS 57, 22 March 1989 (entered into force 5 May 1992); Bonn Convention on the Conservation of Migratory Species of Wild Animals, 1651 UNTS 333, 23 June 1980 (entered into force 1 November 1983); Vienna Convention for the Protection of the Ozone Layer, 1513 UNTS 293, 22 March 1985 (entered into force 22 September 1988).

59 There are proposals for a Framework Convention on Global Health, for example.

60 United Nations Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, 1342 UNTS 137, 10 October 1980 (entered into force 2 December 1983).

61 N. Matz-Luck, above note 55, para. 11.

62 John K. Setear, “An Iterative Perspective on Treaties: A Synthesis of International Relations Theory and International Law”, *Harvard International Law Journal*, Vol. 37, No. 1, 1996.

Sequencing

As outlined in WP.18, a framework pathway could build on some existing agreements, such as the NPT and the CTBT, but there would also be a need to negotiate other agreements or instruments, including a treaty on fissile material, as well as agreement on legally binding negative assurances and possibly a phased programme of destruction of weapons (or at least their lowered operational readiness).

The sequencing of these negotiations in the context of an overarching framework will be contentious and, in light of the political sensibilities, it does seem that *consecutive* negotiations of the various proposed agreements or protocols may not be possible. Simultaneous negotiations, while legally possible, may not be feasible in terms of the level of resources required to sustain them. One option may be to consider a system of negotiating the different instruments on the model of the “closed chapters” approach used in trade negotiations. This would allow negotiations to proceed consecutively but would prevent the entry into force (or even the opening for signature) of any one instrument until all negotiations are completed. In this way, nothing is ultimately agreed, in the sense of binding obligations, until everything is agreed, and yet, the negotiations could be undertaken “step by step”.

Normative force

Despite this difficulty, a framework approach offers the possibility of normative evolution. The umbrella treaty would reiterate the NPT’s Article VI obligation to enter into disarmament negotiations; indeed, the creation of the COP in itself would be facilitating the commencement of those negotiations. This would represent an immediate legal advance as it would mark a small but still significant step by elaborating the promise of disarmament. Even if the framework treaty contained just a simple repetition of the Article VI obligation, it would have normative impact. It is evident from other regimes that the reiterative nature of a framework arrangement does reinforce the evolution of normative and cognitive shifts.⁶³ If the framework treaty itself went beyond that iteration, and created a COP for further negotiations or discussions, that would be a small but important institutional and normative step.

Institutionalized framework

A key strength of a framework convention model is that it is specifically designed to promote long-term interaction between treaty parties.⁶⁴ There are already a number

63 Lawrence O. Gostin, “Meeting Basic Survival Needs of the World’s Least Healthy People: Towards a Framework Convention on Global Health”, *Georgetown Law Journal*, Vol. 96, No. 2, 2008.

64 Daniel Bodansky, Jutta Brunnée and Ellen Hey, “International Environmental Law: Mapping the Field”, in Daniel Bodansky, Jutta Brunnée and Ellen Hey (eds), *Oxford Handbook of International Environmental Law*, Oxford University Press, Oxford, 2007, pp. 21–23.

of forums available to allow such interaction, including the Conference on Disarmament, the Review Conferences of the NPT, and the UNGA First Committee.⁶⁵ However, a framework model would be premised on a different basis because, unlike the CD, its membership could be open to *all* States. While the new treaty may not initially attract a membership broader than the existing CD, that possibility would at least be open to such States, and in that sense, it would have more legitimacy.

It would be desirable to encourage as broad a membership as possible to strengthen its normative impact. Further, the COP would determine its own rules of procedure and decision-making processes (for example, it could decide to follow the practices developed in the Ottawa Process for the Anti-Personnel Landmines Convention regarding the involvement of NGOs and other interested parties).⁶⁶

A careful study and comparative analysis should be undertaken of the different approaches taken in the existing framework treaties in order to evaluate those approaches in light of what would be the best option in the context of nuclear disarmament.

Substantive content of a framework treaty

There is no standard format for the scope or design of framework treaties and consequently there is significant variance in format and scope. The UNFCCC, for example, really only sets out principles and objectives to guide global climate policy and establishes institutions and processes for further treaty development.⁶⁷ In contrast, while the CCW itself is devoid of any substantive obligations, States are required to ratify at least two of the protocols to the treaty in order to be brought within the system.⁶⁸ Generally, in framework treaties, there is a separation between the adoption by the COP of a protocol and the process of that protocol becoming a binding obligation on any State Party. This can encourage States to participate in the framework treaty without pre-determining their precise legal obligations. That being said, in addition to negotiating protocols, COPs in other contexts have made recommendations that are considered by some to be “soft law”.⁶⁹

65 For an overview and discussion of the different possible forums, see the brief prepared for the Open Ended Working Group: UNIDIR, *The Treatment of the Issue of Nuclear Disarmament in the Relevant Forums Established by the United Nations*, OEWG Brief No. 1, 2013.

66 L. O. Gostin, above note 63, p. 390; George W. Downs, Kyle W. Danish and Peter N. Barsboom, “The Transformational Model of International Regime Design: Triumph of Hope or Experience?”, *Columbia Journal of Transnational Law*, Vol. 38, No. 1, 2000, p. 467.

67 UNFCCC, above note 56. Article 2 sets out the objective, which is the stabilization of greenhouse gas emissions; in Article 3 the States Parties agree to be guided by certain principles; Article 4 sets out commitments; and Article 7 establishes a COP.

68 UNFCCC, Art. 4.3.

69 Timothy Meyer, “From Contract to Legislation: The Logic of Modern International Lawmaking”, *Chicago Journal of International Law*, Vol. 14, No. 2, 2014, p. 572.

Relationship with other regimes

The question of linkage between existing treaty arrangements and a framework treaty would need to be considered carefully, and many of the same issues arise as with the comprehensive nuclear weapons convention pathway.⁷⁰ The starting point in this consideration is that a broadly stated framework treaty would simply reiterate the nuclear disarmament obligation of the NPT, thus duplicating (and complementing) the obligation to work towards effective measures towards nuclear disarmament.

The linkage between the CTBT and a framework treaty raises issues similar to those raised by the approaches already discussed above.

Fourth pathway: Other possibilities

WP.18 suggests that consideration should also be given to any combination of the first three pathways, as well as other pathways to “effective measures” for achieving and maintaining a world without nuclear weapons.⁷¹

No first use

Some commentators have raised the possibility of a “no first use” (NFU) treaty.⁷² While some States have articulated an NFU strategy in their nuclear doctrine, an NFU treaty would harden this policy into a binding legal obligation which could apply universally. In itself, this will not lead directly to nuclear disarmament, but it would be confidence-building and would strengthen the norm against nuclear weapons.⁷³

Another option to express the principle of no first use would be to provide a forum for States to make unilateral declarations that they will adhere to an NFU policy. These declarations could be made within any of the existing multilateral bodies (for example, the NPT Review Conference in 2015, the CD, or even at the UN itself), or indeed in any other way. Unilateral declarations, if made publicly and intended to produce obligations under international law, can be binding on States.⁷⁴

70 See the “First Pathway” section above.

71 WP.18, above note 2, Annex IV.

72 For a recent example, see Ramesh Thakur, “Australia Should Take the Lead on Global No-First-Use Convention”, Commentary, *Japan Times*, 18 August 2014. A “no first use” treaty or agreement is a system whereby the nuclear possessor State pledges not to be the first to resort to the use of nuclear weapons.

73 See the discussion by Scott Sagan on why the United States should adopt an NFU approach: Scott Sagan, “The Case for No First Use”, *Survival*, Vol. 51, No. 3, 2009.

74 See International Law Commission, *Guiding Principles Applicable to Unilateral Declarations of States Capable of Creating Legal Obligations*, 2006. See also the discussion on the legal effect of unilateral declarations by the ICJ, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Rwanda)*, Judgment, *ICJ Reports 2006*, paras 46–54, and cases cited therein. See also the negative security assurances the P5 have made, which are considered to be binding: Reaching Critical Will, “Negative Security Assurances”, Fact Sheet, available at: www.reachingcriticalwill.org.

Alternative modes of negotiations

Negotiations towards effective measures for nuclear disarmament must necessarily canvass a broad range of complex issues. Not only is each issue itself complicated, but the negotiations must also hold together States with differing security concerns and understandings. These complexities are not unique to nuclear weapons issues – many areas of international law face similar challenges. As such, consideration should be given to the different ways in which negotiations could be approached, rather than resorting to traditional treaty negotiation practices.

Inspiration might be found in the “closed chapter” practices of the European Union when considering new members, and which are also used in some trade negotiations.⁷⁵ Broadly speaking, this approach allows negotiation and agreement of “chapters” which are then “closed” and, although negotiated, do not take effect until such time as the entire agreement is in place.⁷⁶ In the specific context of nuclear disarmament, such an approach might allow negotiations on different issues to proceed (for example, agreement on fissile material) without taking effect until the next step is also agreed.

An immediate step that could be taken is to engage in discussions on possible alternative negotiating procedures.

Why does law matter?

Just as the humanitarian discourse is an important means of reframing the nuclear weapons debate, in my view there is also an important reframing movement to be established in opening up the discourse on Article VI to include discussions about the nature of the legal obligations on States party to the NPT, and the legal vehicles by which those obligations can be articulated. A great deal has been said on whether there is a legal obligation to pursue negotiations in good faith, and it is time to renew a serious discussion about how that might happen, what legal tools are available to us and the legal complexities raised by each option.

It is true that, ultimately, there will need to be political will in order to move forward towards nuclear disarmament. Legal arguments, by themselves, will have insufficient traction. That being said, there are important reasons why it is timely to start a proper legal discussion.

The first reason is entirely pragmatic, and that is to ensure that any political agreement which might be forthcoming is legally workable. Regardless of the pathway chosen, the actual implementation and verification of nuclear disarmament will be immensely complicated from a legal point of view. Some issues raised in this paper illustrate that point, including the formulation of

75 For example, in the current negotiations for the Trans Pacific Partnership. For an overview, see Deborah Kay Elms, “The Trans-Pacific Partnership Trade Negotiations: Some Outstanding Issues for the Final Stretch”, *Asian Journal of WTO and International Health Law and Policy*, Vol. 8, No. 2, 2014, p. 379.

76 See discussion above.

dispute resolution mechanisms, how to craft provisions for dealing with potential regime overlap, and even the structure of treaty regimes. There is a great deal of experience already to draw on, however, and one of the aims of this paper has been to identify some of that experience so that it can be explored further. Detailed legal analysis now can ensure that political will can be expressed in a legally workable way.

The second reason why it is timely to start the legal discussion is more conceptual. In this author’s view, to argue that law has no place in the discussion prior to political agreement being reached is to misunderstand the dynamic and complex relationship between law and politics, or to put it another way, between law and society. As legal sociology tells us,⁷⁷ as well as the constructivist school of international relations,⁷⁸ law does not simply reflect our societies and their values – it shapes and reshapes them. Insisting on political agreement being reached prior to engaging in a legal discussion is to discount the social impact of law. It has long been accepted that there is a complex relationship between law and society in the context of domestic law,⁷⁹ and it must surely be accepted that a similar dynamic exists within the international community.

Conclusion

The ongoing failure to make any meaningful progress on nuclear disarmament is not only a breach of Article VI of the NPT, but also undermines the Treaty’s objectives and purpose regarding non-proliferation by keeping the threat of nuclear weapons as an ever-present reality. The obligation under Article VI to pursue effective measures towards nuclear disarmament is an obligation that applies to all States party to the NPT, not just those States possessing nuclear weapons.

There is no legal impediment to exploring the pathways discussed in this paper, even without input from the nuclear possessor States. The difficulties are political, not legal.

All of the options discussed in this paper offer a means to strengthen the norm against the use, and eventually possession, of nuclear weapons. While this is insufficient in and of itself to fully satisfy the terms of Article VI, it is an important step in the right direction. A hardening of the norm against nuclear weapons would contribute to the growing impetus towards nuclear disarmament.⁸⁰

77 See for example, Moshe Hirsch, “The Sociology of International Law: Invitation to Study International Rules in their Social Context”, *University of Toronto Law Journal*, Vol. 55, No. 5, 2005. The leading legal sociology scholar was, of course, the great US jurist, Roscoe Pound.

78 Jutta Brunnée and Stephen J. Toope, “International Law and Constructivism: Elements of an Interactional Theory of International Law”, *Columbia Journal of Transnational Law*, Vol. 39, 2000–2001.

79 Consider the evolution of society’s thinking on issues such as domestic violence, alcohol and driving, homosexuality and, even now, physical disciplining of children.

80 And see R. Acheson, T. Nash and R. Moyes, above note 42, Chapter 3.

The human costs and legal consequences of nuclear weapons under international humanitarian law

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Abstract

The potential use of nuclear weapons has long been a global concern. This article highlights the principal rules of international humanitarian law (IHL) governing the conduct of hostilities applicable to nuclear weapons, and the issues and concerns that would arise were such weapons ever to be used again, in particular the severe and extensive consequences for civilians, civilian objects, combatants and the environment.

In recent years, increased attention has been paid to the humanitarian consequences of nuclear weapons. Based on what has been learned from extensive research on the humanitarian and environmental effects of nuclear weapons since they were first used in 1945, and the accompanying implications for IHL, it seems appropriate to conclude that the use of nuclear weapons in or near a populated area would amount to an indiscriminate attack and that there should also be a presumption of illegality with regard to the use of nuclear weapons outside such areas.

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Keywords: nuclear weapons, international humanitarian law, deterrence, disarmament, humanitarian consequences.

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The use of nuclear weapons and IHL: Worth a further look

Much has been written about the compatibility of nuclear weapons with international humanitarian law (IHL), and it might be easy to conclude that nothing new can be said on the subject. However, recent developments have brought renewed attention to this issue. In 2010, the States party to the Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT) expressed their “deep concern at the catastrophic humanitarian consequences of any use of nuclear weapons” and reaffirmed “the need for all States at all times to comply with applicable international law, including international humanitarian law”.¹ This marked the first time that the NPT States Parties had collectively acknowledged the relevance of IHL for nuclear weapons. In addition, recent international conferences have shed further light on the effects of nuclear weapons in humanitarian terms and the risks associated with their intentional or accidental detonation. The findings presented at these conferences have highlighted the catastrophic humanitarian consequences of the use of nuclear weapons and have led the president of the International Committee of the Red Cross (ICRC), Peter Maurer, to call for “a reassessment of nuclear weapons by all States in both legal and policy terms”.²

This article will highlight the principal rules of IHL applicable to nuclear weapons and the issues and concerns that would arise were such weapons ever to be used again. Any analysis in this area must begin with the observation that IHL does not expressly prohibit the use of nuclear weapons. This contrasts with several other categories of arms about which there are serious concerns in humanitarian terms, and whose use is prohibited by specific IHL rules and instruments.³

That said, IHL does contain a range of general rules regulating the conduct of hostilities which are customary in nature and apply to all weapons used in armed conflict. Of particular relevance are (a) the rule of distinction; (b) the prohibition on indiscriminate attacks; (c) the prohibition on disproportionate attacks; (d) the prohibition on area bombardment; (e) the obligation to take precautions in attack; (f) the prohibition on using weapons of a nature to cause superfluous

1 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Vol. 1, UN Doc. NPT/CONF.2010/50, 2010, p. 19.

2 Peter Maurer, “Nuclear Weapons: Ending a Threat to Humanity”, speech to the Geneva Diplomatic Corps, 15 February 2015, available in the “Reports and Documents” section of this issue of the *Review*.

3 These include expanding bullets, exploding bullets weighing less than 400 grams, chemical and biological weapons, munitions that have fragments not detectable by X-ray, blinding laser weapons, anti-personnel mines and cluster munitions.

injury or unnecessary suffering; and (g) the rules on the protection of the natural environment. Also relevant are the rules and limitations on belligerent reprisals. The issues to which the use of nuclear weapons would give rise under each of these rules will be discussed below.

In this discussion, it would be remiss not to take account of the International Court of Justice's (ICJ) 1996 Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons* (Nuclear Weapons Advisory Opinion).⁴ In this decision, issued twenty years ago, the ICJ recognized the "unique characteristics" of nuclear weapons, which "render the nuclear weapon potentially catastrophic".⁵ It also highlighted that "[t]he destructive power of nuclear weapons cannot be contained in either space or time".⁶ In light of these and other observations, the Court concluded that the use of nuclear weapons would "generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law".⁷ However, the Court could not conclude definitively that the use of nuclear weapons would be unlawful in all circumstances. It left open the question of whether they may be lawful in "an extreme circumstance of self-defence in which the very survival of a State would be at stake".⁸

This conclusion was controversial, not least amongst the members of the ICJ themselves: the Court's decision was adopted only on the casting vote of the ICJ president, and each of the fourteen judges felt the need to append a Declaration, Separate Opinion or Dissenting Opinion. As many capable scholars have considered the Nuclear Weapons Advisory Opinion in detail, this article will not do so.⁹ Nevertheless, and despite the passage of time, a number of the Court's observations remain relevant. As a result, the article will occasionally draw on the Advisory Opinion and the pleadings of States made during the case in the course of the discussion.

The humanitarian concern: The catastrophic consequences of nuclear weapons

Before examining the use of nuclear weapons under the rules of IHL, it is necessary to provide a brief outline of their effects. As noted above, the ICJ found nuclear

4 ICJ, *The Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996*, 8 July 1996 (Nuclear Weapons Advisory Opinion).

5 *Ibid.*, para. 35.

6 *Ibid.*

7 *Ibid.*, para. 105(2E).

8 *Ibid.*

9 See, for example, articles contained in the thematic issue of the *International Review of the Red Cross* on "Nuclear Weapons: The Advisory Opinion of the International Court of Justice on the Legality of Nuclear Weapons under International Humanitarian Law", Vol. 79, No. 823, 1997; Daniel Thurer, "The Legality of the Threat or Use of Nuclear Weapons: The ICJ Advisory Opinion Reconsidered", in *Volkerrecht und die Dynamik der Menschenrechte: Liber Amicorum Wolfram Karl*, Wien, 2012; Shabtai Rosenne, "The Nuclear Weapons Advisory Opinion of 8 July 1996", *Israel Yearbook on Human Rights*, Vol. 27, 1997.

weapons to be unique in that they release a combination of immensely powerful forces, namely powerful blast waves, intense heat in the form of thermal radiation, and high amounts of ionized radiation. Their detonation also creates residual radioactive particles (so-called nuclear fallout) with the potential to spread over great distances.¹⁰ These features give nuclear weapons the capacity for incredible destructive power and severe and widespread consequences for human health, civilian structures and the environment.

Studies have shown that the detonation of a nuclear weapon would cause widespread death, injury and damage, especially if it occurred in or near a populated area.¹¹ There would be extensive casualties from severe burns and blunt force trauma which would occur in the moments after the detonation, as a result of blast effects and the release of thermal radiation. As these effects cause fuel and flammable substances to explode or burn, fires and firestorms are also likely to develop, creating large numbers of additional casualties.¹² Furthermore, many of those who survive the heat and blast effects will later fall victim to radiation sickness, which may not manifest itself until days or weeks after the explosion.¹³ Radioactive fallout could be carried considerable distances downwind to other countries or territories; as a result, people outside the immediate area of the blast would face an increased risk of developing certain cancers, such as leukaemia and thyroid cancer, which may only manifest themselves decades later.¹⁴ Information recently published by the International Committee of the Red Cross (ICRC) and the Japanese Red Cross Society indicates that today, some seventy years after the dropping of the atomic bombs on Hiroshima and Nagasaki, the Japanese Red Cross hospitals in those cities treat several thousand victims each year for cancers and illnesses attributable to the 1945 atomic bombings of those cities.¹⁵ The health of children born to survivors in the years following their direct exposure to the blasts is also being monitored. If it is found that exposure to radiation damaged the genes of their parents, as it has done in animal studies, hereditary transmission of radiation effects will be another long-term concern and there may be another generation of victims requiring long-term treatment.¹⁶

10 United Nations (UN) Department of Disarmament Affairs, *Comprehensive Study on Nuclear Weapons*, Report of the Secretary General, UN Doc. A/45/373, 1991, pp. 71–73.

11 *Ibid.*, pp. 76–80; British Medical Association, *The Medical Effects of Nuclear War*, John Wiley and Sons, Chichester, 1983, pp. 45–56 (looking at estimations of casualties of a nuclear attack on the United Kingdom); Frederic Solomon and Robert Q. Martson (eds), *The Medical Implications of Nuclear War*, National Academy Press, Washington D.C. 1986.

12 UN Department of Disarmament Affairs, above note 10, p. 82.

13 *Ibid.*, pp. 82–84.

14 The extent of radiation illness from fallout will depend on a variety of factors. These include where the detonation occurred (high in the air or close to the ground), the yield of the weapon, local wind patterns and weather conditions, and whether individuals in the area of fallout are able to remain sheltered, especially during the initial days following the explosion, when radioactivity would be most intense.

15 ICRC and Japanese Red Cross Society, “Long-Term Health Consequences of Nuclear Weapons: 70 Years On, Red Cross Hospitals Still Treat Thousands of Atomic Bomb Survivors”, Information Note No. 5, July 2015.

16 *Ibid.*

To compound the situation, assessments undertaken by the ICRC have highlighted that there is a lack of capacity in most countries and at the international level to adequately respond to a nuclear detonation, and to provide assistance that would benefit a substantial portion of survivors in the aftermath.¹⁷ The ICRC has estimated that loss of life and the medical needs of the wounded and sick are likely to be enormous, with an overwhelming number of people in need of immediate treatment for severe and life-threatening wounds.¹⁸ Yet such treatment or assistance is unlikely to be available in the short term, as most local medical personnel would be dead or wounded and most local medical facilities would be destroyed or unable to function. Access to the area is likely to be severely hindered by debris and damage to infrastructure, and the operations of assistance providers are likely to be restricted due to concerns about the health risks of exposure to ionizing radiation.¹⁹ A 2014 study by the United Nations Institute for Disarmament Research (UNIDIR) raised similar concerns and highlighted the lack of planning and capacity on the part of the United Nations system to respond to such situations.²⁰

Studies have also highlighted the impact of a nuclear detonation on the environment, and in particular the effects on the atmosphere and the climate, with potentially serious consequences for humans, plants and wildlife.²¹ They have detailed the possibility that even a limited nuclear exchange could result in reduced sunlight and rainfall, and cause depletion of the ozone layer. Such consequences, it has been argued, would affect farming and food production, causing famine in many parts of the world and putting many millions of people – potentially a billion – at risk of starvation.²²

17 Gregor Malich, then Head of ICRC NRBC Operational Response Unit, “Challenges in Responding to the Use of Nuclear Weapons”, presentation made to the Conference on the Humanitarian Impact of Nuclear Weapons, Oslo, 4–5 March 2013, available at: www.regjeringen.no/globalassets/upload/ud/vedlegg/hum/hum_malich.pdf (all internet references were accessed in December 2015). See also Robin Coupland and Dominique Loye, “Who Will Assist the Victims of Use of Nuclear, Radiological, Biological or Chemical Weapons – and How?”, *International Review of the Red Cross*, Vol. 89, No. 866, 2007, pp. 329–344; Robin Coupland and Dominique Loye, “International Assistance for Victims of Use of Nuclear, Radiological, Biological or Chemical Weapons: Time for a Reality Check?”, *International Review of the Red Cross*, Vol. 91, No. 874, 2009, pp. 329–340; Gregor Malich, Robin Coupland and Johnny Nehme, “Chemical, Biological, Radiological or Nuclear Events: The Humanitarian Response Framework of the International Committee of the Red Cross”, in this issue of the *Review*.

18 G. Malich, above note 17.

19 R. Coupland and D. Loye, “Who Will Assist the Victims ...?”, above note 17, p. 335. Depending on the levels of radiation, protective measures may have to be implemented which could include maintaining safe distances from contaminated areas, limiting the number of aid workers and time spent in such areas, and avoiding direct contact with contaminated matter.

20 John Borrie and Tim Caughley, *An Illusion of Safety: Challenges of Nuclear Weapon Detonations for the United Nations Humanitarian Coordination and Response*, UN, Geneva, 2014.

21 See Mark A. Harwell and Thomas C. Hutchinson, *Environmental Consequences of Nuclear War*, Vol. 2: *Ecological and Agricultural Effects*, 2nd ed., Wiley, New York, 1989; Owen B. Toon, Alan Robock and Richard Turco, “Environmental Consequences of Nuclear War”, *Physics Today*, December 2008; Committee on the Atmospheric Effects of Nuclear Explosions, *The Effects on the Atmosphere of a Major Nuclear Exchange*, National Academy Press, Washington, DC, 1985.

22 Ira Helfand, *Nuclear Famine: A Billion People at Risk*, Physicians for the Prevention of Nuclear War and Physicians for Social Responsibility, International Press, Somerville, MA, 2012.

Although much of this information was available and discussed during the Cold War, it received renewed attention at three international conferences on the humanitarian impact of nuclear weapons held in 2013 and 2014. These meetings, which took place in Oslo (Norway), Nayarit (Mexico) and Vienna (Austria), were the first multilateral gatherings devoted to discussing the consequences of nuclear weapons solely in humanitarian terms, and reaffirmed many of the existing concerns about the use of nuclear weapons. Although more fully discussed in other articles in this edition of the *Review*, the main conclusions drawn from these conferences include the following:²³

- The use of nuclear weapons, even on a limited scale, could have severe and potentially long-lasting consequences for human health and well-being, the environment, the climate, food production and socioeconomic development.
- The health effects can last for decades and even impact the children of survivors through genetic damage to their parents.
- There is no effective or feasible means of assisting a substantial portion of survivors in the immediate aftermath of a nuclear detonation, while adequately protecting those delivering assistance in most countries or at the international level.
- Accidental nuclear weapon detonations remain a very real danger. Malfunctions, mishaps, false alarms and misinterpreted information have nearly led to the intentional or accidental detonation of nuclear weapons on numerous occasions since 1945.²⁴
- These effects of a nuclear detonation, irrespective of the cause, would not be constrained by national borders and could have regional and even global consequences.²⁵

These findings reinforce the earlier research on the issue, as well as the conclusions of the ICJ about the features that make nuclear weapons unique and “potentially catastrophic”. They also play a central role in evaluating nuclear weapons under IHL.

23 Select conclusions drawn from the Chair’s Summaries of each conference. See Conference on the Humanitarian Impact of Nuclear Weapons, Oslo, 3–5 March 2013, Chair’s Summary, available at: www.regjeringen.no/en/aktuelt/nuclear_summary/id716343/; Second Conference on the Humanitarian Impact of Nuclear Weapons, Nayarit, 13–14 February 2014, Chair’s Summary, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/nayarit-2014/chairs-summary.pdf; Vienna Conference on the Humanitarian Impact of Nuclear Weapons, Vienna, 8–9 December 2014, Report and Summary Findings of the Conference, available at: <http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/vienna-2014/ChairSummary.pdf>. See also Alexander Kmentt, “The Development of the International Initiative on the Humanitarian Impact of Nuclear Weapons and Its Effect on the Nuclear Weapons Debate”, in this issue of the *Review*.

24 See also Eric Schlosser, *Command and Control: Nuclear Weapons, the Damascus Accident and the Illusion of Safety*, Penguin Press, New York, 2013; Patricia Lewis, Heather Williams, Benoit Pelopidas and Sasan Aghlani, *Too Close for Comfort: Cases of Near Nuclear Use and Options for Policy*, Chatham House, London, 2014.

25 In this regard, the use of nuclear weapons can also raise issues under the law of neutrality, the customary rules of which would be applicable. See Nuclear Weapons Advisory Opinion, above note 4, paras 88–90.

Assessing the use of nuclear weapons through the lens of IHL

As mentioned above, IHL does not explicitly prohibit the use of nuclear weapons. However, IHL does contain general rules that apply to the use of weapons during armed conflict. For the most part, these are rules of customary international law applicable in both international and non-international armed conflicts, and as such are binding on all States and parties involved in the fighting. Many of these rules have also found expression as treaty law in the first Additional Protocol to the Geneva Conventions of 1977 (AP I).²⁶

The customary status of these rules is important because, upon ratifying AP I, France, the United Kingdom and several other States – mainly NATO members – submitted declarations or reservations to the effect that the new rules introduced in AP I were understood to apply only to conventional arms; thus, they were not intended to regulate or prohibit nuclear weapons.²⁷ This view was also expressed in a number of written submissions to the ICJ in relation to its Nuclear Weapons Advisory Opinion.²⁸ Although the Court did not substantively address the issue of AP I's application to nuclear weapons, it confirmed that all States are bound by the pre-existing customary rules of IHL to which AP I merely gave expression.²⁹

As customary law, such rules would govern the use of nuclear weapons by any State in an international armed conflict. Similarly, customary law would govern the use of nuclear weapons by any State or – should it acquire them – non-State armed group in the context of a non-international armed conflict.

Since the adoption of AP I and the Nuclear Weapons Advisory Opinion, the practice of nuclear-armed States has confirmed that general IHL principles and rules on the conduct of hostilities are relevant to the use of nuclear weapons. The 2013 US secretary of defence's report on the nuclear employment strategy of the United States specifies:

The new guidance makes clear that all plans must also be consistent with the fundamental principles of the Law of Armed Conflict. Accordingly, plans will, for example, apply the principles of distinction and proportionality and seek to minimize collateral damage to civilian populations and civilian objects. The United States will not intentionally target civilian populations or civilian objects.³⁰

26 Protocol Additional (I) to the Geneva Conventions of 12 August 1949 and relating to the Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I).

27 These include Belgium, Canada, Germany, Italy, the Netherlands and Spain. The declarations of these countries can be found on the ICRC's IHL database, available at: www.icrc.org/applic/ihl/ihl.nsf/vwTreatiesByCountry.xsp.

28 See, for example, the written statements of the Netherlands, the Solomon Islands, the United Kingdom and the United States.

29 Nuclear Weapons Advisory Opinion, above note 4, para. 84; Stefan Oeter, "Means and Methods of Combat", in Dieter Fleck (ed.), *The Handbook of Humanitarian Law in Armed Conflicts*, 3rd ed. Oxford University Press, Oxford, 2013, pp. 158–160; Yves Sandoz, Christophe Swinarski and Bruno Zimmermann (eds), *Commentary on the Additional Protocols*, ICRC, Geneva, 1987 (ICRC Commentary), para. 1852.

30 US Secretary of Defence, Nuclear Employment Strategy of the United States specified in Section 491 of 10 USC, June 2013, pp. 4–5.

Similarly, the UK *Joint Service Manual* of 2004 states that “[t]he legality of their [nuclear weapons] use depends upon the application of the general rules of international law, including those regulating the use of force and the conduct of hostilities”.³¹ Despite the UK declaration made when ratifying AP I, the *Joint Service Manual* goes on to identify a range of IHL rules on the conduct of hostilities whose application to nuclear weapons is not explicitly excluded.³² For the most part, these rules follow or use wording similar to the relevant rules of AP I.³³ This contrasts with the *Manual’s* rules for the protection of the environment, which the *Manual* clearly indicates “do not have any effect on and do not regulate or prohibit the use of nuclear weapons”.³⁴

The ICRC study *Customary International Humanitarian Law* (ICRC Customary Law Study) offers, to date, the most comprehensive overview of customary IHL rules, including rules on the conduct of hostilities.³⁵ Although the study did not propose a specific rule on nuclear weapons, it is an appropriate source for the general customary rules on the conduct of hostilities applicable to the use of nuclear weapons.³⁶

The rule of distinction

The rule of distinction is a fundamental tenet of IHL and is the foundation on which other IHL requirements regulating the conduct of hostilities are built. It is, in the words of the ICJ, a cardinal principle of IHL.³⁷ This rule requires the parties to an armed conflict to distinguish at all times between civilians and combatants and between military objectives and civilian objects.³⁸ Attacks may only be directed against combatants or military objectives. All members of the armed forces of a party to the conflict, except medical personnel and chaplains, are combatants.³⁹ Military objectives are those “objects which by their nature, location, purpose or use make an effective contribution to military action and whose partial or total destruction, capture or neutralization in the circumstances ruling at the time, offers a definite military advantage”.⁴⁰

It follows from this rule that, in areas where civilians and civilian objects are mixed with combatants and military objectives, the attacking party must do

31 UK Ministry of Defence, *Joint Service Manual of the Law of Armed Conflict*, Joint Service Publication No. 383, 2004, p. 117 n. 82, which directs the reader to Chapter 5 of the *Manual* on the conduct of hostilities.

32 *Ibid.*, Chapter 5.

33 *Ibid.* See for example, Chapter 5.23, p. 68, and Section D on precautions in attack, p. 81.

34 *Ibid.*, Chapter 5.29.3, p. 76.

35 See Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law, Vol. 1: Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study).

36 In particular, the rules for the protection of the civilian population. For a discussion on the customary status of the rules for the protection of the natural environment, whose customary status has been objected to by some States, see below.

37 Nuclear Weapons Advisory Opinion, above note 4, para. 78.

38 ICRC Customary Law Study, above note 35, Rule 1, p. 3, and Rule 7, p. 25; AP I, above note 26, Art. 48.

39 ICRC Customary Law Study, above note 35, Rule 3, p. 11; AP I, above note 26, Art. 43.

40 ICRC Customary Law Study, above note 35, Rule 9, p. 29; AP I, above note 26, Art. 52(1).

everything feasible to verify that targets are military objectives,⁴¹ and must not launch attacks using means and methods of warfare that are of a nature to strike military objectives and civilians or civilian objects without distinction. Likewise, it cannot treat as a single military objective a number of clearly separated and distinct military objectives located in a city, town, village or other area with a similar concentration of civilians. Such attacks are classified as indiscriminate, and are discussed below in more detail.

In accordance with the rule of distinction, the use of a nuclear weapon must be directed at a specific military objective. Such a requirement has clear implications for any use, whether employed in offence or defence. Recently released target lists prepared during the Cold War show that nuclear weapons were often envisioned for use against population centres,⁴² and writers on this issue continue to include or perceive this as part of possible use today.⁴³ With the potential exception of employing a nuclear weapon in the context of a belligerent reprisal (discussed below in more detail), directing a nuclear weapon against a city, village or other grouping of civilians or civilian objects would contravene the rule of distinction.⁴⁴

The prohibition on indiscriminate attacks

As mentioned above, attacks of a nature to strike military objectives and civilians or civilian objects without distinction are “indiscriminate” attacks and are prohibited. IHL identifies several kinds of attacks as indiscriminate.⁴⁵ These include those:

- that are not directed at a specific military objective;
- that employ a method or means of combat which cannot be directed at a specific military objective; or
- that employ methods or means of combat the effects of which cannot be limited as required by IHL;

and consequently, in each such case, that are of a nature to strike military objectives and civilians or civilian objects without distinction.⁴⁶ Disproportionate attacks and

41 See ICRC Customary Law Study, above note 35, Rule 16, p. 55; AP I, above note 26, Art. 57(2)(a)(i).

42 Scott Shane, “1950’s U.S. Nuclear Target List Offers Chilling Insight”, *The New York Times*, 22 December 2015. The full archive of declassified US Cold War target lists can be accessed at: <https://nsarchive.gwu.edu/nukevault/ebb538-Cold-War-Nuclear-Target-List-Declassified-First-Ever/>.

43 Jonah Friedman, “Countervalue v. Counterforce”, *Center for Strategic and International Studies blog*, 2 June 2011, on file with authors; Thérèse Delpech, *Nuclear Deterrence in the 21st Century: Lessons from the Cold War for a New Era of Strategic Piracy*, Rand Corporation, Santa Monica, CA, 2012, pp. 35–37; Farah Zhara, “Pakistan’s Road to a Minimum Nuclear Deterrent”, *Arms Control Today*, 1 July 1999, available at: www.armscontrol.org/print/516.

44 See also S. Oeter, above note 29, p. 146: “On an abstract level one can only state that a strategy of ‘massive retaliation’ – at least in the form of a threat of first strike or of escalation – is probably not compatible with the general principles of distinction and the prohibition of indiscriminate warfare. A retaliatory operation against a population centre would only be permissible if it constituted a preemptive strike qualifying as a military reprisal.”

45 ICRC Customary Law Study, above note 35, Rule 12, pp. 40–41; AP I, above note 26, Art. 51(4).

46 ICRC Customary Law Study, above note 35, Rule 12, pp. 40–41; AP I, above note 26, Art. 51(4).

attacks undertaken by “area bombardment” are also classified as indiscriminate attacks under IHL, and are discussed below.

The first prong of the rule on indiscriminate attacks prohibits attacks which are not directed at a specific military objective. This covers situations where no effort is made in the course of the attack to discriminate as required by the rule of distinction. Firing or targeting blindly is forbidden. The attacker should at the very least have precise and recent information as to the nature and location of the specific objective to be targeted to ensure that it is a military objective.⁴⁷

The second and third prongs of the rule focus specifically on the means and methods of warfare used, and are therefore most relevant for assessing the compatibility of nuclear weapons with the prohibition on indiscriminate attacks. With regard to means of warfare, those that can in no circumstances be directed at a specific military objective, or that produce effects which cannot be limited by IHL, may be considered under customary IHL as weapons that are indiscriminate by nature, the use of which would inevitably constitute an indiscriminate attack.⁴⁸ This will be the main focus of analysis for this section.

Are nuclear weapons indiscriminate by nature? The first question to be addressed is whether nuclear weapons can be “directed at a specific military objective” as required by the second prong of the rule. In short, is there any feature in their design or construction that would render such weapons incapable of being properly targeted? Before the ICJ, both the United States and the United Kingdom argued that modern nuclear weapons can be targeted with sufficient precision to satisfy this requirement.⁴⁹ Today, commentators appear to accept this conclusion as nuclear weapons typically incorporate precision guidance features or are delivered much like traditional gravity bombs; thus, there is a reasonable expectation that the weapons can be directed to the intended target.⁵⁰

The second – and central – question in considering whether nuclear weapons are indiscriminate by nature, and one which applies irrespective of whether the nuclear weapons are precision-guided or not, is whether they

47 ICRC Commentary, above note 29, para. 1952, p. 620.

48 ICRC Customary Law Study, above note 35, Rule 71, p. 247. See also Stuart Casey-Maslen, “The Use of Nuclear Weapons under Rules Governing the Conduct of Hostilities”, in Gro Nystuen, Stuart Casey-Maslen and Annie Golden Bersagel (eds), *Nuclear Weapons under International Law*, Cambridge University Press, Cambridge, 2014, pp. 97–103.

49 Letter dated 20 June 1995 from the Acting Legal Adviser to the Department of State, together with the Written Statement of the Government of the United States of America, p. 23, available at: www.icj-cij.org/docket/files/95/8700.pdf; letter dated 16 June 1995 from the Legal Adviser to the Foreign and Commonwealth Office of the United Kingdom of Great Britain and Northern Ireland, together with Written Comments of the United Kingdom, p. 52, available at: www.icj-cij.org/docket/files/95/8802.pdf. In its written statement, the United States argued that “[s]ince nuclear weapons can be directed at a military objective, they can be used in a discriminate manner and are not inherently indiscriminate”: letter dated 20 June 1995, *ibid.*, p. 23. The United Kingdom similarly asserted that “[m]odern nuclear weapons are capable of far more precise targeting and can therefore be directed against specific military objectives”. Letter dated 16 June 1995, *ibid.*, p. 52.

50 See, e.g., Robert Chatham, “Tactical Nuclear Weapons”, *The Reporter*, Vol. 37, No. 2, 2010, p. 44 (noting that “[n]uclear weapons, particularly battlefield tactical devices, can be directed at specifically military targets”); S. Casey-Maslen, above note 48, p. 111 (describing this proposition as “relatively uncontroversial” in light of the accuracy of modern delivery mechanisms).

produce effects that cannot be “controlled or limited” as required by IHL (the third prong of the rule on indiscriminate attacks). These terms are not specifically defined in IHL, but several military documents employ the phrase “uncontrollable effects” when speaking about indiscriminate weapons. In a 1976 pamphlet on the conduct of armed conflict and air operations, the US Air Force highlighted that the term “uncontrollable” “refers to effects which escape in time or space from the control of the user as to necessarily create risks to civilian persons or objects excessive in relation to the military advantage anticipated”.⁵¹ The South Africa National Defence Force has also highlighted that “[w]eapons which are likely to ... affect both civilians and combatants, without distinction, and whose harmful effects go beyond control, in time or place, are illegal *per se*”.⁵² The ICJ also made observations pointing in this direction when it concluded that “[t]he destructive power of nuclear weapons cannot be contained in either space or time”, although it did not define those terms.⁵³ Nevertheless, these references imply that compliance requires geographical and temporal limits on the effects of the weapon, and precludes too great an element of unpredictability.

It should be noted that the application of this rule to specific weapons is somewhat difficult to assess in practice. The one type of weapon widely agreed as having uncontrollable effects is biological weapons. A variety of other weapons are also perceived as indiscriminate by nature, but State practice rarely specifies whether this is because they cannot be properly targeted, because their effects are uncontrollable, or both.⁵⁴

A primary issue here is whether the forces released by a nuclear weapon, and the effects of those forces, can be sufficiently limited to the specific military objective targeted such that the discrimination required by the rule of distinction can be made and the respect and protection provided by IHL assured.⁵⁵

Perhaps the most significant concern is the spread of radioactive fallout, which has been identified as “the most fundamental difference between nuclear

51 US Department of the Air Force, *International Law: The Conduct of Armed Conflict and Air Operations*, US Air Force Pamphlet No. 110-31, 1976, ss. 6-3(c) (although this pamphlet indicates that it does not necessarily reflect official US government policy).

52 South Africa National Defence Force, *Revised Civic Education Manual*, 2004, Chapter 4, ss. 56(f).

53 Nuclear Weapons Advisory Opinion, above note 4, para. 35: “[The Court] also notes that nuclear weapons are explosive devices whose energy results from the fusion or fission of the atom. By its very nature, that process, in nuclear weapons as they exist today, releases not only immense quantities of heat and energy, but also powerful and prolonged radiation. According to the material before the Court, the first two causes of damage are vastly more powerful than the damage caused by other weapons, while the phenomenon of radiation is said to be peculiar to nuclear weapons. These characteristics render the nuclear weapon potentially catastrophic. The destructive power of nuclear weapons cannot be contained in either space or time. They have the potential to destroy all civilization and the entire ecosystem of the planet.”

54 The ICRC Customary Law Study, above note 35, cites States as identifying the following weapons as being potentially indiscriminate: chemical, biological and nuclear weapons; anti-personnel landmines; mines; poison; explosives discharged from balloons; V-1 and V-2 rockets; cluster bombs; booby traps; Scud missiles and Katyusha rockets; incendiary weapons; and environmental modification techniques.

55 This includes the respect and protection outlined in the rule of distinction as well as the general principle outlined in AP I, Art. 51(1), that “[t]he civilian population and individual civilians shall enjoy general protection against dangers arising from military operations.”

and conventional weapons”.⁵⁶ The severity and spread of radioactive particles will depend on the yield of the weapon and where it is detonated (ground burst, air burst or underwater), as well as a range of geographic, climatic and meteorological factors. These latter elements are generally beyond the control of the parties to the conflict, making the spread of radiation nearly impossible to constrain. Thus, the short- and long-term health effects of nuclear weapons could cross international borders, impacting neighbouring States and many more people than those in the area initially affected by the blast. The scale and dispersion of such radiation has been highlighted in a number of studies. One recent presentation highlighted that the ground-burst detonation of a 200-kiloton bomb would spread and potentially impact the health of civilians over hundreds of kilometres.⁵⁷ In another study, it was found that 75% of the 100,000 estimated casualties from the detonation of a 10-kiloton earth-penetrating nuclear weapon would be caused by nuclear fallout.⁵⁸ As indicated above, the impact of radiation on human health can be long-term, with illness and cancers occurring years or even decades after exposure.

Such effects raise serious concerns in light of the inherent difficulties in controlling or limiting them in space and in time. These consequences would arguably qualify nuclear weapons as weapons that are indiscriminate by nature, the use of which cannot be reconciled with the prohibition on indiscriminate attacks.

Even if, for the sake of argument, nuclear weapons were not to be considered indiscriminate by nature, they can still offend the prohibition on indiscriminate attacks as a result of the circumstances in which they are used. The prohibition on indiscriminate attacks takes into account the fact that means and methods of warfare which can be used legitimately in some situations could, in other circumstances, be of a nature to strike military objectives and civilians and civilian objects without distinction. In light of the blast, thermal and radiation effects and the areas over which these effects are spread, nuclear weapons may still contravene this rule, certainly when used in populated areas.

56 Nuclear Weapons Advisory Opinion, above note 4, para. 35.

57 Matthew McKinzie, Erwin Polriech, Dèlia Arnold, Christian Maurer and Gerhard Wotawa, “Calculating the Effects of a Nuclear Explosion at a European Military Base”, presentation made to the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8 December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abbruestung/HINW14/Presentations/HINW14_S1_Presentation_NRDC_ZAMG.pdf. Also see the article by Hans M. Kristensen and Matthew McKinzie in this issue of the *Review*.

58 National Research Council Committee on the Effects of Nuclear Earth-Penetrator and Other Weapons, *Effects of Nuclear Earth-Penetrator and Other Weapons*, National Academies Press, Washington, DC, 2005, pp. 75–80. See also Victor W. Sidel, H. Jack Geiger, Herbert L. Abrams, Robert W. Nelson and John Loretz, *The Threat of Low-Yield Earth-Penetrating Nuclear Weapons to Civilian Populations: Nuclear “Bunker Busters” and Their Medical Consequences*, International Physicians for the Prevention of Nuclear War, 2003; Robert W. Nelson, “Low-Yield Earth Penetrating Nuclear Weapons”, *Science and Global Security*, Vol. 10, 2002 (citing examples of very low-yield (>1kt) bunker-busting bombs spreading fatal doses of radiation to tens of thousands of people if detonated in or near a populated area).

The prohibition on disproportionate attacks

The prohibition on disproportionate attacks, also known as the rule of proportionality, prohibits attacks that may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects or a combination of these that would be excessive in relation to the concrete and direct military advantage anticipated.⁵⁹ As mentioned above, attacks violating this rule are considered a particular form of indiscriminate attack. It is worth noting that this rule regulates attacks directed against military objectives and will involve an assessment, undertaken before the decision to launch an attack, of the military advantage expected from the operation and the expected incidental civilian harm. The relevant advantage must be military, concrete and direct, and must not be remote, long-term or hypothetical.⁶⁰

The incidental harm and damage that must be factored in when making the excessiveness assessment includes, in the first instance, immediate effects such as direct civilian casualties and damage to civilian objects. In addition, it is generally accepted that the assessment must consider the attack's "reverberating" effects – that is, the indirect second- and third-tier consequences – when these are foreseeable.⁶¹ This is drawn from the wording of the rule of proportionality ("may be expected to cause incidental loss") and the general principle of IHL whereby civilians "enjoy general protection against the dangers arising from military operations".⁶²

As indicated above, the use of a nuclear weapon will have extensive immediate and long-term consequences, especially if used against military objectives located in or near populated areas. One recent study examined the impact of the air-burst detonation of a 20-kiloton nuclear weapon over a European capital city.⁶³ While the effects can be influenced by a number of factors, it was estimated that the blast radius of a weapon would extend more than 5 kilometres from the epicentre of the explosion and that thermal heat would be distributed across some 4.5 kilometres, with tens of thousands of people

59 ICRC Customary Law Study, above note 35, Rule 14, p. 46; AP I, above note 26, Art. 51(5)(b).

60 ICRC Commentary, above note 29, para. 2209.

61 See, e.g., Cordula Droegge, "Get Off My Cloud: Cyber Warfare, International Humanitarian Law and the Protection of Civilians", *International Review of the Red Cross*, Vol. 94, No. 886, 2012, pp. 572–573 (describing it as "largely undisputed" that reverberating effects must be taken into account and that "it is reasonable to argue that foreseeable damages, even if they are long-term, second- and third-tier damages, must be taken into account"); Michael Schmitt and Eric Widmar, "On Target: Precision and Balance in the Contemporary Law of Targeting", *Journal of National Security Law and Policy*, Vol. 7, No. 379, 2014, p. 405.

62 See, e.g., C. Droegge, above note 61, p. 572; Marco Sassòli and Lindsey Cameron, "The Protection of Civilian Objects: Current State of the Law and Issues *de Lege Ferenda*", in Natalino Rozzitti and Gabriella Venturini (eds), *The Law of Air Warfare: Contemporary Issues*, Eleven International Publishing, The Hague, 2006, p. 65; Robin Geiss, "The Conduct of Hostilities in Asymmetric Conflicts", *Journal of International Law of Peace and Armed Conflict*, Vol. 23, No. 3, 2010, p. 122.

63 Elin Enger and Thomas Vik, Norwegian Defence Research Establishment, "Scenario of a Nuclear Detonation", presentation to the Conference on the Humanitarian Impact of Nuclear Weapons, Oslo, 4 March 2013, available at: www.regjeringen.no/globalassets/upload/ud/vedlegg/hum/hum_enge.pdf.

swiftly killed or injured in the moments following the detonation.⁶⁴ Massive destruction of civilian buildings and infrastructure would also be expected.⁶⁵

Although this will be influenced by the yield of the weapon and the environment in which it is used, extensive casualties can also result from the fires and firestorms that are likely to occur and burn uncontrollably in the immediate aftermath of the explosion. The course and duration of such forces are difficult to predict, and limiting the casualties and damage caused by the fires would be nearly impossible. In Hiroshima and Nagasaki, for example, fires burned without restraint for hours in the aftermath of the atomic bomb detonation, and many thousands who survived the initial blast were subsequently killed or injured by the conflagration. In Hiroshima alone, the firestorm subsequent to the atomic bomb detonation covered approximately 4 square kilometres.⁶⁶

The immediate casualties and damage caused by the blast wave and thermal heat of a nuclear detonation would clearly need to be taken into account in the assessment of proportionality. In addition, the foreseeable casualties from ionizing radiation and radioactive fallout in the days, weeks and months following the attack must also be appraised. One may question the extent to which casualties that occur years or even decades after the attack are properly to be taken into account in applying the rule, but a good-faith application would surely require it. As was indicated earlier,⁶⁷ such effects are clearly foreseeable given that the long-term effects of radiation exposure on human health have been widely studied, and in light of the experiences of Hiroshima and Nagasaki, where thousands of people died from the consequences of ionizing radiation in the months and years following the explosion of the atomic bombs dropped over those cities. Today, such casualties could not be considered remote or speculative.

It should also be noted that the rule of proportionality does not set or imply a temporal limit on the incidental damage to be considered when applying it. During the discussions on the rule of proportionality and the long-term effects of unexploded and abandoned ordnance (referred to in that context as explosive remnants of war) that took place between 2000 and 2003 amongst the States party to the Convention on Certain Conventional Weapons, such a limitation was never raised, yet the impact of such ordnance was widely known to last years and in some cases decades. In these discussions, States and experts seemed to accept that the rule of proportionality encompassed a forward-looking, long-term element. Finally, viewing these consequences through the general principle of IHL that seeks to protect civilians against the dangers arising from military operations

64 By comparison, the atomic bomb dropped on Hiroshima was estimated to have a yield of 16 kilotons and the radius of destruction from the blast forces was estimated at 1.6 kilometres, with an additional 11 square kilometres destroyed by subsequent fires and firestorms. Some 70,000–80,000 people, including some 20,000 soldiers, were killed during this time. See, Committee for the Compilation of Materials on Damage Caused by the Atomic Bombs in Hiroshima and Nagasaki, *Hiroshima and Nagasaki – the Physical, Medical and Social Effects of the Atomic Bombings*, Basic Books, New York, 1981, pp. 55–56.

65 *Ibid.* In Hiroshima it is estimated that buildings and infrastructure across some 12 square kilometres of the city were destroyed.

66 *Ibid.*, pp. 55–56.

67 See the discussion on the humanitarian consequences of nuclear weapons above.

would further argue for including the casualties and damage expected to occur in the long term.

In light of such impacts, the concrete and direct military advantage to be gained from the use of a nuclear weapon would have to be of paramount value and importance to justify such a high and foreseeable level of death, injury and destruction. In reality, it seems particularly hard to imagine any such advantage arising from an attack in or near a populated area. Indeed, based on what is today known about the effects of nuclear weapons, it can be asserted that the use of nuclear weapons against a military objective located in or near a populated area would contravene the prohibition on disproportionate attacks.

The prohibition on area bombardment

Another form of indiscriminate attack is “area bombardment”, which is defined under IHL as “attacks by bombardment by any method or means which treats as a single military objective a number of clearly separated and distinct military objectives located in a city, town, village or other area containing a similar concentration of civilians or civilian objects”.⁶⁸ This rule is intended to outlaw practices such as “carpet bombing”, “saturation bombing” and similar attacks, which were employed in World War II and in later conflicts with severe consequences for civilian populations.

Much of the discussion about this rule has focused on the meaning of “clearly separated and distinct”. There are no specific criteria assigned to these terms in IHL, and as a result their determination remains a somewhat subjective assessment. Yet, when the distance between two or more military objectives is sufficient for them to be attacked separately, taking into account the means available, they must be engaged individually.⁶⁹ Where the distance is not sufficient to render them clearly separated and distinct, other relevant rules, such as the rule of proportionality and the rule on feasible precautions, remain applicable.

The prohibition on area bombardment has not often been discussed in relation to nuclear weapons and is not specifically referred to in the Nuclear Weapons Advisory Opinion.⁷⁰ This may be because the use of a nuclear weapon in a populated area would raise a host of concerns in relation to other prominent IHL rules regulating the conduct of hostilities, as discussed above. Nevertheless, under this prohibition, the principal concerns relate to the wide-area blast and thermal heat effects of nuclear weapons: features which may make a nuclear weapon particularly appealing as an efficient means to collectively destroy multiple military objectives. The rule prohibiting area bombardment would

68 ICRC Customary Law Study, above note 35, Rule 13, p. 43; AP I, above note 26, Art. 51(5)(a).

69 ICRC Commentary, above note 29, para. 1975.

70 But see Louise Doswald-Beck, “International Humanitarian Law and the Advisory Opinion of the International Court of Justice on the Legality of the Threat or Use of Nuclear Weapons”, *International Review of the Red Cross*, Vol. 79, No. 823, 1997; S. Casey-Maslen, above note 48, pp. 107–108.

preclude such use in any populated area when the objectives are clearly separated and distinct from each other.

The obligation to take precautions in attack

Parties to an armed conflict are required to take constant care in the conduct of military operations to spare the civilian population and civilian objects.⁷¹ The particular precautions required by IHL with respect to attacks include doing everything feasible to verify that targets are military objectives⁷² and taking all feasible precautions in the choice of means and methods of warfare with a view to avoiding, or in any event minimizing, incidental civilian casualties and damage to civilian objects.⁷³

The references to “everything feasible” and “feasible” precautions are a reminder of the fact that armed forces cannot be required to do what is objectively impossible.⁷⁴ It also leaves room for those acting in good faith to make mistakes, but those acting negligently can be held accountable.⁷⁵ Feasible precautions have been defined as “those precautions which are practicable or practically possible taking into account all circumstances ruling at the time, including humanitarian and military considerations”.⁷⁶

The obligation to take feasible precautions in the choice of means of warfare with a view to avoiding or minimizing civilian casualties and damage would require that the party planning an attack assess such factors as the importance of the target, the different weapon systems available, and the foreseeable impact of those weapons on civilians and civilian objects.⁷⁷ Although IHL does not dictate the kinds of weapons that are to be used in attacking particular targets, it is largely undisputed that if there is a choice of weaponry that could accomplish the same military task, the rule requires the use of that which would lead to fewer civilian casualties and damage when it is practically possible.⁷⁸

In light of what is known about the severe humanitarian consequences that would arise from the use of nuclear weapons and the requirement to take constant care to spare civilians and civilian objects, the situations where nuclear weapons

71 ICRC Customary Law Study, above note 35, Rule 15, p. 51; AP I, above note 26, Art. 57(1).

72 ICRC Customary Law Study, above note 35, Rule 16, p. 55; AP I, above note 26, Art. 57(2)(i).

73 ICRC Customary Law Study, above note 35, Rule 16, pp. 56–60; AP I, above note 26, Art. 57(2)(ii).

74 Jean Francois Quéguiner, “Precautions under the Law Governing the Conduct of Hostilities”, *International Review of the Red Cross*, Vol. 88, No. 864, 2006, pp. 809–810.

75 *Ibid.*

76 Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices, as amended on 3 May 1996, Art. 3(10); Protocol on Explosive Remnants of War, 28 November 2003, Art. 5(1).

77 See, e.g., UK Ministry of Defence, above note 31, p. 83, discussing the factors to be considered in selecting the means and methods of attack under this rule.

78 See J. F. Quéguiner, above note 74, pp. 802–803, arguing that this rule would require the use of precision-guided weapons over other munitions when they are in a State’s arsenal and it is practically possible. See also Michael N. Schmitt and Eric Widmar, “The Law of Targeting”, in Paul Alphons Duheine, Michael N. Schmitt and Frans P. B. Osinga (eds), *Targeting: The Challenges of Modern Warfare*, Asser Press, The Hague, 2016, p. 138.

could be the weapon of choice would seem to be very limited. The faithful application of the rule on precautions in attack would likely preclude the use of nuclear weapons in or near a populated area and would require the employment of a less destructive and harmful means of warfare. Some commentators note that, in light of recent developments in conventional weapons technology, “virtually any military objective for which [low-yield, ‘tactical’ nuclear] weapons might be used could also be addressed by conventional weapons”.⁷⁹

The prohibition on using weapons of a nature to cause superfluous injury or unnecessary suffering

IHL prohibits the use of means and methods of warfare which are of a nature to cause superfluous injury or unnecessary suffering. The basis for this rule was first articulated in the Preamble of the 1868 St. Petersburg Declaration Renouncing the Use, in Time of War, of Explosive Projectiles under 400 Grammes Weight. It later found expression in the 1899 and 1907 Hague Conventions with respect to the Laws and Customs of War on Land. Applications of the rule to specific weapons are found in the 1899 Hague Declarations on asphyxiating gases and expanding bullets and the 1925 Geneva Gas Protocol.⁸⁰ Its influence is also reflected in instruments such as the 1972 Biological Weapons Convention, the 1993 Chemical Weapons Convention, the 1980 Convention on Certain Conventional Weapons and the 1997 Anti-personnel Mine Ban Convention.⁸¹ This rule differs from those discussed above in that it is primarily intended to protect combatants, rather than civilians, from injury and suffering that has little or no military purpose.⁸²

The application of this rule as a legal constraint on the use of a particular weapon raises questions as to how “superfluous” injury and “unnecessary” suffering should be identified and assessed. With regard to weapons, there is wide agreement that this requires an assessment between the military need for the weapon and the nature of the injury or suffering expected from its use. Injury or suffering that exceeds what is required to achieve the military goal sought would violate the rule.⁸³ Like the assessment required by the rule of proportionality, the effects to

79 See Dakota Rudesill, “Regulating Tactical Nuclear Weapons”, *Georgetown Law Journal*, Vol. 102, No. 99, 2013, p. 159, concluding that, as conventional weapons can now be effectively used for most of the military missions for which “tactical” nuclear weapons would previously have been designated, “[t]he battlefield role for [tactical nuclear weapons] is over”. See also Charles Moxley, John Burroughs and Jonathan Granoff, “Nuclear Weapons and Compliance with International Humanitarian Law and the Nuclear Non-Proliferation Treaty”, *Fordham International Law Journal*, Vol. 34, No. 595, 2011, p. 660.

80 ICRC Customary Law Study, above note 35, Rule 70, pp. 237–244; AP I, above note 26, Art. 35(2). For an overview of the history of this rule, see ICRC Commentary, above note 29, pp. 401–403.

81 ICRC Commentary, above note 29. Reference to the rule is specifically made in the Preamble of the 1997 Anti-personnel Mine Ban Convention.

82 ICRC Customary Law Study, above note 35, p. 240.

83 See, e.g., M. G. Cowling, “The Relationship between Military Necessity and the Principle of Superfluous Injury and Unnecessary Suffering in the Law of Armed Conflict”, *South African Yearbook of International Law*, Vol. 25, No. 131, 2000, p. 142; C. Moxley, J. Burroughs and J. Granoff, above note 79, pp. 618–619. And see ICRC Customary Law Study, above note 35, Rule 70, pp. 240–241, which also cites the ICJ, in its Nuclear Weapons Advisory Opinion, para. 78, defining this as “harm greater than that unavoidable to achieve legitimate military objectives”.

be taken into account in the application of the rule would logically be limited to those that are foreseeable.

As the ICRC Commentary to the Additional Protocols notes, however, neither a weapon's effects on combatants nor the relationship of these effects to military necessity has been "interpreted in a consistent and generally accepted manner", and as a result, the rule is somewhat "relative and imprecise".⁸⁴ The ICRC Customary Law Study also found that State views differ as to how it can actually be determined that a weapon causes superfluous injury or unnecessary suffering – although there is general agreement that suffering which has no military purpose violates the rule,⁸⁵ and that relevant factors include the inevitability of serious permanent disability or death.⁸⁶

In the Nuclear Weapons Advisory Opinion, the ICJ cited this rule as one of the cardinal principles of IHL and identified it as having direct regulatory relevance for the use of nuclear weapons.⁸⁷ Despite this, the application of this rule to the use of nuclear weapons is seldom discussed in existing literature.⁸⁸ The primary concern with regard to nuclear weapons is the impact of radiation on the health of combatants. Given what is known about the intense radiation released by a nuclear detonation and its severe effects on human health, it would be reasonable to conclude that many combatants who may survive the immediate heat and blast effects of a nuclear detonation will fall victim to a slower death caused by radiation in the days, weeks and months that follow. Others would also be at increased risk of developing cancers, such as leukaemia and thyroid cancer, later in life. Such suffering, culminating in their slow death, is foreseeable and would need to be considered in the application of this rule.

A number of States – largely on the basis of this rule – have identified nuclear weapons as causing unnecessary suffering.⁸⁹ The ICRC also stated in 2015 that "[t]he horrific short- and long-term illnesses, permanent disability and suffering caused by radiation exposure raise serious questions about the compatibility of nuclear weapons" with the prohibition.⁹⁰ This conclusion has particular relevance to, and would appear to raise questions about, claims that low-yield nuclear weapons employed against combatants in locations far from civilian areas are consistent with IHL.

84 ICRC Commentary, above note 29, pp. 409–410. See also Simon O'Connor, "Nuclear Weapons and the Unnecessary Suffering Rule", in G. Nystuen, S. Casey-Maslen and A. Golden Bersagel, above note 48, pp. 129–147.

85 ICRC Customary Law Study, above note 35, Rule 70, p. 240.

86 *Ibid.*, p. 241.

87 Nuclear Weapons Advisory Opinion, above note 4, para. 78.

88 See S. O'Connor, above note 84, p. 129.

89 ICRC Customary Law Study, above note 35, Rule 70 n. 55, p. 244.

90 Helen Durham, ICRC Director of International Law and Policy, "The Use of Nuclear Weapons and International Humanitarian Law", statement to the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/Presentations/HINW14_S4_Presentation_Helen_Durham.pdf.

It has been argued that the health effects of radiation are not to be considered when applying this rule because radiation is an inherent by-product of a nuclear explosion and is not an effect added to increase the suffering of combatants.⁹¹ This view relies on an interpretation of the rule of unnecessary suffering as formulated in the 1907 Hague Regulations, which states that it is prohibited “to employ arms, projectiles, or materials *calculated to cause unnecessary suffering*” (emphasis added).⁹² This “calculated to cause” formulation is seen as implying that the prohibition only covers situations where a weapon is designed or altered so as to intentionally aggravate the suffering of combatants.

However, the 1907 English-language version of this rule is widely considered to be an inaccurate translation of the authentic and authoritative French text, which used the phrase “*propres à causer des maux superflus*” and which is properly interpreted as having a broader scope and not requiring a specific intent.⁹³ When the rule was reaffirmed and negotiated in the context of AP I, the English version more closely followed the authoritative French text.⁹⁴ Thus, Article 35(2) of AP I prohibits the use of “weapons, projectiles and material and methods of warfare of *a nature to cause superfluous injury or unnecessary suffering*” (emphasis added). Similar wording (“of a nature to cause”) is also used in the Statute of the International Criminal Court and in the equivalent rule under customary IHL.⁹⁵ The “of a nature to cause” phrasing reflects the formulation accepted by nearly all States today. The effect is that the rule is widely understood to apply not only to instances where a weapon is designed or intentionally altered to increase the suffering of combatants, but also to situations where the suffering is not intentional but is foreseeable as a result of the weapon’s design and intended use. Thus, the impact of radiation and the injury and suffering it will cause must be weighed against the military objective being sought. As indicated above, the severe consequences of radiation exposure on the health of combatants raise serious concerns under this rule and appear to undermine arguments that nuclear weapons would be consistent with IHL when used away from populated areas.

Rules on the protection of the natural environment

IHL contains a number of rules intended to protect the natural environment from the effects of armed conflict. In this context, the natural environment is generally

91 Letter dated 20 June 1995, above note 49, pp. 28–29. See also C. Moxley, J. Burroughs and J. Granoff, above note 79, p. 651.

92 1907 Hague Convention IV Respecting the Laws and Customs of War on Land, 18 October 1907 (entered into force 26 January 1910), Art. 23(e).

93 Adam Roberts and Richard Guelff, *Documents on the Laws of War*, 3rd ed., Oxford University Press, Oxford, 2000, p. 77 n. 3.

94 S. O’Connor, above note 84, p. 132.

95 Rome Statute of the International Criminal Court, UN Doc. A/CONF.183/9, 17 July 1998 (entered into force 1 July 2002), Art. 8(2)(b)(xx); ICRC Customary Law Study, above note 35, Rule 70, p. 237.

understood in a broad sense and includes air, water, agriculture, livestock, forests, flora, fauna and other biological and climatic elements.⁹⁶

The general rules of IHL regulating the conduct of hostilities protect the natural environment as a civilian object.⁹⁷ Thus, parts of the environment may be lawfully attacked only if they constitute a military objective. In addition, the destruction of any part of the environment is prohibited, unless it is required by imperative military necessity.⁹⁸ Incidental damage to the environment must also be taken into account as part of the proportionality assessment carried out for attacks directed at other military objectives. Such damage cannot be excessive in relation to the concrete and direct military advantage anticipated. Feasible precautions in the choice of weapons must also be taken to avoid or in any event minimize incidental environmental damage.⁹⁹

IHL also has a specific rule that prohibits the use of means and methods of warfare which are or may be expected to cause “widespread, long-term and severe” damage to the natural environment.¹⁰⁰ As indicated above, the customary status of this rule has been disputed, with France, the United Kingdom and the United States asserting that the rule has not achieved customary status with regard to nuclear weapons.¹⁰¹ Nevertheless, these provisions can still have relevance for the use of nuclear weapons for those States that are or may become a party to AP I and that have not submitted declarations excluding the application of this rule in such instances.

The main difference between this rule and the treatment of the environment as a civilian object is that the rule is an absolute prohibition. If widespread, long-term and severe damage is intended or expected, the means or method of warfare under consideration in that instance is prohibited.

The requirements for the damage to be “widespread, long-term and severe” are cumulative and as such fix a very high threshold. These terms were not specifically defined in AP I, but have been summarized as “major interference with human life or natural resources which considerably exceeds the battlefield damage to be regularly expected in a war”.¹⁰² Although the phrase “long-term” is generally understood to be measured in decades and not in months or a season,

96 ICRC Commentary, above note 29, para. 2126, p. 662.

97 ICRC Customary Law Study, above note 35, Rules 43, 44, pp. 143–151.

98 *Ibid.*, Rule 43, pp. 144–145.

99 *Ibid.*, Rule 44, p. 149.

100 ICRC Customary Law Study, above note 35, Rule 45, p. 151; AP I, above note 26, Art. 35(3). This rule is also reinforced in Art. 55(1) of AP I.

101 Specifically, Articles 35(3) and 55 of AP I, above note 26; see ICRC Customary Law Study, above note 35, pp. 154–155. For more views on this subject, see Erik Koppe, “Use of Nuclear Weapons and Protection of the Environment during International Armed Conflict” in G. Nystuen, S. Casey-Maslen and A. Golden Bersagel, above note 48, p. 259 n. 45. For a detailed critique, see Jeremy Marsh, “Lex Lata or Lex Ferenda? Rule 45 of the ICRC Study on Customary International Humanitarian Law”, *Military Law Review*, Vol. 198, No. 116, 2008; Jean-Marie Henckaerts, “Customary International Law: A Response to the US Comments”, *International Review of the Red Cross*, Vol. 89, No. 866, 2007, p. 482.

102 S. Oeter, above note 29, p. 126; see also German Federal Ministry of Defence, *Humanitarian Law in Armed Conflicts: Manual*, Joint Service Regulation (ZDv) 15/2, DSK AV230100262, May 2013, p. 61.

neither the commentary to AP I nor the ICRC Customary Law Study offer definitions of “widespread” or “severe”.¹⁰³

As indicated above, numerous studies have highlighted the serious consequences that the use of nuclear weapons would have on the natural environment. These include the destruction of flora and fauna by the detonation’s release of blast forces and thermal radiation; contamination of land and water supplies by radioactive particles; and the dispersal of dirt and soot affecting the atmosphere and climate, with potentially serious consequences for humans, plants and wildlife.¹⁰⁴ The dispersal of dirt and soot is of particular concern because of the severe impact it can have on farming and food production, potentially putting many millions of people at risk of starvation.¹⁰⁵ It would equally have an impact on other plants and vegetation upon which animals and insects feed.¹⁰⁶ Although the scale and level of such consequences will vary with the yield of the particular weapon and the context in which it is used, they can be readily expected with the use of large nuclear weapons and even lower-yield weapons as part of a nuclear attack or exchange.

These consequences, like other foreseeable damage and effects, must be taken into account when applying the general IHL rules that seek to protect the natural environment. They have particular bearing on the rule on disproportionate attacks, as incidental damage to the environment or parts thereof must be included in the proportionality assessment. Given the extensive damage to the natural environment that would result in most instances, the military advantage expected from an attack employing nuclear weapons would have to be of very high value for the attack to be lawful. In addition, and in light of the powerful and long-lasting effects of nuclear weapons, the application of the rule on feasible precautions would seem to argue for the use of a conventional rather than a nuclear weapon in the vast majority of instances where one was available and the same military goal could be achieved. It is hard to imagine any conventional weapon causing the kind and level of environmental damage that would result from the use of a nuclear weapon.

Serious problems arise with the use of nuclear weapons under the prohibition on means and methods of warfare which may be expected to cause widespread, long-term and severe damage to the natural environment. The range and nature of the long-term environmental consequences highlighted above would, in most instances, seem to meet the severe, widespread and long-term

103 ICRC Commentary, above note 29, p. 417. These terms are used in the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention), and although they only apply in that context, “widespread” is understood to encompass an area of several hundred square kilometres and “severe” to involve “serious or significant disruption or harm to human life, natural and economic resources or other assets”. UN Environmental Protection Programme, *Protection of the Environment during Armed Conflict: An Inventory and Analysis of International Law*, 2009, p. 5. Under the ENMOD Convention, however, the terms are not a cumulative standard as is the case in AP I.

104 See the references cited at note 21.

105 I. Helfand, above note 22; British Medical Association, above note 11, pp. 92–100.

106 *Ibid.*

criteria set out in the prohibition. The fact that some nuclear-armed States have consistently rejected the application of this specific rule to the use of nuclear weapons serves to highlight its relevance as a limitation.

The use of nuclear weapons as a belligerent reprisal

Despite the legal issues and concerns highlighted above, it has been suggested that nuclear weapons may be used in an armed conflict as a belligerent reprisal.¹⁰⁷ Briefly stated, the law of belligerent reprisals permits (under certain conditions) acts that would normally be unlawful under IHL insofar as they seek to bring an adversary back into compliance with its IHL obligations.¹⁰⁸ Belligerent reprisals have been a traditional method of enforcing the law of armed conflict, but in recent decades the trend has moved towards prohibiting reprisals taken against the civilian population in the conduct of hostilities.¹⁰⁹ Article 51(6) of AP I explicitly prohibits “attacks against the civilian population by way of reprisals”, and although it is not yet considered a rule of customary IHL, there is a strong movement in this direction.¹¹⁰

Although the requirements for a lawful reprisal are not comprehensively settled, customary IHL sets out a number of conditions and limitations.¹¹¹

1. The reprisal must be in response to a serious violation of IHL and employed only for the purpose of restoring the opposing party’s compliance. Thus, belligerent reprisals cannot be anticipatory or pre-emptive acts. In addition, the reprisal must be in response to a serious violation of IHL, and not a reaction to violations of rules deriving from other areas of law. Nor can an adversary against whom the reprisal is directed use that initial reprisal as a justification to employ its own reprisal in response – a so-called “counter-reprisal”.
2. The reprisal must be a measure of last resort. This implies that other measures (e.g. political, diplomatic or economic measures) should be taken in advance of the reprisal in an effort to end the offending behaviour. It also appears to suggest that the adversary must be given due warning of the consequences of any repeat action before a reprisal is taken.
3. The reprisal must be proportionate to the original breach.
4. The decision to employ a reprisal must be taken at the highest level. This normally means high levels of the government or the military. The decision to employ a reprisal may not be made by local commanders.
5. The reprisal must cease once compliance is restored.

107 See S. Oeter, above note 29, p. 205. More generally, see Fritz Kalshoven, *Belligerent Reprisals*, 2nd ed., Brill Academic Publishers, Leiden, 2005.

108 S. Oeter, above note 29, p. 204.

109 ICRC Customary Law Study, above note 35, Rule 145, p. 513.

110 *Ibid.*, pp. 520–523.

111 ICRC Customary Law Study, above note 35, Rule 145, pp. 515–518; S. Casey-Maslen, above note 48, pp. 178–179; C. Moxley, J. Burroughs and J. Granoff, above note 79, p. 661.

These conditions would be applicable to the use of any nuclear weapon as a belligerent reprisal and would act as limitations on any such use.

As indicated above, one requirement for a belligerent reprisal is that it be in response to a serious violation of IHL. Thus, the use of a nuclear weapon against civilians or civilian objects as a belligerent reprisal could not be justified for a violation of *jus ad bellum* or rules deriving from other areas of law.¹¹² A surprise or unexpected attack in violation of a rule of *jus ad bellum* against a clear military objective, initiating an armed conflict, would not substantiate the use of nuclear weapons as a reprisal. Nuclear weapons may be used in response, but their use would need to strictly comply with the IHL rules discussed throughout this article.

In addition, the requirement that reprisals be proportionate to the original breach would appear to limit the use of nuclear weapons to a very small number of situations. Given their severe humanitarian consequences, the use of such weapons as a reprisal would logically require that the violation provoking the reprisal be of enormous severity. It is hard to imagine that a nuclear reprisal could be legitimately employed in response to an attack or attacks involving conventional weapons. More likely, the unlawful precipitating attack would need to involve the use of one or several nuclear weapons, or another weapon of mass destruction, against a populated area, resulting in an immense number of civilian casualties.¹¹³ In this regard, it is highly unlikely that a nuclear-armed State, having been the victim of such an attack using weapons of mass destruction, would first seek to exhaust all relevant political, diplomatic, economic and other measures against the attacker before resorting to a reprisal in response – a necessity that is implied in the second limitation outlined in the list above. It therefore seems unrealistic that this criterion would be fulfilled or strictly applied in practice.¹¹⁴

Finally, while one may be able to envision a situation where a very limited number of low-yield nuclear weapons are used to compel a return to compliance with IHL, this would seem to be a very risky road to take. As has been noted in a number of military manuals, the use of reprisals has tended to escalate attacks on civilians rather than ending them.¹¹⁵ Thus, one use or even a limited exchange of nuclear weapons runs a very real risk of nuclear escalation and further violations of IHL, with the potential for catastrophic consequences in humanitarian terms.

112 Christopher Greenwood, “The Twilight of the Law of Belligerent Reprisals”, *Netherlands Yearbook of International Law*, Vol. 20, 1989, pp. 40–43; Stuart Casey-Maslen, “The Use of Nuclear Weapons as Reprisals”, in G. Nystuen, S. Casey-Maslen and A. Golden Bersagel, above note 48, p. 184.

113 *Ibid.*, p. 186.

114 A point also noted by F. Kalshoven, above note 107, p. 340. See also Françoise Hampson, “Belligerent Reprisals and the 1977 Protocols to the Geneva Conventions of 1949”, *International and Comparative Law Quarterly*, Vol. 37, 1988, p. 823.

115 See US Office of the General Counsel, *Department of Defense Law of War Manual*, June 2015, Chapter 18.18.4, p. 1099, highlighting many of the practical consequences to consider in the use of reprisals; C. Moxley, J. Burroughs and J. Granoff, above note 79, p. 664; ICRC Customary Law Study, above note 35, p. 522.

Concluding comments

This article has outlined the IHL rules governing the conduct of hostilities that must be taken into account if a party to an armed conflict were ever to consider the use of a nuclear weapon. It highlights the problems and concerns that arise in light of the severe and extensive consequences for civilians, civilian objects and combatants that the use of nuclear weapons would entail. As pointed out by the ICJ in its Nuclear Weapons Advisory Opinion, the combination and power of the blast, thermal heat and radiation forces that result from the explosion make nuclear weapons unique. Very few existing means of warfare have effects that impact so significantly across such a wide range of IHL rules. These are the factors that have led the International Red Cross and Red Crescent Movement to declare that it “finds it difficult to envisage how any use of nuclear weapons could be compatible with the rules of international humanitarian law, in particular the rules of distinction, precaution and proportionality”.¹¹⁶

As highlighted in the introduction to this article, there is no treaty or rule of IHL that specifically prohibits the use of nuclear weapons. Nevertheless, it is difficult to reconcile their use in nearly every circumstance with the customary IHL rules that seek to protect civilians and civilian objects from the effects of military operations. This conclusion holds in respect of low- and higher-yield nuclear weapons, as each would have severe consequences for civilians at the moment of the attack and in the longer term due to the effects of radiation and radioactive fallout on human health. Given such effects, it seems reasonable to conclude that the use of a nuclear weapon in or near a populated area would constitute an indiscriminate attack.

The use of nuclear weapons outside of populated areas is also a concern despite the fact that there might be a possibility of fewer civilian casualties. The situations most regularly contemplated in this regard involve the use of nuclear weapons against vessels at sea or against enemy combatants located in the desert or in an otherwise isolated area.¹¹⁷ It seems logical that these situations must be assessed on a case-by-case basis. As is clear from the discussion above, the application of the relevant IHL rules must take into account the immediate and long-term consequences on the health of combatants from exposure to radiation; the possible impact on the environment in the area of the attack; and the dangers to civilians outside the immediate area given the risk and likelihood that radioactive particles will travel. In addition, the arguments supporting the lawfulness of the use of nuclear weapons in these scenarios often posit the use of a single low-yield warhead and do not consider the cumulative effects if more than one weapon is used. If multiple nuclear weapons are meant to be integrated into the attack, their cumulative effects would also arguably need to be part of the assessment.

116 See Resolution 1 adopted by the Council of Delegates of the Red Cross and Red Crescent Movement, December 2011.

117 Statement of the Government of the United Kingdom to the ICJ, *The Legality of the Threat or Use of Nuclear Weapons*, June 1995, para. 370; Nuclear Weapons Advisory Opinion, above note 4, Dissenting Opinion of Judge Schwebel, pp. 320–321.

Also a concern, albeit not a legal one, is the risk of nuclear escalation and the accompanying consequences if one or more low-yield weapons were used against another nuclear-armed State, as well as the implications for further use if the seventy-year history of non-use of nuclear weapons were to be broken. Thus, the arguments in favour of the lawful use of nuclear weapons in these types of scenarios provide little comfort that the grave humanitarian consequences occasioned by the use of nuclear weapons will not occur again.

Based on what has been learned from extensive research on the humanitarian and environmental consequences of nuclear weapons, and their implications for IHL, it seems appropriate to propose – in addition to the conclusion outlined above regarding the use of nuclear weapons in or near populated areas — a presumption of illegality with regard to the use of such weapons outside populated areas. In theory, such a presumption could be overcome in relation to a specific instance of use.

But concrete scenarios with all the information necessary for a full assessment of the consequences of nuclear weapon use have not often been presented or made by the nuclear-armed States. This was highlighted by the ICJ itself in its 1996 Nuclear Weapons Advisory Opinion and it appears to remain true today.¹¹⁸

The potential use of nuclear weapons has long been a global concern. The increased attention given to their humanitarian consequences in the past few years has helped shed more light on their severe and long-lasting impact. This attention has also raised further questions as to the status of nuclear weapons under IHL, which this article has attempted to illuminate and inform. Though there is greater knowledge about the consequences of nuclear weapons in humanitarian terms, they remain a weapon the use of which is difficult to reconcile with existing IHL rules.

118 Nuclear Weapons Advisory Opinion, above note 4, para. 93.

Chemical, biological, radiological or nuclear events: The humanitarian response framework of the International Committee of the Red Cross

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Abstract

Mounting an effective international humanitarian response to a chemical, biological, radiological or nuclear (CBRN) event, especially if the response is undertaken on an ad hoc basis, would be extremely difficult and would pose many risks to the responders. The International Committee of the Red Cross (ICRC) has created a competency-based capacity to respond to at least small-scale CBRN events, including a deployable capability to undertake operational activities. This involves informed assessments of CBRN risks, timely and competent decisions on how to respond, and effectively mobilizing appropriate resources to implement these decisions, through the creation of an emergency roster. In addition to the acquisition of technical expertise and material resources, the creation of such capacity requires the application of central processes, ensuring systematic management of CBRN response (including risk-based decision-making), standing operational procedures, and availability of and access to the necessary resources. Implementation of the ICRC's CBRN response framework as described in this article should be considered by any agency or other stakeholder preparing for international humanitarian assistance in CBRN events – especially if such events are related to armed conflict.

Keywords: CBRN, humanitarian response, framework, weapon contamination.

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Introduction

An event in which chemical, biological, radiological or nuclear (CBRN) agents are intentionally or unintentionally released, or in which weapons that are specifically designed to inflict harm through the release of CBRN agents are used, has the potential for affecting the lives, health and well-being of a large number of people, directly from exposure to the released agent and/or indirectly after the release and dispersal of the agent, such as through cross-contamination. In a

context of armed conflict, there are complex and interrelated challenges to any agency attempting to bring assistance to those people affected, particularly since the circumstances and effects of agent release and dispersal are likely to be fraught with uncertainty. The complexity of a response may be further aggravated by allegations and implicit or explicit threats of use of CBRN weapons, as those carry additional security, legal, political and media implications of their own.

Recognizing the above, the International Committee of the Red Cross (ICRC) undertook in 2007 a global risk assessment with respect to the use of CBRN weapons, a study of its own history in this domain and an assessment of the capacity of other agencies or coordination mechanisms to respond.¹ The conclusion of this exercise was that:

[A]n effective international assistance response which would be of direct benefit to surviving or potential victims and which provides adequate security for staff is not possible at present. To our knowledge, no government, international organization (including the ICRC and other components of the International Red Cross and Red Crescent Movement), non-governmental organization or collaborative body has either realistic plans or the capacity to mount such an international response.²

There has been no disagreement with a “reality check” subsequently published in the form of an article discussing the lack of plans at the international level to assist victims of a CBRN event and providing recommendations on what such a response would involve.³ The risk assessment, the ICRC’s own history in this domain, the lack of existing capacities for international humanitarian assistance in a CBRN event and the “reality check” article together indicate the futility of any agency attempting such a response on an *ad hoc* basis. This then called for an approach that is thought out in advance, is rational and disciplined, and is both adaptable to and based on the realities of a CBRN event.

In response, in 2010 the ICRC appointed two professionals specialized in the subject matter for a project to introduce, develop and establish a permanent capacity to respond appropriately to at least small-scale CBRN events. The project entailed creating the necessary institutional framework within which the ICRC would respond and which would direct the adaptation of the response preparedness to the complexities of any given event, notably in relation to decision-making and mobilization of deployable human and material resources.

This newly acquired expertise was called upon many times from the outset of the project. Field deployments for assessments and advisory and operational

1 Dominique Loye and Robin Coupland, “Who Will Assist the Victims of Use of Nuclear, Radiological, Biological or Chemical weapons – and How?”, *International Review of the Red Cross*, Vol. 89, No. 866, 2007, available at: www.icrc.org/eng/assets/files/other/irrc_866_loye.pdf (all internet references were accessed in December 2015).

2 *Ibid.*, p. 343.

3 Robin Coupland and Dominique Loye, “International Assistance for Victims of Use of Nuclear, Radiological, Biological and Chemical Weapons: Time for a Reality Check?”, *International Review of the Red Cross*, Vol. 91, No. 874, 2009, available at: www.icrc.org/eng/assets/files/other/irrc-874-coupland-loye.pdf.

support have been undertaken in relation to several CBRN events, including the nuclear accident in Fukushima in 2011 and the alleged use of nerve agents and chlorine gas in the violent events in North Africa and the Middle East from 2011 until now.

The nascent CBRN response capacity and the framework within which this capacity sits today therefore evolved in the context of responding to real events. The focus has been on the most likely risks to ICRC staff and civilians from CBRN hazards, whether these risks arise from deployment of CBRN weapons or another type of CBRN event. In particular, the ICRC recognizes that armed conflict brings particular risks also from toxic industrial chemicals and from radioactive material, which may be released as a result of mismanagement of chemical or radioactive industrial waste, industrial accidents, unintentional damage to nuclear or chemical facilities in armed conflict, attacks on nuclear or chemical facilities with or without the intention to release the agent or agents concerned, or attacks using radioactive materials or industrial chemicals as weapons. In consequence, the principal risks around which the ICRC's response capacity is being orientated are associated with toxic industrial chemicals, radioactive material or nerve agents.

Given the ICRC's experience to date, foremost amongst the lessons learnt is that a CBRN response framework must be predetermined and agreed upon at the highest level within the organization. Also of critical importance is building external networks of resources, the most important of which for the ICRC are a number of National Red Cross and Red Crescent Societies and specialized Swiss governmental agencies. This article describes the CBRN response framework that was agreed by the ICRC Directorate in 2013. The framework is built on both institutional guiding principles for responding to CBRN events and a dedicated response capacity comprising internal and external networks for response built around a sustainable CBRN sector within the ICRC.

It should be emphasized that the ICRC does not have a stand-by capacity to bring effective assistance to victims of all CBRN events, especially those involving large-scale use of CBRN weapons. The framework described aims to assure the ICRC's ability to continue its operations in the face of a CBRN event, and to respond appropriately without exposing those to whom the organization has a duty of care – for instance, ICRC staff, colleagues from the International Red Cross and Red Crescent Movement (the Movement) and non-ICRC staff associated with the organization – to undue risks. However, the acceptability of risks depends on both the event-specific circumstances and the purpose of the ICRC's response. "Undue risks" may therefore only be defined in a particular context, in line with the provisions of the ICRC's CBRN response framework.

Definitions

Before discussing the ICRC's dedicated CBRN response capacity, some basic terms must be defined and the institutional guiding principles introduced. For the purposes of the ICRC's CBRN response capacity, the following terms are defined:

CBRN agent release and dispersal may be:

- unintentional – for example, natural disease outbreak, natural disaster, accident in transport or at an industrial facility, collateral damage in armed conflict, remnants/contaminants from past agent use; or
- intentional – for example, targeted or indiscriminate military action or attacks by individuals or groups using purpose-built or improvised devices to cause injuries or deaths, temporarily incapacitate, or terrorize.

CBRN events are actions or occurrences that may lead to the release and dispersal of CBRN agents, which are hazardous materials with different properties and origins. Events of concern to the ICRC depend on the context and may involve:

- confirmed, alleged and/or threatened (implicitly or explicitly) use of CBRN weapons;
- confirmed, alleged and/or threatened (implicitly or explicitly) exposure to CBRN agents in the context of armed conflict or other situations of violence;⁴ or
- any other situation that poses risks of exposure to CBRN agents for persons to whom the ICRC has a duty of care.

CBRN response refers to the management of risks from CBRN events, which may comprise prevention, preparation and reaction. It also includes making representations to authorities and communication regarding the international legal obligations of one or more parties to an armed conflict.

Institutional guiding principles

A CBRN response capacity requires more than the allocation of an adequate budget or the acquisition of technical expertise and material resources. There is a need for an overarching institutional framework founded on guiding principles. This implies reflecting on the reasons for concern about CBRN events, describing key objectives of a response to such events within the organization's mandate and duty of care, defining the capacity needed to meet the objectives, and outlining fundamental considerations relating to making difficult decisions. The guiding principles upon which the ICRC's CBRN response framework is based relate to objectives, basic premises, decision-making and the response itself.

Objectives based on mandate and duty of care

Responding to CBRN events in armed conflicts and other situations of violence is within the mandate of the ICRC. There is also an institutional imperative driven

4 This may include situations where there is a risk of a pandemic or epidemic with pandemic potential, given that such events have proven links to armed conflict. For more information on the relationship between pandemics and armed conflict, see G. Dennis Shanks, "How World War 1 Changed Global Attitudes to War and Infectious Diseases", *The Lancet*, Vol. 384, No. 9955, 2014.

by a duty of care to people in its employ and others, which may include families of employees, colleagues from the Movement or other operational partners. With respect to staff health, safety and security, the ICRC considers its duty of care as comprising informed consent, risk mitigation and social security by taking into account the circumstances of the event and an understanding of the health impact specific to the CBRN agent in question.

Because CBRN events are unpredictable, heterogeneous and specific to the agent or agents in question, sitting at the core of the CBRN response framework is how the requirement of the ICRC to fulfil its mandate is reconciled with the duty of care to staff and others. Therefore, the three key objectives of any response to a CBRN event are, in order of priority, to (1) minimize risks to the health, safety and security of persons to whom the ICRC has a duty of care; (2) ensure the integrity of the organization and the continuation of its activities; and (3) provide assistance to affected people, as possible. This priority order results from its inherent logic, as only acceptably healthy, safe and secure ICRC staff members, Movement colleagues, or others associated with the organization (persons to whom the ICRC has a duty of care) will ensure the integrity of the organization and the continuation of its activities, which again is a prerequisite to providing assistance to affected people. In order to reach these objectives, the ICRC may also support the Movement in developing the CBRN response capacities of National Societies.

Basic premises

The main concerns arising from CBRN events are the potential health effects of exposure to such weapons or agents. The effects may range from mild sickness to severe illness or even death, depending on the innate properties of the agent, and may be compounded by psychological reactions because of a potential lack of understanding of the risks.⁵ The latter is exacerbated by the fact that many CBRN agents are difficult to detect or recognize. It might not be known at a given time that exposure has occurred, when or how it has occurred, to where the released agents have dispersed nor for how long the dispersed agents might persist. CBRN events, therefore, pose risks not only to those directly exposed at the time of release but also to others, including responders, who might find themselves unexpectedly in contaminated environments.⁶

In view of this, to achieve the objectives stated above, it is necessary for the ICRC to have the capacity to undertake informed assessments of CBRN risks, make

5 “Uncertainties about releases and exposure levels, and a general lack of public understanding of the risks and adverse health effects to be expected, mean that the threat or actual release of [a] CBRN agent may evoke intense fear and other psychological reactions among the affected population. This can make it difficult to differentiate between the ‘worried well’ [and] those individuals with physical injuries or disease. It has been suggested that fear of [a] CBRN event has caused psychosomatic responses in some cases so it is important to counteract hysteria with calm advice and medical monitoring.” ICRC, *Chemical, Biological, Radiological and Nuclear Response: Introductory Guidance*, 2014, p. 12, available at: www.icrc.org/eng/resources/documents/publication/p4175.htm.

6 *Ibid.*

timely and competent decisions on how to respond, and effectively mobilize resources to implement those decisions. In order to create such a competency-based capacity, central processes must be applied in relation to systematic management of CBRN response (including risk-based decision-making), standing operational procedures and availability of and access to the necessary resources. This is because CBRN events are unpredictable and the organization is only prepared to respond quickly and effectively if processes are already in place to prevent the need to define responsibilities, chain of command and other aspects of response management during the CBRN event. Likewise, when a CBRN event occurs, there must be no debate as to the best operational practices, what resources are required, where such resources can be found or how they can be made available for response efforts.

Decision-making

All decisions relating to a response to CBRN events are based on an analysis of the best available information. This is furnished by the expertise available in the ICRC's Weapon Contamination (WeC) Unit – CBRN sector, the WeC advisers based in the field, and external networks, unless the situation requires immediate action to preserve life, in which case decisions will have to be made on the spot. The ICRC's decision-making process is predetermined in terms of who will make the decisions, when they will be made and what information is taken into account. There are three key considerations that the ICRC applies to this process. First, any response to a CBRN event must take into account policies, capacities and perceptions of governments, authorities (civil and military) and civil society as well as of international organizations and the other components of the Movement. Second, the ICRC may have to reduce or abandon its humanitarian activities because of the nature of a CBRN event in order to minimize risks to staff health, safety and security. Third, depending on the nature of the CBRN event, the ICRC may seek, acquire or otherwise possess extremely sensitive information which must be carefully managed in terms of recording, processing and sharing or dissemination in line with relevant institutional policies, meaning that any action or non-action in response to an allegation of use of CBRN weapons could be interpreted as confirmation or denial of the allegation.

Operational response

The risks of undertaking an operational activity in response to a CBRN event must be weighed against the expected benefits of that activity. An example for how the expected benefits can be assessed relates to medical assistance in a CBRN event. In an article in the *Emergency Medicine Journal*, Malich, Coupland, Donnelly and Baker argue that, first, the widely accepted basic principles of life support⁷ can be

7 In order of priority, the basic principles of life support are maintaining the airway, supporting ventilation, arresting haemorrhage and supporting circulation.

applied to people suffering acute life-threatening effects of CBRN agents, and second, first aid provided by trained non-medical responders to people suffering toxic trauma in a contaminated or potentially contaminated environment is likely to save lives whether or not there is later access to hospital care.⁸

Another imperative for an operational CBRN response is that any activity must be prepared for and planned in the context in which the event occurred. This implies that protection of people involved in the response must be optimized through consideration of the compatibility of the available human and material resources with the requirements of standardized operational practices, the appropriateness of the location, time and duration of the planned operations, and the appropriateness of existing contingency arrangements. With respect to staff health, safety and security, the response to a CBRN event must be as coherent and equitable as possible.

The ICRC's dedicated CBRN response capacity maintains a deployable – albeit still developing – capability to undertake a clearly defined range of prepared operational activities (see below). For these activities to be effective, specific resources are needed in terms of skills, equipment and procedures that, in turn, determine the minimal capacity for a CBRN operational response. A response based on a capacity that falls short of this minimum is likely to be both ineffective and, more importantly, dangerous for those involved.

Dedicated response capacity

To respect and implement the guiding principles, the ICRC draws on a dedicated response capacity for CBRN events. This capacity consists of a network of CBRN and conventional weapons specialists based in the field, along with external networks for response that are built around the WeC Unit within ICRC, comprising the CBRN sector. Offering technical competence and assuming managerial functions, the CBRN sector is charged with overall coordination of all aspects of the ICRC's CBRN response. The sector ensures that a response to CBRN events can be systematically managed, operational practices are defined and kept relevant, and human and material resources are suitable and available.

Systematic approach to management, including risk-based decision-making

In keeping with the stated objectives based on the ICRC's mandate and standard of care, a response to CBRN events, whether or not it involves a field-level operational response, can only be achieved through systematic management processes, including risk-based decision-making, in order to accommodate possibly

8 Gregor Malich, Robin Coupland, Steve Donnelly and David Baker, "A Proposal for Field-Level Medical Assistance in an International Humanitarian Response to Chemical, Biological, Radiological or Nuclear Events", *Emergency Medicine Journal*, Vol. 30, No. 10, 2013.

conflicting imperatives such as those relating to staff health, operational constraints and the needs of victims or potential victims of the event. This requires that a decision on the type and scope of the response be based on an event-specific assessment of the risks. This is the only rational approach in this context because CBRN events are highly complex, fraught with uncertainty, and likely to be emotionally charged.

The management and decision-making element of the ICRC's response capacity applies to all four phases of response to any CBRN event. These are: (1) recognition of and notification about events of concern; (2) analyzing relevant information and making recommendations as to a response; (3) approving (or not) and mobilizing required resources as necessary; and (4) implementing and adapting the response in keeping with the prioritized objectives. Since developing this CBRN response framework, the management of the ICRC's responses to any CBRN event has always covered all four phases. These responses have related to live events affecting ICRC operations or potentially affecting the ICRC, while other involvements have included advisory support and capacity-building for delegations and operational partners within and outside the Movement.

In-house subject-matter expertise is essential for translating existing management and operational practices for all of these phases into an appropriate CBRN response – including through the provision of indispensable analytical and operational capabilities. For example, with respect to contingency planning, identified scenarios of concern to the ICRC may include thematic CBRN risks such as availability, release and dispersal of a certain CBRN agent or effects of exposure, or regional CBRN risks such as the use or threat of use of certain CBRN weapons in a developing or ongoing armed conflict. For such scenarios, contingency planning must incorporate assessments of these risks and decisions on risk mitigation, which, in collaboration with the concerned ICRC field offices, should be facilitated and informed by in-house CBRN specialists.

Standing operational procedures

The ICRC's CBRN response framework foresees a deployable capability to undertake, as a minimum, the following clearly defined functions: Self-protection of staff against the effects of exposure to CBRN agents; CBRN specialist support to humanitarian assistance, notably an advisory role, for example to establish a safe ICRC field office, reconnaissance, for instance where the ICRC plans assistance operations, detection, monitoring and management of contamination, and stand-by medical support for the response; and eventually, humanitarian assistance relating to CBRN events, notably field medical care, management of dead bodies, and management of stockpiled, unexploded or discarded weapons.

To ensure the effectiveness and safety of these functions, the required skills, equipment and procedures are all standardized. An overview of requirements as to training and material is given in [Table 1](#) for each of these functions, with details provided as to the sought competencies and training programme as well as to the equipment kits for personal protection and specific CBRN response tasks.

Table 1. Deployable operational functions for the ICRC's CBRN response – training and material requirements

Operational function	Training			Material	
	Aspired competencies	Programme	Personal protection kits	Task-specific CBRN kits	
Self-protection Individual and team protection	CBRN awareness, emergency protection	Pre-deployment briefing	Emergency self-protection and decontamination (ESPD)	Emergency victim decontamination (EVD), if any	
Humanitarian assistance Field medical care Dead body management Management of stockpiled, unexploded or discarded weapons	CBRN awareness, emergency protection + CBRN response framework, operational concepts, standard protection, (CBRN) first aid + Function-specific competencies	Basic training course on CBRN response + Training seminars on CBRN medical care/dead body management/weapon contamination management + Pre-deployment Briefing	Standard personal protection equipment (SPPE)	First aid Medical care EVD	

<p>CBRN specialist support*</p> <p>Advisory</p> <p>Reconnaissance Detection, monitoring, contamination management Team medical support</p>	<p>CBRN response framework</p> <p>CBRN response framework, operational concepts + Function-specific competencies</p>	<p>Advisory tutorial + Pre-deployment briefing</p> <p>Advisory tutorial + Familiarization and exercise on CBRN operational practices for reconnaissance/ detection, monitoring and contamination management/medical care + Pre-deployment briefing</p>	<p>ESPD</p> <p>SPPE Enhanced personal protection equipment (recon only)</p>	<p>Detection and monitoring, if any</p> <p>Recon Detection and monitoring Environmental sampling Team decontamination Victim decontamination Medical care</p>
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* People foreseen to undertake CBRN specialist support tasks need to have vocational training relating to civil protection and/or extensive operational experience in CBRN response such, as in first responder units or the military.

The authors stress that the above describes a minimal capacity only; it will prove inadequate to meet all needs of a CBRN event in which many people are directly or indirectly affected. Therefore, while the ICRC prepares to undertake operational activities in response to at least small-scale CBRN events (including threats or allegations), it has also engaged with other stakeholders to support and promote capacity-building for a broader CBRN response (see below).

Specialized resources

The resources required for responding to a CBRN event can broadly be divided into information, people and material. To an extent, the resource requirements for managing the ICRC's response and for maintaining deployable capabilities for a CBRN response can be foreseen. However, depending on the context, additional resources may be needed for the different phases of a response.

The CBRN sector: In-house subject-matter expertise

In coming to terms with, first, the complexity of responding to CBRN events and, second, the fact that resources available to any organization preparing for such events are limited, the ICRC has established a competent and sustainable structure – a designated CBRN sector – as the core element in its CBRN response capacity. The response capacity also comprises other ICRC units and external service providers whose respective roles in the ICRC's CBRN response are aligned with and coordinated through the CBRN sector. For this purpose, the sector is composed of specialist staff covering the indispensable functions of coordination, medical advisory and technical advisory in relation to CBRN response.

The remit of the sector is to ensure that the ICRC's response to CBRN events is systematic and in keeping with the best possible practices. This entails contributing to early warning, operations and contingency planning, critical incident management, rapid deployments, safety and security consultations, and training of ICRC staff, other humanitarian workers and the local population. The trainings for ICRC teams and experts on the ICRC roster for CBRN response are provided in close cooperation with specialized bodies and address, in different courses, CBRN basic response, in collaboration with the Irish Armed Forces; CBRN reconnaissance, in collaboration with Spiez Laboratory; and CBRN medical response. In addition, tailored training and instructions are provided on an as-needed basis to other humanitarian workers or local populations.

Internal resource network

The ICRC's internal network for CBRN response, in addition to the CBRN sector, comprises units whose normal roles and responsibilities also relate to CBRN events, individuals who are specially trained to undertake prepared operational activities in CBRN response, and special advisory bodies, as needed. Units within the ICRC

whose normal roles and responsibilities also relate to CBRN events include those in charge of human resources and staff health, safety and security, regional and local operations, rapid deployments, institutional position and legal assessments relating to the prevention of the use of certain weapons and the protection of civilians, medical assistance, dead body management, weapon contamination management, thematic research and scanning of publicly available information, internal and external communication, or procurement, logistic support and stock management. Individuals trained to undertake prepared operational activities in CBRN response may come from units in charge of medical assistance, dead body management, or the management of stockpiled, unexploded or discarded weapons. Special advisory bodies could be bodies comprising representatives of units concerned with medical aspects of CBRN response in light of ICRC health policies, institutional credibility, and the operational and legal implications of allegations of use of CBRN weapons.

These units, individuals and advisory bodies have specific tasks regarding CBRN response and are expected to be able to assume these tasks. Other ICRC units adapt their routine work as required in a CBRN event of concern to the ICRC. The ICRC's designated CBRN sector coordinates these resources in the context of operations and contingency planning as well as during actual CBRN events through a variety of the ICRC's interaction mechanisms, including through the designation of CBRN focal points and the setting up of CBRN strategic orientation groups or headquarter operational task forces.

External resource network

The extensive resources required for training and maintaining a CBRN response capacity and undertaking operational activities in the context of actual events could not be met by resources available only within the ICRC. Supplementary external resources are needed, and the ICRC's CBRN response capacity therefore includes coordinating with competent organizations and individuals who may provide specialized resources through formal agreements or via a professional interface with contact on a regular basis.

In general, those organizations and individuals that are available to augment and complement the ICRC's own CBRN response capacities may provide information pointing to potential or actual CBRN events or supporting their assessments, information, people and material for building and enhancing CBRN response capacities, people and material for assessing actual CBRN events, and people and material for complementing the ICRC's deployable capability for CBRN response. In relation to operational activities, compliance with the ICRC's competency requirements for required roles and specifications of associated material kits (see [Table 1](#)) will be essential.

Selected specialized Swiss agencies, covering all areas of CBRN response, represent a core of the ICRC's external CBRN response network. These agencies provide, on a formalized basis, access to leading subject-matter competence, and offer resources to the ICRC when necessary.

Another core group in the ICRC's external CBRN response network consists of selected National Red Cross and Red Crescent Societies which have their own CBRN response capacities for a domestic event or have an interest in developing such. The ICRC engages with them, and with the International Federation of Red Cross and Red Crescent Societies, to promote and facilitate exchanges of CBRN experts within the Movement and to ensure, such as through the ICRC's CBRN workshops and training courses, a Movement-wide, harmonized approach to CBRN response, including capacity-building within the Movement. For instance, the developing roster of experts managed by the CBRN sector includes selected volunteers from the National Societies that have CBRN capacities.

The ICRC maintains an external network of individuals specialized in different aspects of CBRN response. The principal function of this network is to provide access to training and assessment skills as well as to pertinent information in relation to a real event. This network includes professional contacts in specialized agencies, UN-based organizations and non-governmental organizations, training and research facilities, and private companies such as equipment manufacturers.

Conclusions

The ICRC has built a capacity to respond to at least small-scale CBRN events. This capacity also includes a deployable capability to undertake operational activities according to prioritized objectives and from within an overall framework agreed by the senior management of the organization. The described framework permits the ICRC to respond to a CBRN event in a manner that is compatible with both its mandate and its duty of care towards staff and others.

If the international humanitarian community is considering responding to a CBRN event, the authors strongly recommend an approach based on such a framework both within and between the various agencies and other stakeholders concerned in order to harmonize their response capabilities for such an event. The response framework, by necessity, must include a thorough – and common – understanding of objectives, mandates and security policies, and most importantly of how and when decisions are made, and by whom. In terms of information management, skills, training and materials, the authors recommend that discussions about how to harmonize capabilities for responding to a CBRN event be initiated at the earliest opportunity. This call has already been responded to by a number of agencies in the context of the violent events in North Africa and the Middle East from 2011 until the present, and has also been taken up in a study presented by the United Nations Institute of Disarmament Research (UNIDIR) in 2014 on humanitarian assistance in case of nuclear weapons use.⁹

9 UNIDIR, *An Illusion of Safety: Challenges of Nuclear Weapon Detonations for United Nations Humanitarian Coordination and Response*, United Nations, 2014.

Though progress is being made in relation to humanitarian response to CBRN events, the authors recall the ICRC's 2009 "reality check"¹⁰ and the fact that there is very little real experience in relation to medical care of victims of a CBRN event that can be brought to bear.¹¹ Also, while recent events involving the confirmed, threatened and alleged use of CBRN weapons have led to a greater awareness of the need to address the humanitarian consequences of such events, there are no indications that an effective international humanitarian response capacity would be available. In reality, whilst calling for greater efforts at the international level as regards response to CBRN events, the authors recognize that the chances are near to zero of bringing effective assistance to victims of large-scale use of CBRN weapons. This underscores the importance, legitimacy and urgency of the continued efforts of the international community to prevent, by any means, such events from ever occurring.

10 R. Coupland and D. Loye, above note 3.

11 G. Malich, R. Coupland, S. Donnelly and D. Baker, above note 8.

The use of nuclear weapons and human rights

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Abstract

International human rights law is an as-yet underused branch of international law when assessing the legality of nuclear weapons and advocating for their elimination. It offers a far greater range of implementation mechanisms than does international humanitarian law (IHL), and arguably strengthens the protections afforded to civilians and combatants under IHL, particularly in non-international armed conflict. Of particular relevance are the rights to life, to humane treatment, to health and to a healthy environment, associated with the right to a remedy for violations of any human rights.

Keywords: human rights, right to life, humane treatment, remedy, jurisdiction, *lex specialis*, radiation, burns, necessity, proportionality.



Introduction

Gone are the days when it could be said with any sincerity that international weapons law, the evolving branch of international law that regulates the development, production, stockpiling, testing, transfer and use of conventional weapons and weapons of mass destruction, comprised only international humanitarian law (IHL) and disarmament law. International environmental law and especially international human rights law both potentially apply to and control weapons, and in particular their testing, transfer and use. While the testing and transfer of nuclear weapons are beyond the scope of this article, it argues that constraints imposed on the use of force by international human rights law, and the accountability that the law foresees for any such unlawful use (which would include any future use of nuclear weapons), provide a valuable complement to the rules of IHL governing the conduct of hostilities.

Human rights law rules on the use of force

But does human rights law even govern the use of force? The response to this question might seem self-evident to many. Nonetheless, it is important to reaffirm, unequivocally, that this body of international law applies clear and strict rules to any use of force, particularly for law enforcement purposes. This is the case whether force is used within or outside a situation of armed conflict. If there is no armed conflict, or the force does not have the requisite nexus with an armed conflict, IHL holds no sway. So, human rights law must effectively control the behaviour of the State as it responds to unlawful violence, whether everyday criminal violence or that which is terrorist in nature.¹

Human rights law's regulation of the use of force encompasses two core rules. First, any force used must be only the minimum necessary (the principle of necessity). Second, force used must be proportionate to the threat (the principle of proportionality).² These rules are cumulative, and violation of either means that human rights (in particular the right to life and/or the right to freedom from inhumane treatment) have been violated. Their application must, however, be "realistic" – indeed, human rights jurisprudence has shown that a "margin of appreciation" may be allowed to a State in exceptional circumstances, such as when it is confronting a terrorist attack³ – and must effectively balance protection

1 The term "terrorist" is used here to mean one or more acts of violence committed against the general public with a view to provoking a state of terror and/or to changing government policy.

2 With respect to intentional lethal use of force, this is only lawful when "strictly unavoidable" to protect life – this is what the United Nations (UN) Special Rapporteur on extrajudicial, summary or arbitrary executions, Christof Heyns, has termed the "protect life" principle. See, e.g., Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Christof Heyns, UN Doc. A/HRC/26/36, 1 April 2014.

3 See, e.g., European Court of Human Rights (ECtHR), *Finogenov and Others v. Russia*, App. Nos. 18299/03 and 27311/03, Judgment (First Section), 20 December 2011 (as rendered final on 4 June 2012), para. 213, available at: <http://hudoc.echr.coe.int/sites/eng/pages/search.aspx?i=001-108231> (all internet references were accessed in November 2015).

and security. Nonetheless, the rules are specific and clear both in their normative content and in their practical application. They are not mere aspirations.

Outside a situation of armed conflict – for instance, where a State opposes peaceful protesters against the regime, or where it counters armed opposition insofar as the violence is not regular and intense and/or the opposition has not coalesced into one or more “organized armed groups”⁴ – any use of nuclear weapons by a State on its territory would inexorably contravene these rules. Use of nuclear weapons could never amount to minimum necessary force, and such a use of force would therefore violate international human rights law. IHL, of course, would simply not apply.

Thankfully, such a scenario is far-fetched, though it is not wholly implausible. In this regard, Ritchie refers to “strongman rhetoric” by Professor Colin Gray, an expert on international politics and strategic studies at the University of Reading, given in evidence to the United Kingdom’s House of Commons Defence Committee in 2006:

I certainly would not want terrorists and those who support them to say they can use weapons of mass destruction against Britain and we will do our best with conventional weapons to bring the roof down on their heads. I would like them to know they are messing with a nuclear power.⁵

Undeniably, one of the stated military rationales for retaining and eventually using nuclear weapons – to be able to respond to a threat of or an actual detonation by a terrorist group – could even be seen as an additional incentive to such groups to acquire nuclear material. Provoking an unlawful, cataclysmic response would be the group’s deliberate intent.

A more likely scenario, however, is use of nuclear weapons in armed conflict as part of the conduct of hostilities. Here, the legal situation is more complex.

The application of human rights law to the conduct of hostilities

There are potentially two significant obstacles to the application of human rights law to the conduct of hostilities that must be addressed before the substantive content of the law is assessed: the first is the geographical limitations on the jurisdiction of human rights law, and the second is the material scope of its application. I will now deal with these two issues in turn.

4 International Criminal Tribunal for the former Yugoslavia (ICTY), *The Prosecutor v. Dusko Tadić*, Case No. IT-94-1-A, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction, 2 October 1995, para. 70.

5 Nick Ritchie, *A Nuclear Weapons-Free World: Britain, Trident, and the Challenges Ahead*, Palgrave Macmillan, Basingstoke, 2012, p. 89. See also Jerry Miller, *Stockpile: The Story behind 10,000 Strategic Nuclear Weapons*, Naval Institute Press, Annapolis, 2010, pp. 216–17; and see, e.g., Robert Ayson, “After a Terrorist Nuclear Attack: Envisaging Catalytic Effects”, *Studies in Conflict & Terrorism*, Vol. 33, No. 7, 2010.

Geographical limitations on the jurisdiction of human rights law

A potential obstacle preventing the application of human rights law to the use of weapons in armed conflict, including nuclear weapons, is the idea that physical geography acts to limit the law's jurisdictional reach. The United States has been a leading advocate of this position, asserting, with respect to the International Covenant on Civil and Political Rights (ICCPR) in particular, that the duty accepted by each State Party "to respect and to ensure to all individuals within its territory and subject to its jurisdiction the rights recognized"⁶ means that only persons on its territory may formally enjoy the protection of human rights. The Human Rights Committee has explicitly rejected this position, both generally and with regard to the United States specifically.⁷

What is more, the International Court of Justice (ICJ) has also, albeit implicitly, rejected extraterritoriality as an element that would *ipso facto* bar the application of human rights law to the use of nuclear weapons in warfare. As the ICJ observed: "In principle, the right not arbitrarily to be deprived of one's life applies also in hostilities."⁸ Thus, in adjudging that human rights law continued to apply to the conduct of hostilities in armed conflict, and given that the Court's 1996 Advisory Opinion on the threat or use of nuclear weapons (Nuclear Weapons Advisory Opinion) was only addressing situations of international armed conflict,⁹ the ICJ must have accepted that there is no jurisdictional limitation to the reach of international human rights law, at least as it applies to the use of nuclear weapons.¹⁰

6 International Covenant on Civil and Political Rights (ICCPR), New York, 16 December 1966 (entered into force 23 March 1976), 999 UNTS 171, Art. 2(1).

7 See, e.g., Human Rights Committee, Concluding Observations on the Fourth Periodic Report of the United States of America, UN Doc. CCPR/C/USA/CO/4, 23 April 2014, para. 4.

8 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996 (Nuclear Weapons Advisory Opinion), *ICJ Reports* 1996, para. 25.

9 The Court stated: "The terms of the question put to the Court by the General Assembly in resolution 49/75 K could in principle also cover a threat or use of nuclear weapons by a State within its own boundaries. However, this particular aspect has not been dealt with by any of the States which addressed the Court orally or in writing in these proceedings. The Court finds that it is not called upon to deal with an internal use of nuclear weapons." *Ibid.*, para. 50. Of course, a nuclear weapon could be detonated within a State's own borders during an international armed conflict, but the far likelier scenario is the launching or dropping of such weapons onto another State's sovereign territory.

10 Admittedly, the ECtHR took a markedly different approach in the *Banković* case, holding that the bombing, from the air, of a Serbian television and radio station by NATO forces did not fall within the scope of the Convention for the Protection of Human Rights and Fundamental Freedoms, 213 UNTS 222, 4 November 1950 (entered into force 3 September 1953) (European Convention on Human Rights, ECHR). ECtHR, *Banković and Others v. 17 NATO States*, App. No. 52207/99, Admissibility Decision (Grand Chamber), 12 December 2001, para. 75. As Louise Doswald-Beck has observed, however, in a later case, *Mansur Pad and Others v. Turkey*, which concerned the killing of persons in Iraq by a Turkish helicopter near the border between the two States, the ECtHR came to a different conclusion. Here the Court stated that it was "not required to determine the exact location" where the people were killed by the helicopter fire; the fact that they were the victims of the shooting meant that they were "within the jurisdiction of Turkey at the material time". Louise Doswald-Beck, "Human Rights Law and Nuclear Weapons", in Gro Nystuen, Stuart Casey-Maslen and Annie Golden Bersagel (eds), *Nuclear Weapons under International Law*, Cambridge University Press, Cambridge, 2014, pp. 440–441, citing ECtHR, *Mansur Pad and Others v. Turkey*, App. No. 60167/00, Admissibility Decision, 28 June 2007, paras 54–55.

Material scope of application of human rights law

A number of States have, at least in earlier decades, sought to sustain the position that human rights apply only in peacetime and not during situations of armed conflict. On one level this argument is nonsensical, while on another it has been contradicted by jurisprudence. The absurdity of the position writ large can be seen in the fact that States engaged in armed conflicts must still prevent and repress ordinary crimes committed on their territory (at the very least, outside the confines of any area in which hostilities are actively being conducted between the parties to the conflict) as well as at other *loci* under their jurisdiction. Such law enforcement activities are clearly to be done in accordance with domestic criminal law as overseen by the State's obligations under international human rights law,¹¹ not by reference to IHL's far less restrictive rules of distinction and proportionality in attack.

Further, as the ICJ observed in its 1996 Nuclear Weapons Advisory Opinion, some have contended that a leading human rights treaty, the 1966 International Covenant on Civil and Political Rights, "was directed to the protection of human rights in peacetime, but that questions relating to unlawful loss of life in hostilities were governed by the law applicable in armed conflict".¹² The ICJ dismissed this argument in the following terms:

The Court observes that the protection of the International Covenant of [sic] Civil and Political Rights does not cease in times of war, except by operation of Article 4 of the Covenant whereby certain provisions may be derogated from in a time of national emergency. Respect for the right to life is not, however, such a provision. In principle, the right not arbitrarily to be deprived of one's life applies also in hostilities.¹³

Accordingly, therefore, the Court has accepted that, in principle, human rights law forms part of the *jus in bello*, the law applicable in armed conflict.¹⁴ Thus, all the

11 More precisely, the international law of law enforcement is composed of three main elements:

- international human rights law, especially the rights to life, liberty and security, to peaceful protest (an umbrella right comprising a number of independent rights), and to freedom from torture and other forms of inhumane treatment;
- customary international law, derived from, *inter alia*, criminal justice standards, especially the 1979 Code of Conduct for Law Enforcement Officials and the 1990 Basic Principles on the Use of Force and Firearms by Law Enforcement Officials; and
- general principles of law, which reflect core principles of national criminal law across democratic nations.

See further Stuart Casey-Maslen (ed.), *Weapons under International Human Rights Law*, Cambridge University Press, Cambridge, 2014.

12 Nuclear Weapons Advisory Opinion, above note 8, para. 24.

13 *Ibid.*, para. 25.

14 See also in this regard ICJ, *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, 9 July 2004, *ICJ Reports 2004*, para. 106.

provisions of the ICCPR will potentially apply during armed conflict, subject to the possibility of derogation from full observance of some in a time of grave national emergency.¹⁵

The nature of the interrelationship between human rights law and IHL pertaining to the conduct of hostilities

If, however, it is now generally accepted that human rights law applies to the use of weapons in a situation of armed conflict, this is largely where broad agreement ends. The ICJ made its position clear in 1996 on how it appreciates the interrelationship between human rights law and IHL pertaining to the conduct of hostilities:

The test of what is an arbitrary deprivation of life ... falls to be determined by the applicable *lex specialis*, namely, the law applicable in armed conflict which is designed to regulate the conduct of hostilities. Thus whether a particular loss of life, through the use of a certain weapon in warfare, is to be considered an arbitrary deprivation of life contrary to Article 6 of the Covenant, can only be decided by reference to the law applicable in armed conflict and not deduced from the terms of the Covenant itself.¹⁶

What the ICJ is effectively saying is that the use of a weapon in the conduct of hostilities – at least in a situation of international armed conflict – will only violate human rights law if that use *also* constitutes a violation of the rules of IHL. If use does not violate IHL, it will not violate human rights law, as IHL is, allegedly, a more specific source of norms regulating the conduct of hostilities than is human rights law.

This use of the *lex specialis derogat legi generali* method of resolving a conflict of norms has been widely criticized. Christian Tomuschat has referred to the ICJ's statement as "somewhat short-sighted";¹⁷ William Schabas has described the Court's approach as "clumsy at best";¹⁸ and Noam Lubell has

15 Article 4(1) of the ICCPR states: "In time of public emergency which threatens the life of the nation and the existence of which is officially proclaimed, the States Parties to the present Covenant may take measures derogating from their obligations under the present Covenant to the extent strictly required by the exigencies of the situation, provided that such measures are not inconsistent with their other obligations under international law and do not involve discrimination solely on the ground of race, colour, sex, language, religion or social origin."

16 Nuclear Weapons Advisory Opinion, above note 8, para. 25.

17 Christian Tomuschat, "The Right to Life – Legal and Political Foundations", in Christian Tomuschat, Evelyne Lagrange and Stefan Oeter (eds), *The Right to Life*, Brill, Leiden, 2010, p. 11.

18 William Schabas, "The Right to Life", in Andrew Clapham and Paola Gaeta (eds), *Oxford Handbook of International Law in Armed Conflict*, Oxford University Press, Oxford, 2014.

deemed it “perhaps an inept approach”.¹⁹ Marko Milanović has called for *lex specialis* to be “abandoned as a sort of magical, two-word explanation of the relationship between IHL and [international human rights law], as it confuses far more than it clarifies”.²⁰ But although the ICJ may be construed to have pulled back from this absolutist position in the later contentious case of *Democratic Republic of the Congo v. Uganda*,²¹ since that jurisprudence did not concern specifically the use of weapons, arguably the view it expressed in its 1996 Nuclear Weapons Advisory Opinion remains authoritative insofar as the use of nuclear or other weapons in the conduct of hostilities is concerned.²²

If the ICJ were correct in its earlier assertions, would this mean that human rights law could offer no added protection in addressing any future use of nuclear weapons in international armed conflict? Not at all. Aside from the vagueness of the practical content of its primary rules governing the conduct of hostilities when they are applied in practice, addressed below in relation to situations of non-international armed conflict, IHL also suffers from a woeful lack of implementing mechanisms, with the high threshold for prosecutions of war crimes under international criminal law (both legal and political) making accountability for violations of that important corpus of law grossly inadequate. Fortunately this is an area in which human rights law is relatively strong, and the United Nations (UN) Human Rights Council (for all its faults) and UN human rights treaty bodies and special procedures, as well as the regional human rights courts in Africa, the Americas and Europe, may each offer valuable opportunities to have alleged violations of international law investigated. An element of the right to life is a duty to investigate and, where relevant, to

- 19 Noam Lubell, *Extraterritorial Use of Force against Non-State Actors*, Oxford Monographs in International Law, Oxford University Press, Oxford, 2011, p. 240. More recently, in submitting an *amicus curiae* brief to the ECtHR with Professor Françoise Hampson, Lubell noted that “[t]he reference to *lex specialis* is unhelpful, which may account for why the ICJ did not include the final sentence in its quotation from para. 106 of the Advisory Opinion in the subsequent contentious case [*Democratic Republic of the Congo v. Uganda*, discussed below]. Whilst in general terms its meaning is clear, its specific meaning and application appears to be interpreted in a different way by every commentator. Use of this term has served to obfuscate the debate rather than provide clarification. It was designed to deal with a different situation – a vertical relationship between a general regime and specific regimes. ... The relationship between LOAC/IHL and human rights law involves a different problem – the horizontal collision of two separate legal regimes. One is not a more specific form of the other.” ECtHR, *Georgia v. Russia (II)*, 38263/08, Amicus Curiae Brief Submitted by Professor Françoise Hampson and Professor Noam Lubell of the Human Rights Centre, University Of Essex, 2014, para. 18.
- 20 Marko Milanović, “Norm Conflicts, International Humanitarian Law and Human Rights Law”, in Orna Ben-Naftali (ed.), *Human Rights and International Humanitarian Law*, Collected Courses of the Academy of European Law, Vol. 19, No. 1, Oxford University Press, Oxford, 2010, p. 6.
- 21 ICJ, *Case Concerning Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, 19 December 2005, *ICJ Reports 2005*, para. 216.
- 22 See, in this regard, Vera Gowlland-Debbas, “The Right to Life and Genocide: The Court and an International Public Policy”, in Laurence Boisson de Chazournes and Philippe Sands (eds), *International Law, the International Court of Justice and Nuclear Weapons*, Cambridge University Press, Cambridge, 1999.

prosecute.²³ Implementing bodies for human rights law, such as the regional human rights courts in Africa, the Americas and Europe, may even, depending on the forum and the circumstances, lead to judgments that effectively mandate acts in reparation, with a view to satisfying the responsibility of States for such violations.²⁴

It is fundamental to the notion of human rights that each victim of a human rights violation has the right to an effective remedy. The right to a remedy and reparation forms part of the corpus of customary law²⁵ and is arguably also a general principle of law.²⁶ The 1948 Universal Declaration of Human Rights saw the exercise of the right to a remedy purely in terms of national fora.²⁷ Today, however, the scope of the right is also well developed in international²⁸ and regional²⁹ human rights treaties, and has been clearly articulated by the various oversight and implementation mechanisms established under them. Mass claims, as would be expected in the event of nuclear weapon use, would demand extraordinary processes, but mass claims are not new.

- 23 In *Kolevi v. Bulgaria*, for instance, the ECtHR stated: “The obligation of States to protect the right to life ... requires by implication that there should be an effective official investigation when individuals have been killed. ... The investigation must be effective in the sense that it is capable of leading to the establishment of the relevant facts and the identification and punishment of those responsible. ... While the obligation to investigate is of means only and there is no absolute right to obtain a prosecution or conviction, any deficiency in the investigation which undermines its capability of establishing the circumstances of the case or the person responsible is liable to fall foul of the required measure of effectiveness.” ECtHR, *Kolevi v. Bulgaria*, App. No. 1108/02, Judgment (Fifth Section), 5 November 2009, paras 191, 192.
- 24 According to Article 1 of the 2001 Draft Articles on the Responsibility of States for Internationally Wrongful Acts, elaborated by the International Law Commission and forwarded to the UN General Assembly, “[e]very internationally wrongful act of a State entails the international responsibility of that State”. According to Article 31 of the Draft Articles:
1. The responsible State is under an obligation to make full reparation for the injury caused by the internationally wrongful act.
 2. Injury includes any damage, whether material or moral, caused by the internationally wrongful act of a State.
- 25 In 2001, in its judgment in the *Cantoral Benevides* case, for example, the Inter-American Court of Human Rights (IACtHR) held that Article 63(1) of the American Convention on Human Rights (ACHR), 1144 UNTS 123, 22 November 1969 (entered into force 18 July 1978) (governing remedy and reparation), “embodies a rule of customary law that is one of the basic principles of contemporary international law as regards the responsibility of States. When an unlawful act imputable to a State occurs, that State immediately becomes responsible in law for violation of an international norm, which carries with it the obligation to make reparation and to put an end to the consequences of the violation.” IACtHR, *Cantoral Benevides* case, Ser. C, No. 88 (2001), Judgment, 3 December 2001, para. 40. See also Dinah Shelton, *Remedies in International Human Rights Law*, 2nd ed., Oxford University Press, Oxford, 2005, pp. 27–29, 217.
- 26 See, e.g., IACtHR, *Velasquez Rodriguez v. Honduras*, Ser. C, No. 7, Judgment (Reparations), 21 July 1989, para. 25.
- 27 “Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.” Universal Declaration of Human Rights, UN Doc. A/810, Paris, 10 December 1948, Art. 8.
- 28 See, e.g., ICCPR, above note 6, Art. 2; International Convention on the Elimination of All Forms of Racial Discrimination, 660 UNTS 195, 21 December 1965 (entered into force 4 January 1969), Art. 6; and Convention against Torture and other Cruel, Inhuman or Degrading Treatment of Punishment, 1465 UNTS 85, 10 December 1984 (entered into force 26 June 1987) (Convention against Torture), Art. 14.
- 29 Thus, the ECHR (Arts 13 and 41), the ACHR (Art. 25), the 1981 African Charter on Human and Peoples’ Rights (Art. 7) and the 2004 Arab Charter on Human Rights (Art. 12) all codify the right to a remedy for victims of human rights violations. African Charter on Human and Peoples’ Rights, 1520 UNTS 217, Nairobi, 27 June 1981 (entered into force 21 October 1986); Arab Charter on Human Rights, Tunis, 22 May 2004 (entered into force 15 March 2008), reprinted in *International Human Rights Report*, Vol. 12, 2005, p. 893.

For example, although not a human rights organ, the UN Compensation Commission (UNCC), created to address Iraq's financial liability for its "unlawful invasion and occupation of Kuwait" in 1990, suggests how a human rights body might be able to address unlawful use of a nuclear weapon. The UNCC was established in 1991 as a subsidiary organ of the UN Security Council.³⁰ Security Council Resolution 687 had already "reaffirmed", *inter alia*, that Iraq, "without prejudice to the debts and obligations of Iraq arising prior to 2 August 1990, which will be addressed through the normal mechanisms, is liable under international law for any direct loss [or] damage, including environmental damage and the depletion of natural resources".³¹

The UNCC accepted claims from individuals, corporations and governments (as long as the claims were submitted by governments), as well as those submitted by international organizations for individuals who were not in a position to have their claims filed by a government. More than 2.6 million claims were submitted for a total of more than \$350 billion in compensation; grounds included serious personal injury to an individual and the death of a spouse, child or parent as a result of Iraq's invasion and occupation of Kuwait.³² A total of some \$52 billion was awarded.³³

In sum, where an act in the conduct of hostilities violates IHL, there is a reasonable chance that there will be one or more fora in which a corresponding violation of human rights law can at least be considered.³⁴ In the case of a nuclear weapon detonation in anger, the mass nature of potential claims should not be an insurmountable obstacle to satisfaction. Furthermore, if the use of a nuclear weapon was an act not only *in bello* but also *ad bellum*, there could also be distinct and separate liability under human rights law (as well as, of course, under public international law more generally) for a violation of the law governing the inter-State use of force.³⁵

Human rights most likely to be violated by the use of nuclear weapons

As Louise Doswald-Beck has observed, "[t]he enormous destructive effect of a nuclear detonation, as well as the long-term radioactive effects, is likely to result

30 UNSC Res. 692, 20 May 1991.

31 UNSC Res. 687, 3 April 1991, para. 16.

32 UNCC, "The United Nations Compensation Commission", available at: www.uncc.ch. Thus, as Edda Kristjansdottir observes, such mass claims processes show that "where there is political will and some source of funds to pay compensation or property to restitute, the challenge of processing hundreds of thousands, or even millions, of claims in a relatively short amount of time is not insurmountably difficult". Edda Kristjansdottir, "International Mass Claims Processes and the ICC Trust Fund for Victims", in Carla Ferstman, Mariana Goetz and Alan Stephens (eds), *Reparations for Victims of Genocide, War Crimes and Crimes against Humanity: Systems in Place and Systems in the Making*, Martinus Nijhoff, Leiden and Boston, 2009, p. 169. See further Linda A. Taylor, "The United Nations Compensation Commission", in *ibid.*, esp. p. 213.

33 See UNCC, "Summary of Awards and Current Status of Payments", available at: www.uncc.ch/summary-awards-and-current-status-payments.

34 Having said this, it is a sad reality that IHL's inadequacies in humanitarian protection are exacerbated by a woeful lack of accountability mechanisms.

35 See, e.g., Stuart Casey-Maslen, "The Right to a Remedy and Reparation for the Use of Nuclear Weapons", in G. Nystuen, S. Casey-Maslen and A. Golden Bersagel, above note 10, pp. 463–465.

in the finding of a violation of some or all” of a range of human rights.³⁶ In this regard, she cites *inter alia* the rights to life, to humane treatment, to a healthy environment and to the highest attainable standard of health.³⁷

The right to life

The right to life is often described as “a fundamental human right; a right without which all other rights would be devoid of meaning”.³⁸ Respect for the right to life is generally non-derogable under human rights treaties,³⁹ meaning, as the ICJ observed, that the right not arbitrarily to be deprived of one’s life applies *in toto* also in hostilities.⁴⁰ This right is both a treaty and a customary norm, and at its core may even amount to a peremptory norm of international law.⁴¹

As well as, consonant with other human rights, obliging action to respect, protect, and fulfil its enjoyment, the right to life also has significant procedural elements associated with it. The European Court of Human Rights (ECtHR) has held that this includes a duty on the State to investigate alleged violations of the right to life:

The obligation to protect the right to life under [Article 2], read in conjunction with the State’s general duty under Article 1 of the [European Convention on Human Rights] to ‘secure to everyone within their jurisdiction the rights and freedoms defined in [the] Convention’, requires by implication that there should be some form of effective official investigation when individuals have been killed as a result of the use of force by, *inter alios*, agents of the State ...⁴²

This applies whether such alleged violations may occur in the course of a law enforcement operation or a situation of armed conflict.⁴³

36 L. Doswald-Beck, above note 10, p. 459.

37 *Ibid.*, pp. 444–459.

38 Report of the Special Rapporteur, above note 2, para. 42.

39 The exception that proves the rule is contained in Article 15 of the ECHR (“Derogation in Time of Emergency”). Article 15(2) states: “No derogation from Article 2 [which sets out and protects the right to life], except in respect of deaths resulting from lawful acts of war ... shall be made under this provision.” This exception is limited to situations of international armed conflict, as non-international armed conflicts fall within the scope of Article 2(2)(c): “action lawfully taken for the purpose of quelling a[n] ... insurrection”. See L. Doswald-Beck, above note 10, pp. 447 n. 60 and 451.

40 Nuclear Weapons Advisory Opinion, above note 8, para. 25.

41 See Report of the Special Rapporteur, above note 2, para. 42.

42 ECtHR, *Al-Skeini and Others v. UK*, App. No. 55721/07, Judgment (Grand Chamber), 7 July 2011, para. 163.

43 “[T]he procedural obligation under Article 2 continues to apply in difficult security conditions, including in a context of armed conflict. ... It is clear that where the death to be investigated under Article 2 occurs in circumstances of generalised violence, armed conflict or insurgency, obstacles may be placed in the way of investigators and ... concrete constraints may compel the use of less effective measures of investigation or may cause an investigation to be delayed. ... Nonetheless, the obligation under Article 2 to safeguard life entails that, even in difficult security conditions, all reasonable steps must be taken to ensure that an effective, independent investigation is conducted into alleged breaches of the right to life.” *Ibid.*, para. 164. See also, e.g., ECtHR, *Jaloud v. The Netherlands*, App. No. 47708/08, Judgment (Grand Chamber), 20 November 2014.

Of course, States cannot reasonably be expected to investigate all alleged violations to the right to life during armed conflict. Some will not amount to arbitrary deprivation of life under IHL conduct of hostilities rules. Moreover, any use of nuclear weapons would place massive “obstacles” in the way of investigators, and constraints would surely “compel the use of less effective measures of investigation” and almost certainly cause investigation, at least at ground zero, to be delayed. But an investigation would still be required, and some form of investigation would still be feasible. No one could seriously argue that use of nuclear weapons would not require a detailed investigation under international law, including from a human rights perspective.

Substantively, the right to life also encompasses a duty to minimize recourse to lethal force in State law enforcement operations, both in the planning of operations and through the provision of appropriate medical assistance to anyone injured during their execution. It is further clear that the protection afforded by the right to life encompasses not only situations where the victim is killed; serious injuries resulting from the use of lethal force will also be covered. In *Benzer v. Turkey*, which concerned the bombing in March 1994 by the Turkish air force of two ethnic Kurdish villages in the south-east of the country, the ECtHR stated that the attack, “which caused these three applicants’ injuries, was so violent and caused the indiscriminate deaths of so many people that these three applicants’ fortuitous survival does not mean that their lives had not been put at risk.” The Court was therefore satisfied that “the risks posed by the attack call for examination of their complaints” under the right to life laid down in the European Convention on Human Rights.⁴⁴

The ECtHR held that the right to life of the three seriously injured victims of the bombing had been violated, both in substance and under the procedural aspects of Article 2.⁴⁵ This broad interpretation of the right to life is relevant for nuclear weapons not only because those who survive the initial detonation may nonetheless later die of the burn and blast injuries they sustain, but also because those in a very wide radius from the blast will also be subject to radioactive debris known as fallout.⁴⁶ Indeed, as has been noted, “the most fundamental difference between nuclear and conventional weapons is that the former release radioactive rays at the time of explosion”.⁴⁷ The effects of radiation on the body are said to be prodromal, hematologic, gastrointestinal, pulmonary, cutaneous and neurovascular.⁴⁸

44 ECtHR, *Benzer and Others v. Turkey*, App. No. 23502/06, Judgment (Former Second Section), 24 March 2014, para. 143.

45 *Ibid.*, para. 185.

46 Nuclear fallout refers to the particles of matter in the air made radioactive from a nuclear explosion. Some of these particles fall in the immediate area, and some get blown many thousands of miles by upper winds. When they eventually fall to earth, this is called fallout. See, e.g., Fun Fong, Cham E. Dallas and Lorris G. Cockerham, “In-Depth Medical Management for Nuclear/Radiological/Conventional Terrorism Agents”, PowerPoint Presentation, undated, available at: www.powershow.com/view/17e3-NTY4Y/Medical_Effects_of_Nuclear_Weapons_powerpoint_ppt_presentation. See also L. Doswald-Beck, above note 10, pp. 450–451.

47 Statement of the Mayor of Nagasaki to Nuclear Weapons Advisory Opinion, above note 8, p. 36, available at: www.icj-cij.org/docket/files/95/5935.pdf.

48 F. Fong, C. E. Dallas and L. G. Cockerham, above note 46.

The right to humane treatment

Fallout is also relevant to consideration of the right to freedom from cruel, inhumane or degrading treatment, as set out in the 1966 ICCPR,⁴⁹ the 1984 Convention against Torture,⁵⁰ and the three main continental human rights treaties.⁵¹ While the material and personal scope of this right is in no way synonymous with the customary and conventional IHL prohibition against the use of means or methods of warfare of a nature likely to cause superfluous injury or unnecessary suffering, to the extent that nuclear weapons are of such a nature, this would certainly entail a violation of this human right. “Radiation adversely affects the immune system so that the injured will not recover in the way they could have from weapons without this effect. In addition to causing more deaths than otherwise, this prolongs suffering.”⁵²

Further, as Doswald-Beck also reminds us, upon the detonation of a nuclear weapon, people can be rendered blind from looking at the initial flash, and those not killed may suffer horrific burns.⁵³ It is well accepted that vision is our most important sense, perhaps accounting for 90% or more of our sensory input.⁵⁴ While other senses, such as hearing and touch, may facilitate post-blindness adjustment to one’s life experience, none of them can come close to replacing sight.⁵⁵

Burns caused by nuclear weapons may go beyond third-degree burns, in which all layers of the skin are destroyed, to fourth-degree burns, in which the injury extends into both muscle and bone. Both third- and especially fourth-degree burns can be fatal. Burns place a huge burden on medical resources, often requiring specialist treatment. These are all inevitable and therefore entirely predictable consequences from the use of a nuclear weapon. In most instances, such use will amount to a violation of the right to humane treatment.

The right to a healthy environment

Beyond the direct harm caused to individuals by a nuclear weapon detonation, the environment in which they live may be seriously – and almost permanently –

49 ICCPR, above note 6, Art. 7.

50 Convention against Torture, above note 28, Art. 16.

51 ECHR, above note 10, Art. 3; ACHR, above note 25, Art. 5; African Charter on Human and Peoples’ Rights, above note 29, Art. 5.

52 L. Doswald-Beck, above note 10, p. 452, referring to US Department of Health and Human Services, Radiation Emergency Medical Management, “Nuclear Detonation: Weapons, Improvised Nuclear Devices: Categories of Medical Effects”, available at: www.remm.nlm.gov/nuclearexplosion.htm#categories.

53 L. Doswald-Beck, above note 10, p. 452.

54 R. DeVour, “Possible Psychological and Societal Effects of Sudden Permanent Blindness of Military Personnel Caused by Battlefield Use of Laser Weapons”, in Louise Doswald-Beck (ed.), *Blinding Weapons: Reports of the Meetings of Experts Convened by the International Committee of the Red Cross on Battlefield Laser Weapons, 1989–1991*, ICRC, Geneva, 1993, pp. 47, 52.

55 *Ibid.*

affected. As the ICJ noted in its 1996 Nuclear Weapons Advisory Opinion, nuclear weapons

have the potential to destroy ... the entire ecosystem of the planet. ... The radiation released by a nuclear explosion would affect health, agriculture, natural resources and demography over a very wide area. ... Ionizing radiation has the potential to damage the future environment, food and marine ecosystem, and to cause genetic defects and illness in future generations.⁵⁶

Two regional human rights treaties set out the right to a healthy environment directly.⁵⁷ More broadly, the right to the highest attainable standard of health is stipulated in a number of human rights treaties, including the International Covenant on Social, Economic and Cultural Rights.⁵⁸ Doswald-Beck cites a case before the African Commission on Human and Peoples' Rights that found a violation both of the right to a healthy environment and of the right to the highest attainable standard of health as a result of major damage to the environment in Ogoniland caused by the Nigerian National Petroleum Company working with Shell Petroleum Development Corporation.⁵⁹ The lack of care violated the State's obligation "to take reasonable and other measures to prevent pollution and ecological degradation".⁶⁰ The extent to which such provisions might apply to any use of nuclear weapons (as opposed, for instance, to their testing) is, however, unclear.

The conduct of hostilities in a non-international armed conflict

The majority of armed conflicts in the modern world are non-international in character. Unfortunately, this is also where IHL has relatively far less to say, at least in the relevant treaties. Indeed, Article 3 common to the four Geneva Conventions does not, by general agreement, regulate the conduct of hostilities at

56 Nuclear Weapons Advisory Opinion, above note 8, para. 35. See also Ira Helfand, *Nuclear Famine: Two Billion People at Risk? Global Impacts of Limited Nuclear War on Agriculture, Food Supplies, and Human Nutrition*, 2nd ed., International Physicians for the Prevention of Nuclear War, November 2013, available at: www.ippnw.org/pdf/nuclear-famine-two-billion-at-risk-2013.pdf.

57 The 1981 African Charter on Human and Peoples' Rights, above note 29, provides in its Article 24 that "[a]ll peoples shall have the right to a general satisfactory environment favourable to their development". The 1988 Additional Protocol to the ACHR in the Area of Economic, Social and Cultural Rights provides in its Article 11 that "[e]veryone shall have the right to live in a healthy environment" and requires that States Parties "promote the protection, preservation and improvement of the environment". L. Doswald-Beck, above note 10, p. 454.

58 International Covenant on Economic, Social and Cultural Rights, 993 UNTS 3, 16 December 1966 (entered into force 3 January 1976), Art. 12.

59 African Commission on Human and Peoples' Rights, *The Social and Economic Rights Action Center and the Center for Economic and Social Rights v. Nigeria*, Comm. No. 155/96, Decision, 27 October 2001, paras. 50–54; see L. Doswald-Beck, above note 10, p. 455.

60 *Ibid.*

all.⁶¹ The 1977 Additional Protocol (II) to the Geneva Conventions (AP II),⁶² which applies to non-international armed conflicts in States Parties where an armed opposition to the State regime effectively controls territory,⁶³ does include provisions specifically regulating the conduct of hostilities. It provides in its Article 13 as follows:

1. The civilian population and individual civilians shall enjoy general protection against the dangers arising from military operations. To give effect to this protection, the following rules shall be observed in all circumstances.
2. The civilian population as such, as well as individual civilians, shall not be the object of attack. Acts or threats of violence the primary purpose of which is to spread terror among the civilian population are prohibited.
3. Civilians shall enjoy the protection afforded by this Part, unless and for such time as they take a direct part in hostilities.⁶⁴

One might argue that use of a nuclear weapon in any populated area would predictably violate paragraph 2: while a nuclear weapon can be targeted with a high degree of accuracy, its effects cannot be controlled,⁶⁵ and its use would certainly spread terror among the civilian population (though whether this could be deemed to be its primary purpose as opposed to a clearly foreseeable consequence might be debated).

While the rule (also called a principle) of proportionality in attack almost certainly applies in all armed conflicts as a norm of customary IHL, just as the International Committee of the Red Cross's (ICRC) landmark study concluded in 2005,⁶⁶ this prohibition did not find its way into the final text of AP II, nor, with respect to non-international armed conflicts, into the 1998 Rome Statute of the

61 See, e.g., Nils Melzer, *Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law*, ICRC, Geneva, 2009, p. 28.

62 Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978) (AP II). As of July 2015, 168 States were party to AP II, the most recent being Palestine.

63 AP II, Art. 1(1), stipulates that the Protocol applies to "all armed conflicts which are not covered by Article 1 of [the 1977 Protocol Additional (I)] and which take place in the territory of a High Contracting Party between its armed forces and dissident armed forces or other organized armed groups which, under responsible command, exercise such control over a part of its territory as to enable them to carry out sustained and concerted military operations and to implement this Protocol".

64 AP II, Art. 13.

65 Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978), Art. 51(4)(c), provides that indiscriminate attacks are prohibited. "Indiscriminate attacks are: ... (c) those which employ a method or means of combat the effects of which cannot be limited as required by this Protocol; and consequently ... are of a nature to strike military objectives and civilians or civilian objects without distinction." Of course, the application of the Protocol to the use of nuclear weapons is contested by certain nuclear-weapon-power States.

66 Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. I: *Rules*, Cambridge University Press, Cambridge, 2005, Rule 14: "Launching an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated, is prohibited."

International Criminal Court.⁶⁷ Similarly, no prohibition against attacks on all civilian objects (namely, all objects which are not military objectives) is explicitly included in AP II, nor are such attacks included as a war crime in non-international armed conflicts in the Rome Statute.⁶⁸ Specific protection is, however, afforded to cultural property. The 1999 Second Protocol to the 1954 Hague Convention for the Protection of Cultural Property enhances the Convention's protection by providing that cultural property can only be attacked if it becomes a lawful military objective and no feasible alternative exists.⁶⁹ Article 22 specifically applies the Second Protocol to non-international armed conflicts.⁷⁰

Arguably, human rights law has much to bring to the protection of civilians in non-international armed conflicts. The difficulty in determining who is a lawful target under IHL is typically far greater than in an international armed conflict, as armed groups typically operate clandestinely when operating against the government. While in certain conflicts the members of non-State armed groups may wear uniforms and bear arms openly, this tends to be the exception that proves the rule. IHL, though, seemingly makes no distinction in the application of its primary rules on the conduct of hostilities between international and non-international armed conflict. The two most important primary rules are the rule on distinction in attack and the rule on proportionality in attack.⁷¹ While their formulation as rules is clear and largely uncontested, their practical application is highly contentious, as the *Gotovina* case before the International Criminal Tribunal for the former Yugoslavia (ICTY) graphically demonstrated.⁷²

In the *Gotovina* case, the ICTY Trial Chamber had found that, on 4 and 5 August 1995, Croatian army artillery units fired artillery shells and rockets at the so-called "four towns" in the Krajina,⁷³ and after carefully comparing the evidence on

67 Under the Rome Statute of the International Criminal Court, 2187 UNTS 90, 17 July 1998 (entered into force 1 July 2002), Art. 8(2)(b)(iv), the ICC potentially has jurisdiction over "serious violations of the laws and customs applicable in *international* armed conflict, within the established framework of international law" (emphasis added), including "[i]ntentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated".

68 *Ibid.*, Art. 8(2)(e).

69 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict with Regulations for the Execution of the Convention, 249 UNTS 240, 14 May 1954 (entered into force 7 August 1956), Second Protocol, 26 March 1999, Art. 6. The 1954 Hague Convention only required parties to a non-international armed conflict to respect cultural property.

70 Already under Article 16 of AP II, it was prohibited "to commit any acts of hostility directed against historic monuments, works of art or places of worship which constitute the cultural or spiritual heritage of peoples, and to use them in support of the military effort".

71 Precautions in attack are not discussed here, as failure to respect them does not formally constitute an indiscriminate attack.

72 The Trial Chamber concluded – arguably incorrectly – that the attacks took place in the context of an international armed conflict. Indeed, the prosecution in the case appeared at times to argue implicitly that a non-international armed conflict was in progress in 1995. "The intensity of the conflict between these well-organized parties ... varied but was sufficiently high to distinguish the 'homeland war' from 'banditry, unorganized and short-lived insurrections, or terrorist activities.'" ICTY, *The Prosecutor v. Gotovina et al.*, Case No. IT-06-90, Prosecution's Public Redacted Final Trial Brief, 2 August 2010, para. 469.

73 Knin, Benkovac, Gračac and Obrovac.

the locations of impacts in these towns with the locations of possible military targets, it concluded that they had targeted not only military objectives but also areas devoid of such lawful targets. As such, the Chamber found that Croatian forces had treated the towns themselves as targets for artillery fire, holding therefore that the shelling of the towns constituted an indiscriminate attack on the towns and an unlawful attack on civilians and civilian objects.⁷⁴

In its pre-trial brief, the prosecution asserted both the unlawful nature of the attack and its “terrifying effect”.⁷⁵ The defendants were convicted, and General Ante Gotovina was sentenced to twenty-four years of imprisonment for a series of crimes against humanity and violations of the laws and customs of war. He appealed against his conviction. The majority in the ICTY Appeals Chamber argued, wrongly in the present author’s view, that the Trial Chamber had based its entire decision that the attacks were unlawful on the fact that all shells or rockets landing at a distance of more than 200 metres from a lawful military objective were deemed indiscriminate. The Appeals Chamber unanimously agreed that no such standard existed in IHL.⁷⁶ The majority of the Chamber could not “exclude the possibility” that the shelling was aimed at legitimate targets:

The fact that a relatively large number of shells fell more than 200 metres from fixed artillery targets could be consistent with a much broader range of error. The spread of shelling across Knin is also plausibly explained by the scattered locations of fixed artillery targets ... along with the possibility of a higher margin of error.⁷⁷

This is potentially a significant protection issue for the civilian population, especially in relatively small towns like Knin. An *amicus curiae*, submitted by leading IHL lawyers concerned at Gotovina’s conviction at trial, had asserted their understanding that assessing legality of attack effects requires some benchmark of acceptable error, and suggested a 400-metre standard:

By substituting 400-meters as the benchmark for assessing attack effects in this case, the Appeals Chamber will send a powerful message that criminal responsibility for allegations of unlawful targeting decisions in future armed

74 See ICTY Chambers, “Judgment Summary for Gotovina *et al.*”, The Hague, 15 April 2011, p. 3, available at: www.icty.org/x/cases/gotovina/tjug/en/110415_summary.pdf.

75 “Pursuant to Gotovina’s order ... civilian population centres in the Krajina were put under artillery fire, including Knin, Benkovac, Obrovac and Gračac. In each of these towns and in outlying villages, shells and rockets impacted civilian areas, causing civilian deaths and injuries, damage to civilian property, and a mass exodus of the civilian population. Civilians who were the object of the attack, as well as observers from multiple international organisations, uniformly described the terrifying effect of the attack.” ICTY, *Gotovina et al.*, above note 72, para. 484. The prosecution further cited Croatian army reports wherein 130mm cannons were fired “at a residential area in Knin” and “in irregular intervals ... at the general area of Knin”. *Ibid.*, para. 507.

76 ICTY, *The Prosecutor v. Gotovina and Markac*, Case No. IT-06-90-A, Judgment (Appeals Chamber), 16 November 2012, paras 58–61.

77 *Ibid.*, para. 65.

conflicts will be imposed only when the totality of the evidence is genuinely sufficient to support such allegations.⁷⁸

The Appeals Chamber did not make this determination. Indeed, what the Chamber failed to do – and it was for this failure, among other things, that the two dissenting judges, Agius and Pocar, criticized it so heavily – is to articulate the correct standard under IHL, as it was required to do under the mandate of the ICTY.⁷⁹ Judge Pocar raised three core concerns about the majority judgment: the failure to determine the standard (and whether that standard should be measured in metres); the basis for the correct legal standard (“Does the Majority consider that a legal standard can be established on a margin of error of artillery weapons?”); and the legal principles that the Trial Chamber should have applied (“Does the Majority consider that the Trial Chamber should have applied the principles of customary IHL in its analysis? If so, which exact IHL principles should the Trial Chamber have applied in assessing whether the artillery attack was lawful?”).⁸⁰

Thus, hopes that the *Gotovina* case would become the “*Tadić* of targeting law”⁸¹ were tragically dashed, leaving the degree of care required by IHL when using artillery or aerial bombing a matter of conjecture. How, for example, would a court address an attack on a massive military base in a capital city that involved use of a “tactical” nuclear weapon? If the accuracy and control of effects required by the rule of distinction is unclear, how opaque is the rule/principle of proportionality?

I am, of course, not suggesting that use of a nuclear weapon in a non-international armed conflict would be lawful under IHL. But nor is it possible to say that it would be unreservedly unlawful. The ICRC has, to its credit, affirmed “the difficulty of envisaging how any use of nuclear weapons could be compatible with international humanitarian law”.⁸²

Concluding remarks

So where does this leave international law governing the use of nuclear weapons? Fragmented, arguably. While human rights law does not outlaw the use of

78 ICTY, *The Prosecutor v. Gotovina and Markac*, Case No. IT-06-90-A, Application and Proposed *Amicus Curiae* Brief Concerning the 15 April 2011 Trial Chamber Judgment and Requesting that the Appeals Chamber Reconsider the Findings of Unlawful Artillery Attacks During Operation Storm, 12 January 2012, para. 17.

79 “By not articulating the correct legal standard, the Majority falls short of correcting any legal errors in the Trial Judgment and clarifying the law the Trial Chamber should have applied when assessing the legality of an attack directed on civilians and civilian objects. It also fails to consider whether the artillery attacks on the Four Towns were lawful or not when the evidence is assessed in light of the principles of international humanitarian law.” ICTY, *Gotovina and Markac*, above note 76, Dissenting Opinion of Judge Pocar, para. 13.

80 *Ibid.*

81 ICTY, *Gotovina and Markac*, Application and Proposed *Amicus Curiae* Brief, above note 78, para. 2.

82 See, e.g., ICRC, “Weapons: ICRC Statement to the United Nations, 2014”, Statement, General Debate on All Disarmament and International Security Agenda Items, UN General Assembly, 69th Session, First Committee, New York, 14 October 2014, available at: www.icrc.org/en/document/weapons-icrc-statement-united-nations-2014#.VP1BMCmzXX5.

nuclear weapons altogether, it at least offers a reasonable chance of accountability should, God forbid, these weapons ever be used in anger again. In addition, outside armed conflict, that branch of international law would unequivocally outlaw any use. The degree of care with regard to human life that human rights law demands in police or military operations for law enforcement significantly exceeds that which is required by the prevailing rules of IHL governing the conduct of hostilities (at least insofar as anyone understands the application in practice of the rules).

In a non-international armed conflict, human rights law would, I believe, go further than would IHL to make any use of nuclear weapons (at least on land) unlawful. Even were an attack in a populated area somehow deemed “discriminate”, not only the readily foreseeable short-term catastrophe but also the medium- and long-term consequences of nuclear weapon use, in particular those resulting from fallout and the accompanying humanitarian plight, would inevitably infringe on a range of human rights. Such limitations on the use of force still amount to a “realistic behavioural approach”,⁸³ but they take account of advances in weapons technology, in particular the greater precision of delivery that contemporary armaments offer (thereby reducing the need for wide-area weapons). Human rights law acts to ensure that humanitarian protection increases, not recedes, over time. Thus, it may be said that the static nature of IHL stands in stark contrast to the progressive dynamism of human rights.

83 See “ICRC and Human Rights Council: Complementary Activities, Respect for Differences”, statement by Mr Peter Maurer, President of the ICRC, 22nd Session of the Human Rights Council, High-Level Segment, Geneva, 26 February 2013, available at: www.icrc.org/eng/resources/documents/statement/2013/ihl-human-rights-council.htm.

The development of the international initiative on the humanitarian impact of nuclear weapons and its effect on the nuclear weapons debate

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Abstract

This article describes the genesis of the humanitarian initiative and the political context in which it has developed in the course of the joint cross-regional statements and the three international conferences on this issue in Norway, Mexico

* The views expressed in this article are those of the author and do not necessarily reflect the positions of the Austrian Foreign Ministry.

and Austria. It examines the key substantive conclusions that have emerged as a result of this debate and assesses their relevance for the global nuclear disarmament and non-proliferation regime. It concludes that these facts and findings warrant an urgent reassessment of the so-called security value of nuclear weapons and a nuclear deterrence-based notion of stability and security.

Keywords: nuclear weapons, humanitarian initiative, humanitarian impact, risk of nuclear weapons, nuclear deterrence, international humanitarian law.



That nuclear weapons detonations result in massive destruction and cause terrible humanitarian consequences is almost a moot point. It has been well known since the first use of these weapons seventy years ago in Hiroshima and Nagasaki.

It is precisely the destructive force of nuclear weapons that led to the establishment of nuclear deterrence theory during the Cold War. The knowledge that any attack would be met with devastation and death on a scale unacceptable to the adversary was the basis for “mutually assured destruction”, or MAD, as it was aptly called. For nuclear weapons possessor States as well as their allies, this notion still forms the backbone of a security policy that is based on nuclear deterrence as the “ultimate security guarantee” and as a means to maintaining a strategic – albeit precarious – stability between them. All international efforts to curb the proliferation of nuclear weapons and move towards nuclear disarmament have taken place within the parameters of maintaining nuclear deterrence and the notion that the nuclear weapons-based strategic stability should be retained.

The past few years, however, have seen an increased focus on and political interest in addressing the humanitarian impact of and the risks associated with nuclear weapons as a complement to the traditional military security-centred discourse. Since 2010, a series of international conferences dedicated to this issue have taken place. An ever-increasing number of States have signed up to cross-regional declarations expressing concern about the humanitarian consequences of nuclear weapons. Civil society, which had struggled to generate support for nuclear disarmament campaigns, has re-emerged, more energized, in the nuclear weapons debate, and academia and experts from different fields have shown an increased focus on this dimension of the issue.

The so-called humanitarian initiative has emerged as perhaps the most serious challenge to the nuclear deterrence orthodoxy. It has provided an outlet for the frustration of many States about the very limited progress on global nuclear disarmament and the lacklustre political will among nuclear possessor States to move in earnest towards a world without nuclear weaponry. Most importantly, however, it has challenged the acceptability and legitimacy of nuclear weapons and nuclear deterrence as well as a security concept that is ultimately based on mass destruction. It has done so by looking closely at the effects of nuclear weapons, the risks that come with possessing them, and the ways in which the international community would be challenged to cope with the

consequences of a nuclear detonation. In short, the concept of nuclear deterrence for the purpose of maintaining military security is juxtaposed in the context of the humanitarian discourse with up-to-date research on the scope and scale of the consequences of nuclear weapons detonation, either in cases where nuclear deterrence fails or through accidents involving nuclear weapons. This article aims to provide an overview of the development of the humanitarian initiative from the 2010 Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT) until the 2015 NPT Review Conference, in particular the cross-regional statements on the humanitarian consequences of nuclear weapons and the three international conferences dedicated to this issue held in Norway (March 2013), Mexico (February 2014) and Vienna (December 2014). Finally, the article will present five key and possible lasting implications of the humanitarian initiative on the nuclear weapons discourse.

Origins of the humanitarian initiative

The humanitarian consequences of nuclear weapons have arguably been a key driving force behind all efforts to address and control such weaponry, and scientists have given countless dire warnings on the matter.¹ Preambular paragraph 1 of the NPT encapsulates these consequences as the key motivation for agreeing to the treaty:

Considering the devastation that would be visited upon all mankind by a nuclear war and the consequent need to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples.²

Nevertheless, the security dimension of nuclear weapons, rather than humanitarian considerations, has dominated most of the debate in international fora until recently. The recent specific focus on the humanitarian dimension of nuclear weapons may be traced back to a speech on 20 April 2010³ in which Jakob Kellenberger, the former president of the International Committee of the Red Cross (ICRC), addressed the diplomatic corps in Geneva, Switzerland. He recalled the ICRC experience as the first international humanitarian organization present in the immediate aftermath of the 1945 bombing of Hiroshima. He highlighted the inadequate capacities to address the humanitarian emergencies that would result from any use of nuclear weapons and the human and societal destruction that would ensue. In light of the humanitarian consequences, Kellenberger also

1 See, e.g., the Russell–Einstein Manifesto, 9 July 1955, available at: <http://pugwash.org/1955/07/> (all internet references were accessed in November 2015).

2 Treaty on the Non-Proliferation of Nuclear Weapons, 729 UNTS 10485, 1 July 1968 (entered into force 5 March 1970), Preamble, para. 1.

3 Jakob Kellenberger, “Bringing the Era of Nuclear Weapons to an End”, statement, 20 April 2010, available at: www.icrc.org/eng/resources/documents/statement/nuclear-weapons-statement-200410.htm. This document is also available in the “Reports and Documents” section of this issue of the *Review*.

stressed that “the ICRC finds it difficult to envisage how any use of nuclear weapons could be compatible with the rules of international humanitarian law”.⁴

This speech by the president of the organization that acts as the “guardian of international humanitarian law” (IHL) was intended as, and proved to be, important input into the NPT Review Conference in May 2010. The Final Document of the Conference included “Conclusions and Recommendations for Follow-on Actions” (Action Plan) that were adopted by consensus.⁵ The Action Plan is preceded by a set of principles and objectives to guide its implementation which includes the following statement:

The Conference expresses its deep concern at the catastrophic humanitarian consequences of any use of nuclear weapons and reaffirms the need for all States at all times to comply with applicable international law, including international humanitarian law.⁶

This reference to the humanitarian consequences of nuclear weapons was actually the first time that the humanitarian dimension had been explicitly addressed in an NPT consensus document since the adoption of the NPT and its preambular paragraph 1 in 1968.

Moreover, the Review Conference also resolved in Action 1 of the 2010 Action Plan that “all States parties commit to pursue policies that are fully compatible with the Treaty and the objective of achieving a world without nuclear weapons”.⁷ The expression of “concern at the catastrophic humanitarian consequences of any use of nuclear weapons”, in conjunction with Action 1, became seen as a *de facto* mandate for States to pursue the humanitarian initiative as a means to implement the NPT itself.

This last point is important in light of the divergence of views that has subsequently emerged with respect to the humanitarian initiative. The 2010 NPT Review Conference took place in an unusually dynamic atmosphere where all major stakeholders were eager to achieve a consensus result. President Obama’s speech in Prague⁸ the year before, with its clearly articulated vision of a world without nuclear weapons, had done much to re-energize the multilateral “disarmament community”. The Russian Federation and the United States had just concluded the New START⁹ Treaty, and international attention was very much focused on achieving concrete progress on nuclear disarmament. Consequently, the disarmament part of the Action Plan received particular attention during the 2010 NPT Review Conference. It was structured in such a

4 *Ibid.*

5 Final Document of the 2010 NPT Review Conference, NPT/CONF.2010/50, Vol. 1, 2010, p. 19, available at: www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2010/50%20%28VOL.1%29.

6 *Ibid.*, p. 19.

7 *Ibid.*, p. 20.

8 Barack Obama, “Remarks by President Barack Obama in Prague as Delivered”, 5 April 2009, available at: www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered.

9 Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Arms (New START), 8 April 2010 (entered into force 5 February 2011), available at: www.state.gov/t/avc/newstart/c44126.htm.

way that progress on its twenty-three action items would become more measurable, thus increasing accountability for its implementation.

Moreover, responsibility for implementing the Action Plan became more widely shared between NPT nuclear weapon States and non-nuclear weapon States. There are those action items on nuclear disarmament that only the former can do. These include reductions, changes in nuclear doctrines, risk reduction and transparency measures. However, other actions are directed to all States. Focusing on the humanitarian consequences of nuclear weapons as a means to generate momentum for nuclear disarmament and a world without nuclear weapons was one of those concrete elements that non-nuclear weapon States could, and wanted to, pursue. The States most invested in the humanitarian approach thus saw it as firmly grounded within the NPT and fully consistent with their own objective of trying to promote a strong and credible NPT.¹⁰ When the humanitarian initiative was later accused by nuclear weapon States and some of their allies of being a distraction from or even undermining the NPT, the proponents of the humanitarian initiative perceived this as a particularly confrontational and unjustified characterization, especially in light of the very limited progress that had been made on the action items that were the responsibility of nuclear weapon States.

Two tracks emerge

Building on the consensus result achieved in 2010, the humanitarian initiative was taken forward towards concrete action in April and May 2012 at the two-week-long First Preparatory Committee for the 2015 NPT Review Conference in Vienna, Austria, where two parallel tracks emerged. Firstly, Switzerland presented the first cross-regional statement by a group of sixteen States (the Group of 16) on the humanitarian dimension of nuclear disarmament.¹¹ It cited the agreement of the 2010 NPT Review Conference and built upon the arguments developed by ICRC president Kellenberger two years earlier. Secondly, Norway announced its intention to host a conference in spring 2013 to highlight the humanitarian consequences of nuclear weapons, including the incompatibility of their use under IHL.¹²

10 See, e.g. Joint Statement delivered by South Africa on behalf of eighty States, 24 April 2013, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom13/statements/24April_SouthAfrica.pdf, which reads: "Addressing the humanitarian impact of nuclear weapons is an absolute necessity. As an element that underpins the NPT, it is essential that the humanitarian consequences inform our work and actions during the current Review Cycle and beyond."

11 First Preparatory Committee for the 2015 NPT Review Conference, Joint Statement by Austria, Chile, Costa Rica, Denmark, the Holy See, Egypt, Indonesia, Ireland, Malaysia, Mexico, New Zealand, Nigeria, Norway, the Philippines, South Africa and Switzerland, 2 May 2012, available at: www.un.org/disarmament/WMD/Nuclear/NPT2015/PrepCom2012/statements/20120502/SwitzerlandOnBehalfOf.pdf.

12 First Preparatory Committee for the 2015 NPT Review Conference, Statement by Norway, 30 April 2012, available at: www.un.org/disarmament/WMD/Nuclear/NPT2015/PrepCom2012/statements/20120430/PM/Norway.pdf.

These two diplomatic developments at the 2012 NPT meeting also coincided with the release of a study by International Physicians for the Prevention of Nuclear War (IPPNW) on the global impact of a limited nuclear war.¹³ This report built on recent research into the climate effects of the use of nuclear weapons and demonstrated that previous studies had significantly underestimated global declines in food production and the number of people at risk of mass starvation. The study was presented at the Vienna NPT meeting and widely discussed among States and civil society representatives. It underpinned the generic concerns about the humanitarian consequences of nuclear weapons in diplomatic documents and statements with up-to-date scientific research about these consequences. The announcement of the international conference in Norway and the subsequent conferences in Mexico and Austria then provided designated fora for the development, presentation and discussion of more specific research and findings on different aspects of the humanitarian impact of nuclear weapons.

The five NPT nuclear weapon States reacted negatively to these developments. Through the strong content of the Joint Statement and the composition of the Group of 16 – States that were among the most active non-nuclear weapon States in the NPT context – it became clear that this was intended to be a serious initiative that was to be followed up in operational terms. In hindsight, it seems that this was a surprise to the NPT nuclear weapon States. They may have agreed to the humanitarian reference in the 2010 NPT Review Conference as one of the usual textual negotiating concessions on nuclear disarmament, but they apparently did not foresee that this reference would be operationalized by non-nuclear weapon States into strong cross-regional statements, followed up by international conferences and based on focused scientific research specifically dedicated to this issue.

The NPT nuclear weapon States voiced concern, *inter alia*, about the strong IHL focus of the statement, highlighting issues regarding the legality of use and the humanitarian effects of nuclear weapons. To them, it was reminiscent of the beginnings of the two past diplomatic processes that had led to legally binding comprehensive ban treaties on anti-personnel landmines¹⁴ as well as cluster munitions¹⁵ based on considerations of the humanitarian effects of these weapon systems.

The cross-regional humanitarian statements

In the years between 2012 and 2015, the Group of 16 focused on outreach and increasing the number of States willing to sign up to subsequent versions of the

13 Ira Helfand, “Nuclear Famine: Two Billion People at Risk? Global Impacts of Limited Nuclear War on Agriculture, Food Supplies, and Human Nutrition”, 2nd ed., briefing paper, IPPNW and Physicians for Social Responsibility, November 2013, available at: www.ippnw.org/nuclear-famine.html.

14 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, 2056 UNTS 211, 18 September 1997 (entered into force 1 March 1999), available at: www.apminebanconvention.org.

15 Convention on Cluster Munitions, 2688 UNTS 39, 30 May 2008 (entered into force 1 August 2010), available at: www.clusterconvention.org.

statement on the humanitarian consequences of nuclear weapons. Civil society undertook its own outreach activities to raise this with States. As such, key events in the multilateral nuclear disarmament calendar, such as subsequent Preparatory Meetings for the NPT as well as the annual meetings of the First Committee of the United Nations (UN) General Assembly, were used to issue similar statements with an ever-increasing number of co-signatories. At the First Committee meetings in 2012, 2013 and 2014, the Second Preparatory Committee for the NPT in 2013 and the 2015 NPT Review Conference, the number co-signing the Joint Statements had increased to thirty-four,¹⁶ eighty,¹⁷ 125,¹⁸ 155¹⁹ and 159²⁰ States respectively. This very significant increase over a relatively short period of time was testimony to the interest generated by the humanitarian approach. It thus increasingly became a politically attractive proposition – similar to a snowball effect – for States to be associated with this statement.

Content-wise, the statement did not change very much. Some changes were made in order to make it easier also for States under the so-called US “nuclear umbrella”²¹ to support the statement. Japan, which had not signed up to the first two statements, expressed strong interest in associating itself with the 2013 statement based on a quite intensive domestic public discussion on why Japan was not among the group most proactively advocating the humanitarian concerns.²² By that time, the Oslo Conference on the Humanitarian Impact of Nuclear Weapons had already taken place. The negotiations with Japan about the statement centred, in the end, around the assertion that “it is in the interest of the very survival of humanity that nuclear weapons are never used again, under any circumstances”.²³ Japan suggested deletion of the phrase “under any circumstances”, which it interpreted as being too far-reaching from a legalistic perspective. South Africa, which coordinated the Group of 16, argued that this reference should not be interpreted in a legalistic way, but that non-use of nuclear weapons would arguably be in the interest of humanity irrespective of varying interpretations on the legality of nuclear weapons and nuclear weapons

16 Joint Statement delivered by Switzerland on behalf of thirty-four States, 22 October 2012, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com12/statements/22Oct_Switzerland.pdf.

17 Joint Statement delivered by South Africa on behalf of eighty States, above note 10.

18 Joint Statement delivered by New Zealand on behalf of 125 States, 21 October 2013, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com13/statements/21Oct_Joint.pdf.

19 Joint Statement delivered by New Zealand on behalf of 155 States, 20 October 2014, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com14/statements/20Oct_NewZealand.pdf.

20 Joint Statement delivered by Austria on behalf of 159 States, 28 April 2015, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/statements/28April_Austria_Humanitarian.pdf.

21 This refers to a guarantee by the United States to defend a non-nuclear allied state, e.g. Japan, South Korea, the North Atlantic Treaty Organization (much of Europe, Turkey, Canada), and Australia.

22 See, e.g., “Japan Finally Backs U.N. Statement against Use of Nuclear Weapons”, *Asahi Shimbun*, 22 October 2013.

23 Joint Statement delivered by Switzerland on behalf of thirty-four States, above note 16.

use. Japan, following further intense domestic debate, decided to associate itself as one of then-125 States that had co-signed the Joint Statement for the October 2013 session of the UN First Committee, which was coordinated by that time by New Zealand and also included the “under any circumstances” reference.²⁴

A few days after Japan’s announcement, Australia came forward with the plan of an “alternative” humanitarian statement. This was presented as not being in competition with the “original” humanitarian statement but as giving a voice primarily to those US allies who wanted to express themselves on the humanitarian dimension but for whom the “New Zealand statement” was too strong. The “Australian statement” argued, as was to be expected, for the so-called “step-by-step” approach of “practical, sustained efforts towards effective disarmament”.²⁵ It also stated that “banning nuclear weapons by itself will not guarantee their elimination without engaging substantively and constructively those states with nuclear weapons, and recognising both the security and humanitarian dimensions of the nuclear weapons debate”.²⁶ This phrasing is interesting, as the notion of a “ban” without “engaging nuclear weapon States” was never part of the original humanitarian statement. It demonstrates the concern of many States under the US nuclear umbrella, as well as nuclear weapon States, that the humanitarian initiative could develop into a diplomatic process towards a prohibition of nuclear weapons possibly without the participation of nuclear weapon States.

In the end, Australia’s statement was supported by seventeen States comprising US allies as well as Sweden and Finland. Through the outreach efforts of New Zealand and others, the “original” statement’s support reached 125 States.²⁷ Even though both sides argued that the statements were not in competition, it was clear that the statement delivered by New Zealand was considered as more dynamic and promising and consequently enjoyed broader and growing support. Japan, which apparently had been surprised by Australia’s plan, in the end supported both humanitarian statements.

At the UN First Committee in autumn 2014, the next round of humanitarian statements saw the level of support for the “New Zealand statement” reach an impressive 155 supporting States. The “Australian statement” was supported by 20 States, still primarily US allies. Sweden had in the meantime switched sides to the group of 155, and Finland, like Japan, decided to support both humanitarian texts. At the 2015 NPT Review Conference, the last version of the Joint Statement to date was delivered by Austria’s foreign minister, Sebastian Kurz, on behalf of 159 States.²⁸ The Australian-led version was

24 Joint Statement delivered by New Zealand on behalf of 125 States, above note 18.

25 Joint Statement delivered by Australia on behalf of seventeen States, 21 October 2013, available at: http://reachingcriticalwill.org/images/documents/Disarmament-foa/1com/1com13/statements/21Oct_Australia2.pdf.

26 *Ibid.*

27 For a full list of all 125 States, see the Joint Statement delivered by New Zealand, above note 18.

28 Joint Statement delivered by Austria on behalf of 159 States, above note 20.

supported by twenty-four States.²⁹ Whether or not the two different versions are in competition or are complementary with each other, it is remarkable that within three years well over 180 States have felt compelled by the momentum created by the humanitarian initiative to highlight the humanitarian consequences of nuclear weapons and the need to prevent such consequences through urgent progress on nuclear disarmament. This must be considered as a significant shift in the discourse on nuclear weapons and nuclear disarmament.

The humanitarian conferences

Oslo, 4–5 March 2013

The first conference on the humanitarian impact of nuclear weapons that had been announced by Norway in spring 2012 took place in Oslo on 4 and 5 March 2013.³⁰ It was organized in a panel-style manner, with expert presentations. Delegates from 127 countries participated, along with several humanitarian UN organizations, such as the UN High Commissioner for Refugees, the UN Office for the Coordination of Humanitarian Affairs, the UN Development Programme and the World Food Programme, as well as the International Red Cross and Red Crescent Movement and civil society. The meeting had a relatively narrow focus on the immediate and wider humanitarian and developmental consequences of a nuclear weapons detonation as well as humanitarian preparedness and response. The Norwegian minister of foreign affairs, Mr Espen Barth Eide, summarized three key points that were discerned from the presentations and the discussions:

It is unlikely that any State or international body could address the immediate humanitarian emergency caused by a nuclear weapon detonation in an adequate manner and provide sufficient assistance to those affected. Moreover, it might not be possible to establish such capacities, even if it were attempted.

The historical experience from the use and testing of nuclear weapons has demonstrated their devastating immediate and long-term effects. While political circumstances have changed, the destructive potential of nuclear weapons remains.

The effects of a nuclear weapon detonation, irrespective of cause, will not be constrained by national borders, and will affect States and people in significant ways, regionally as well as globally.³¹

29 Joint Statement delivered by Australia on behalf of twenty-four States, 30 April 2015, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/statements/30April_Australia.pdf.

30 Oslo Conference, Chair's Summary, available at: www.regjeringen.no/en/topics/foreign-affairs/humanitarian-efforts/humimpact_2013/id708603/.

31 *Ibid.*

The Norwegian hosts had been very careful to ensure that the Oslo Conference remained a facts-based discussion without conclusions of a more political character, such as how concrete progress on nuclear disarmament should be achieved. States that participated also clearly appreciated the opportunity to see the nuclear weapons issue addressed from an angle that represented their own priorities rather than the discourse that takes place in the traditional disarmament fora, such as the NPT and the Conference on Disarmament (CD). The evidence presented by the experts brought to the fore the scale of the destruction and the challenges that would have to be faced in the event of a nuclear explosion. The facts and findings presented clearly left an impression even on delegates with long experience of working on nuclear weapons. The Oslo Conference underscored that it is one thing to talk about nuclear weapons in the context of abstract security policy concepts and quite another to look in concrete terms at the evidence of what would actually happen to people and human society in the event of a nuclear detonation. Moreover, the conference also gave a forum around which civil society groups could crystallize their activities. The International Campaign to Abolish Nuclear Weapons (ICAN) had organized a civil society forum before the conference which brought together hundreds of activists.³² For many participants, the Oslo Conference created a dynamic atmosphere and a sense that something of relevance was happening.

The NPT nuclear weapon States inadvertently did their part to contribute to this atmosphere through their collective boycott of the conference.³³ In an ill-advised display of so-called “P5 solidarity”, they communicated their concern to the Norwegian hosts that the Oslo Conference would “divert discussion away from the practical steps to create the conditions for further nuclear weapons reductions”.³⁴ Rather than constructively engaging on this issue of legitimate concern to the international community, the NPT nuclear weapon States sent a very dismissive signal by their absence and the reasons they gave for it. The absence in particular of the United States, the United Kingdom and France from a conference organized by a fellow NATO member State astonished quite a number of delegates. Views among the NPT nuclear weapon States were said to have been quite divided on the issue of attendance, with Russia and France strongly opposed and the United States and United Kingdom more in favour of participating. It appeared that the United States decided to side with Russia and France in order to maintain “solidarity” in view of the “P5 process”, a regular consultative exchange among the NPT nuclear weapon States that had been established at the 2010 Review Conference.

32 ICAN Civil Society Forum, “Farewell Oslo ¡Hasta Mexico!”, report, 14 March 2013, available at: <https://goodbyenukes.wordpress.com/>.

33 India and Pakistan, States that possess nuclear weapons but are not parties to the NPT, participated in the Oslo Conference.

34 Joint explanatory note by China, France, Russia, the United Kingdom and the United States on non-attendance at the Oslo Conference, 2013, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/oslo-2013/P5_Oslo.pdf.

The issue of attendance also highlighted the considerable conceptual gap between NPT nuclear weapon States and non-nuclear weapon States. The former seemed to assume that a nuclear weapons discussion without their participation would, almost by necessity, be considered a futile exercise. A boycott would thus be the obvious way to ensure that such an initiative would disappear. For many non-nuclear weapon States, however, the “P5 boycott” proved almost to a greater degree that the humanitarian approach was valid and provided a possibility to have the kind of nuclear disarmament debate that is usually stifled in other fora. Rather than weakening the humanitarian approach, the nuclear weapon States’ dismissive attitude actually provided further impetus to this non-nuclear weapon State-driven initiative. This momentum was strengthened by Mexico’s announcement in the closing session of the Oslo Conference that it would host and issue invitations to a follow-up conference.

Nayarit, 14–15 February 2014

The second conference on the humanitarian impact of nuclear weapons organized by Mexico built on the format of its predecessor but expanded the scope of the discussion.³⁵ It put a strong emphasis on the experience of the *Hibakusha*, the survivors of the atomic bombs in Hiroshima and Nagasaki, dedicating an entire session to their powerful and harrowing testimonies. Nayarit also recapitulated and reinforced some of the key findings and presentations of the Oslo Conference, further highlighting the devastating short- and long-term consequences on human health, the climate, food security and social order, as well as the inadequacy of response capabilities. The United Nations Institute for Disarmament Research (UNIDIR) presented the findings of a study on the challenges for the international humanitarian system’s response to the emergencies caused by a nuclear detonation.³⁶ As an important addition, Mexico introduced the element of “risk” associated with nuclear weapons, such as through accidents or human or technical error, into the conference programme and the humanitarian discourse.

While the devastating impact of nuclear explosions is in general known – albeit neither in detail nor in its scope and gravity – the wider public and also many experts would consider the likelihood of intentional or unintentional use of nuclear weapons to be rather remote. It was therefore somewhat of an eye-opener for many participants to hear expert presentations on some of the vulnerabilities of nuclear command and control infrastructures and well as risky practices surrounding nuclear weapons and the history of near-accidents. Chatham House, the UK-based Royal Institute of International Affairs, presented a new study

35 See Second Conference on the Humanitarian Impact of Nuclear Weapons (Nayarit Conference), Chair’s Summary, presentations and selected statements, available at: <http://en.sre.gob.mx/index.php/humanimpact-nayarit-2014>.

36 See John Borrie and Tim Caughley, *An Illusion of Safety: Challenges of Nuclear Weapon Detonations for United Nations Humanitarian Coordination and Response*, UNIDIR, New York and Geneva, 2014, available at: www.unidir.org/illusionofsafety.

examining sixteen historical cases of “near nuclear misses”.³⁷ US investigative journalist Eric Schlosser, who had recently published his acclaimed book *Command and Control*,³⁸ about a near-catastrophic accident at a nuclear silo in rural Arkansas, spoke to the conference via video message. Bruce Blair, a former US nuclear launch officer, explained in detail the possible risks involved in the practices and protocols of nuclear weapons decision-making, such as with respect to targeting and alert status of nuclear weapons.³⁹ Many participants appreciated for the first time the extent to which mere luck rather than planning had saved the day on several occasions in the past. Creating greater awareness about the different elements of risk was thus a key substantive contribution of the Nayarit Conference to the humanitarian impact discourse. The Mexican chair summarized these elements as follows:

Today the risk of nuclear weapons use is growing globally as a consequence of proliferation, the vulnerability of nuclear command and control networks to cyber-attacks and to human error, and potential access to nuclear weapons by non-State actors, in particular terrorist groups.

As more countries deploy more nuclear weapons on higher levels of combat readiness, the risks of accidental, mistaken, unauthorized or intentional use of these weapons grow significantly.⁴⁰

Nayarit was also different to the Oslo Conference in two other important aspects. Firstly, Austria announced at the beginning of the Nayarit Conference that it would host a follow-up conference towards the end of 2014.⁴¹ It was thus clear at the start of the Nayarit meeting that the humanitarian initiative was being taken forward in a sustained and accelerated manner. This announcement was widely welcomed and provided additional impetus to the discussions at the Nayarit Conference. Secondly, participation in Nayarit had increased further compared to Oslo, with the presence of 146 States and, again, many international organizations and NGOs. While very few delegations had expressed the wish to make statements in Oslo, many States now wanted an opportunity to share their views on the humanitarian impact of nuclear weapons. Most of the second day of

37 Patricia Lewis, Heather Williams, Benoit Pelopidas and Sasan Aghlani, *Too Close for Comfort: Cases of Near Nuclear Use and Options for Policy*, Royal Institute of International Affairs, April 2014, available at: www.chathamhouse.org/sites/files/chathamhouse/home/chatham/public_html/sites/default/files/2014_0428TooCloseforComfortNuclearUseLewisWilliamsPelopidasAghlani.pdf.

38 Eric Schlosser, *Command and Control: Nuclear Weapons, the Damascus Accident, and the Illusion of Safety*, Penguin Press, New York, 2013.

39 See also Global Zero Commission on Nuclear Risk Reduction, *De-Alerting and Stabilizing the World's Nuclear Force Postures*, April 2015, available at: www.globalzero.org/files/global_zero_commission_on_nuclear_risk_reduction_report.pdf.

40 Nayarit Conference, Chair's Summary, above note 35.

41 Austrian Foreign Ministry, “Kurz: ‘Paradigm Shift in Nuclear Disarmament is Overdue’”, press release, 13 February 2014, available at: www.bmeia.gv.at/en/the-ministry/press/announcements/2014/kurz-paradigm-shift-in-nuclear-disarmament-is-overdue/.

the conference was thus set aside for a general debate where nearly eighty delegations took the floor.⁴²

The large number of statements gave the Nayarit Conference a more political dimension compared to its predecessor. Most statements highlighted the relevance of the humanitarian initiative, stressed that this should give further political momentum to multilateral nuclear disarmament efforts and called on the NPT nuclear weapon States to engage in the discourse. Many States also focused their speeches on the disappointing progress on nuclear disarmament and on the steps that should be taken to overcome the inertia of the multilateral disarmament fora. In this context, a large number of delegations called for new impetus and new initiatives to push for concrete progress on nuclear disarmament and achieving a world without nuclear weapons, and to put the humanitarian arguments at the centre of all such efforts.

While the NPT nuclear weapon States had continued their boycott of the humanitarian conferences,⁴³ most States allied with the United States participated again, partly in view of an increasing attention by civil society in their respective countries. These States also expressed support for the humanitarian focus but were, at the same time, at pains to reconcile this support with their role as “umbrella” States. Several of their statements highlighted the “security dimension” of nuclear weapons and the need to proceed with “realistic steps” and in an “inclusive manner”, meaning with the NPT nuclear weapon States.⁴⁴ These points were code for supporting the humanitarian discourse up to a point, but not if it should develop into a diplomatic process aimed at the prohibition of nuclear weapons. In this vein and coinciding with the Nayarit Conference, the Australian foreign minister, Julie Bishop, had published an op-ed entitled “We Must Engage not Enrage Nuclear Countries”.⁴⁵ Given that NPT nuclear weapon States had been invited and chose to boycott the conference, however, this caused significant irritation among many participants.

After a dynamic general debate, Mexico concluded the conference with a Chair’s Summary, a non-negotiated document under Mexico’s own responsibility. In addition to the substantive points that had been raised in the panel presentations, Mexico summarized the points made in statements by the delegations and added some political conclusions:

We need to take into account that, in the past, weapons have been eliminated after they have been outlawed. We believe this is the path to achieve a world without nuclear weapons.

42 Video recordings of the statements delivered at the Nayarit Conference are available at: <http://en.sre.gob.mx/index.php/humanimpact-nayarit-2014>.

43 The United States and United Kingdom were said to have seriously considered attendance and decided against it at the last minute.

44 Video recordings of the statements delivered at the Nayarit Conference available at: <http://en.sre.gob.mx/index.php/humanimpact-nayarit-2014>.

45 Julie Bishop, “We Must Engage, not Enrage Nuclear Countries”, *Sydney Morning Herald*, 14 February 2014, available at: www.smh.com.au/comment/we-must-engage-not-enrage-nuclear-countries-20140213-32n1s.html.

In our view, this is consistent with our obligations under international law, including those derived from the NPT as well as from Common Article 1 to the Geneva Conventions. The broad-based and comprehensive discussions on the humanitarian impact of nuclear weapons should lead to the commitment of States and civil society to reach new international standards and norms, through a legally binding instrument.

It is the view of the Chair that the Nayarit Conference has shown that time has come to initiate a diplomatic process conducive to this goal. Our belief is that this process should comprise a specific timeframe, the definition of the most appropriate fora, and a clear and substantive framework, making the humanitarian impact of nuclear weapons the essence of disarmament efforts. It is time to take action. The 70th anniversary of the Hiroshima and Nagasaki attacks is the appropriate milestone to achieve our goal. Nayarit is a point of no return.⁴⁶

While it was clear that these aspects of the Chair's Summary reflected the Mexican perspective on the prevailing views expressed by the delegations and did not represent a full consensus of the conference, the so-called umbrella States subsequently expressed strong criticism that their positions had not been adequately reflected. Civil society organizations, on the other hand, were delighted that the Nayarit Conference had added a political dimension to the facts-based discussions on the consequences and risks of nuclear weapons.⁴⁷

Vienna, 8–9 December 2014

The Nayarit Chair's Summary added some political challenges for the Austrian organizers of the subsequent conference. Those opposed to the humanitarian initiative – NPT nuclear weapon States as well as umbrella States – were openly critical of this more political turn. Their concern that the humanitarian conferences were a “slippery slope” towards initiating a diplomatic process to negotiate a nuclear weapons convention or a treaty banning nuclear weapons had increased. Umbrella States undertook frequent diplomatic démarches to Vienna to seek clarity on what exactly the Vienna Conference was going to be and whether a diplomatic/political outcome was the goal for the conference, underlining that they would not support such an approach. These States asked for reassurance that “their views” would be adequately reflected in any outcome or summary document and, at the same time, strongly encouraged Austria to reach out to the NPT nuclear weapon States.

On the other hand, many States strongly supporting the humanitarian initiative, as well as civil society, expressed the view that the usefulness of the

46 Nayarit Conference, Chair's Summary, above note 35.

47 See, e.g., ICAN, *Nayarit – A Point of No Return: Mexico Conference 2014*, report, April 2014, p. 5, available at: www.icanw.org/wp-content/uploads/2014/04/NayaritReport-email.pdf.

“facts-based” type of conference was probably exhausted and that the facts and findings about the impact of and risks associated with nuclear weapons required urgent action on nuclear disarmament. The next conference should thus look more closely at the question of where the humanitarian discourse was heading and which political and legal conclusions should be drawn from it. Civil society organizations, especially ICAN, were adamant that the Vienna Conference should make significant progress towards initiating a diplomatic process to negotiate a nuclear weapons ban.⁴⁸ Many States, on the other hand, remained non-prescriptive about what exactly the conclusions should be.

The Austrian hosts decided to deal with the broad and divergent range of expectations for the Vienna Conference in several ways. To counter the scepticism of the umbrella States, assurances were given that the Vienna Conference was not intended to initiate a diplomatic process and that the chair would attempt to reflect all views appropriately. In addition, and even though this had already been abundantly evident before, the humanitarian initiative and the Vienna Conference were put clearly in the context of the NPT. Austria, together with other stakeholders, underscored that the initiative had originated in the 2010 Action Plan and that substantive input of high relevance for the NPT was discussed at these conferences. A key objective of the Vienna Conference would thus be to consolidate the substantive elements that had been developed in the course of the different conferences as input for the 2015 NPT Review Conference, scheduled a few months after Vienna.⁴⁹ The clear substantive link to the NPT and the assurance about the objectives and foreseen conclusions of the Vienna Conference made it difficult for the umbrella States to distance themselves from the humanitarian initiative or even not to attend the Austrian event.

At the same time, Austria undertook focused outreach to the NPT nuclear weapon States regarding participation at the Vienna Conference, in particular to the United States. This was based on the calculation that the United States had realized that the “boycott policy” was politically harmful and seen as antagonistic by an ever-growing number of States. Given the objectives that President Obama had laid out in the Prague speech,⁵⁰ the argument that a focus on the humanitarian consequences of nuclear weapons was a “distraction” from the NPT had clearly begun to backfire. Moreover, the Ukraine crisis, the rejection of President Obama’s nuclear reductions proposal⁵¹ by Russia and the overall deterioration of Russian–American relations meant that one of the key reasons for the United States to stay away from

48 *Ibid.*, p. 9. See also ICAN, “Nayarit Point of No Return: Mexico Conference Marks Turning Point Towards Nuclear Weapon Ban”, press release, 14 February 2014, available at: www.icanw.org/campaign-news/nayarit-point-of-no-return-mexico-conference-marks-turning-point-towards-nuclear-weapon-ban-2/.

49 See, e.g., the Conference Report containing all presentations and key findings of the Vienna Conference that was prepared in time for the NPT Review Conference and which was distributed there, “Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 Dec. 2014”, available at: www.hinw14vienna.at.

50 B. Obama, above note 8.

51 See Barack Obama, “Remarks by President Obama at the Brandenburg Gate – Berlin, Germany”, 19 June 2013, available at: www.whitehouse.gov/the-press-office/2013/06/19/remarks-president-obama-brandenburg-gate-berlin-germany.

previous conferences – “P5 solidarity” – had weakened. As a result, the United States changed its rhetoric about the humanitarian consequences initiative somewhat after the Nayarit Conference, highlighting the awareness-raising value of this discourse. In addition, the US Department of State’s domestic efforts to generate discussion about the virtues of the Comprehensive Nuclear Test-Ban Treaty were put into the context of the health consequences of past nuclear testing, thereby opening some additional substantive entry points into the humanitarian initiative. The United States – or at least some of the advocates of the more proactive US disarmament approach – thus seemed to look for a way back into the humanitarian discourse. Moreover, the Washington-based US think tank community also started to pay more attention to the humanitarian initiative, having largely ignored it before due to the lack of US and other NPT nuclear weapon State engagement.⁵² Regular Austrian contacts with US State Department officials in the run-up to the Vienna Conference, in conjunction with the above-mentioned developments, led to the announcement by the United States that it would attend the Vienna Conference.⁵³ With the ill-advised NPT nuclear weapon State boycott broken, the United Kingdom decided, as expected, to follow suit and participate as well.⁵⁴ This left the two NPT nuclear weapon States most vocally opposed to the humanitarian initiative, France and Russia, exposed as having put themselves clearly outside the new mainstream of the international nuclear weapons debate, of which the humanitarian dimension was now widely considered to be an integral part. The participation of some of the NPT nuclear weapon States, in addition to India and Pakistan, was seen as a welcome development and a further validation of the importance of the humanitarian initiative.

Overall, participation increased further at the Vienna Conference, with a total of 158 States, several international organizations, a large number of National Red Cross and Red Crescent Societies and several hundred civil society representatives, bringing attendance at the event to almost 900 persons.⁵⁵ Over the two days prior to the governmental conference, ICAN had hosted a civil society forum which also brought together several hundred additional disarmament activists from a broad range of organizations. Media interest also increased, partly as a function of more concerted efforts from Austria and other stakeholder wanting to promote the humanitarian initiative and partly because

52 See, e.g., Arms Control Association, “Leading Nuclear Policy Experts and Organizations Call on the United States to Participate in International Conference on Humanitarian Impacts of Nuclear Weapons”, 29 October 2014, available at: www.armscontrol.org/pressroom/press-release/Groups-Urge-United-States-to-participate-in-Vienna-humanitarian-impacts-conference.

53 US Department of State, “United States Will Attend the Vienna Conference on the Humanitarian Impact of Nuclear Weapons”, media note, 7 November 2014, available at: www.state.gov/r/pa/prs/ps/2014/11/233868.htm.

54 China subsequently informed Austria officially that it would attend the conference with a former diplomat who, however, registered as an academic. China was therefore not an officially registered participant.

55 List of participants available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_participants.pdf.

participation by the United States and United Kingdom generated more coverage by the major media outlets.

The agenda for the Vienna Conference aimed at recapitulating the key findings of the previous two conferences and adding aspects that had not yet been addressed in the humanitarian initiative.⁵⁶ In addition to statements from the *Hibakusha*,⁵⁷ the conference highlighted the health, environmental, social and cultural impact of past nuclear weapons testing campaigns with moving testimonies by victims from Australia, the Marshall Islands and the United States (Utah) as well as an overview of research on the different consequences of nuclear tests. Two presentations gave overviews of the current research on the mid- and long-term atmospheric, climate and subsequent food-security consequences of a nuclear war, as well as on the impact of nuclear detonations on human health. The latter also specifically highlighted the gender dimension of radiation exposure, which affects women more seriously than men.⁵⁸ The trans-boundary dimension of nuclear weapons detonations was highlighted through a presentation that calculated the impact of a nuclear explosion of 200 kilotons in northern Italy, based on the geographical coordinates of the NATO military base in Aviano where US nuclear weapons are stored.⁵⁹

The key conclusions of these presentations were summarized by the chair as follows:

The impact of a nuclear weapon detonation, irrespective of the cause, would not be constrained by national borders and could have regional and even global consequences, causing destruction, death and displacement as well as profound and long-term damage to the environment, climate, human health and well-being, socioeconomic development, social order and could even threaten the survival of humankind.

The scope, scale and interrelationship of the humanitarian consequences caused by nuclear weapon detonation are catastrophic and more complex than

56 Vienna Conference Programme available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14vienna-Program.pdf.

57 Statements available at: www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons-and-nuclear-terrorism/vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/statements/. Setsuko Thurlow, Opening Statement, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_Speech_Setsuko.pdf.

58 All presentations of the Vienna Conference are available at: www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons-and-nuclear-terrorism/vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/presentations/.

59 Using historical weather patterns, a simulation of the explosion of a single 200-kiloton nuclear weapon was shown to lead to radioactive fallout being dispersed within a few days over large parts of Europe. Matthew McKinzie, "Calculating the Effects of a Nuclear Explosion at a European Military Base", presentation, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/Presentations/HINW14_S1_Presentation_NRDC_ZAMG.pdf. For US nuclear weapons in Europe, see Hans Kristensen, "Status of U.S. Nuclear Weapons in Europe 2010", Federation of American Scientists, 2010, available at: <http://fas.org/programs/ssp/nukes/images/euronukes2010.pdf>. This graph and more information is also available in Hans M. Kristensen and Matthew McKinzie, "The State of Nuclear Arsenals Today: Current Developments, Trends and Capabilities of Nuclear Weapons", in this issue of the *Review*.

commonly understood. These consequences can be large scale and potentially irreversible.

The use and testing of nuclear weapons have demonstrated their devastating immediate, mid- and long-term effects. Nuclear testing in several parts of the world has left a legacy of serious health and environmental consequences. Radioactive contamination from these tests disproportionately affects women and children. It contaminated food supplies and continues to be measurable in the atmosphere to this day.⁶⁰

Following up on the discussions in Nayarit on risk, the Vienna Conference added to these aspects with, *inter alia*, presentations on nuclear doctrines, war planning and scenarios of nuclear conflict, cyber-risks, risk calculation of nuclear war and a systems analytical assessment of the risk of nuclear weapons use. Further, the challenges of responding to a nuclear detonation scenario were elaborated from different national perspectives as well as for the UN system. The chair summarized the risk discussions with these conclusions:

As long as nuclear weapons exist, there remains the possibility of a nuclear weapon explosion. Even if the probability is considered low, given the catastrophic consequences of a nuclear weapon detonation, the risk is unacceptable. The risks of accidental, mistaken, unauthorized or intentional use of nuclear weapons are evident due to the vulnerability of nuclear command and control networks to human error and cyber-attacks, the maintaining of nuclear arsenals on high levels of alert, forward deployment and their modernisation. These risks increase over time. The dangers of access to nuclear weapons and related materials by non-State actors, particularly terrorist groups, persist.

There are many circumstances in which nuclear weapons could be used in view of international conflicts and tensions, and against the background of the current security doctrines of States possessing nuclear weapons. As nuclear deterrence entails preparing for nuclear war, the risk of nuclear weapon use is real. Opportunities to reduce risk must be taken now, such as de-alerting and reducing the role of nuclear weapons in security doctrines. Limiting the role of nuclear weapons to deterrence does not remove the possibility of their use. Nor does it address the risks stemming from accidental use. The only assurance against the risk of a nuclear weapon detonation is the total elimination of nuclear weapons.

No State or international body could address in an adequate manner the immediate humanitarian emergency or long-term consequences caused by a nuclear weapon detonation in a populated area, nor provide adequate

60 Vienna Conference, Chair's Summary, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_Chair_s_Summary.pdf.

assistance to those affected. Such capacity is unlikely ever to exist. Coordinated preparedness may nevertheless be useful in mitigating the effects including of a terrorist event involving the explosion of an improvised nuclear device. The imperative of prevention as the only guarantee against the humanitarian consequences of nuclear weapons use was highlighted.⁶¹

The Vienna Conference also added the international law dimension to the discussion that had been left out by the two previous conferences. Rather than having a repeat of well-rehearsed exchanges of the different opinions on how the 1996 Advisory Opinion of the International Court of Justice (ICJ)⁶² is to be interpreted and about the legality of nuclear weapons itself, the angle taken in Vienna was to look at different perspectives on what existing international law has to say about the consequences of nuclear weapon explosions. The respective panel assessed the applicability of international environmental norms, the World Health Organization's International Health Regulations, and the principles of IHL in light of the new humanitarian findings, as well as how humanitarian considerations are addressed in existing international law regulating arms.

Another new aspect added by the Vienna Conference to the humanitarian discourse was looking at the ethical and moral principles on which international law is based and how they pertain to nuclear weapons. In the legal panel, Nobuo Hayashi from the University of Oslo advocated taking a deontological approach towards nuclear weapons effects and drawing on comparisons with the moral assessment of torture, by considering the intrinsic moral status of an act rather than the moral status of its consequences.⁶³ Moreover, Pope Francis had sent a message to the Vienna Conference that was further elaborated by a Vatican position paper presented in Vienna,⁶⁴ which added very significant new analysis to the assessment of the moral justification of nuclear deterrence. In what must be seen as a highly significant development, the Vatican further elaborated its position on nuclear deterrence, arguing *inter alia* that:

In the absence of further progress toward complete disarmament and without concrete steps toward a more secure and a more genuine peace, the nuclear weapon establishment has lost much of its legitimacy. ... Since what is intended is mass destruction – with extensive and lasting collateral damage, inhumane suffering and the risk of escalation – the system of nuclear deterrence can no longer be deemed a policy that stands firmly on moral ground.⁶⁵

61 *Ibid.*

62 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, summary available at: www.icj-cij.org/docket/index.php?sum=498&code=unan&p1=3&p2=4&case=95&k=e1&p3=5.

63 Nobuo Hayashi, "The Fundamental Ethical and Moral Principles on which International Legal Regulations of Nuclear Weapons Are Based", presentation, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/Presentations/HINW14_S4_Presentation_Nobuo_Hayashi.pdf.

64 Holy See, "Nuclear Disarmament: Time for Abolition", position paper, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_Holy_See_Contribution.pdf.

65 *Ibid.*, p. 4.

The Holy See position paper ended with a strong call for nuclear abolition and the “need to resist succumbing to the limits set by political realism”.⁶⁶

The Austrian Chair’s Summary of the legal and moral discussion at the Vienna Conference concluded:

Looking at nuclear weapons from a number of different legal angles, it is clear that there is no comprehensive legal norm universally prohibiting possession, transfer, production and use. International environmental law remains applicable in armed conflict and can pertain to nuclear weapons, although it does not specifically regulate these arms. Likewise, international health regulations would cover effects of nuclear weapons. The new evidence that has emerged in the last two years about the humanitarian impact of nuclear weapons casts further doubt on whether these weapons could ever be used in conformity with IHL. As was the case with torture, which defeats humanity and is now unacceptable to all, the suffering caused by nuclear weapons use is not only a legal matter, it necessitates moral appraisal.

The catastrophic consequences of a nuclear weapon detonation event and the risks associated with the mere existence of these weapons raise profound ethical and moral questions on a level transcending legal discussions and interpretations.⁶⁷

In the general debate session on the second day, the value of the humanitarian initiative and concern about the consequences and risks of nuclear weapons were underscored in many statements. However, the question of which political conclusions should be drawn from the substantive findings of the humanitarian discourse loomed large in the over 100 statements⁶⁸ by States, international organizations and civil society. Most non-nuclear weapon States used the humanitarian conclusions as arguments to reason that the existence of nuclear weapons endangered their security by posing considerable risks of unacceptable and catastrophic consequences, that the complete elimination of nuclear weapons was the only guarantee to safeguard against these consequences, and that the humanitarian focus should generate the required momentum for urgent progress on nuclear disarmament. A growing number of States as compared to Nayarit called explicitly for a prohibition against nuclear weapons. At the same time, many statements continued to leave open the question of exactly which diplomatic and legal processes should be followed to achieve this goal.

As expected, the statements by the umbrella States countered these views with more cautious statements expressing support for the humanitarian discourse but highlighting the role nuclear weapons played in their security concepts as well as the global security environment. Similar to Nayarit, their statements

⁶⁶ *Ibid.*, p. 11.

⁶⁷ Vienna Conference, Chair’s Summary, above note 60.

⁶⁸ All statements are available at: www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons-and-nuclear-terrorism/vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/statements/.

argued essentially for the continuation of the so-called “step-by-step” approach to nuclear disarmament as being the most effective. The United States and United Kingdom argued along the same lines.⁶⁹

In line with the assurances given prior to the Vienna Conference, the Austrian Chair’s Summary reflected both the majority and minority positions on the political perspectives. Consequently, the summary, being a non-negotiated document and containing a broader range of views, did not give a political way forward for the humanitarian initiative. Austria therefore decided to issue a national document, the Austrian Pledge,⁷⁰ which went beyond the summary and contained its perspective on the *inescapable conclusions* that needed to be drawn from the humanitarian evidence. The document stated, *inter alia*, that Austria

regards it as her responsibility and consequently pledges to present the facts-based discussions, findings and compelling evidence of the Vienna Conference, which builds upon the previous conferences in Oslo and Nayarit, to all relevant fora, in particular the NPT Review Conference 2015 and in the UN framework, as they should be at the centre of all deliberations, obligations and commitments with regard to nuclear disarmament. ...

Austria calls on all States parties to the NPT to renew their commitment to the urgent and full implementation of existing obligations under Article VI, and to this end, to identify and pursue effective measures to fill the legal gap for the prohibition and elimination of nuclear weapons and Austria pledges to cooperate with all stakeholders to achieve this goal. ...

Austria pledges to cooperate with all relevant stakeholders, States, international organisations, the International Red Cross and Red Crescent Movements [*sic*], parliamentarians and civil society, in efforts to stigmatise, prohibit and eliminate nuclear weapons in light of their unacceptable humanitarian consequences and associated risks.⁷¹

The document did not specify exactly what kind of diplomatic and legal process should be pursued. However, it identified the need to “fill the legal gap for the prohibition and elimination of nuclear weapons” and contained an invitation “to cooperate in efforts to stigmatise, prohibit and eliminate nuclear weapons”. In the months after the conference, Austria then undertook outreach to States to convince them to consider associating themselves with this document, which over seventy States had formally done in the months running up to the 2015 NPT Review Conference.⁷²

69 *Ibid.*

70 Austrian Pledge available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_Austrian_Pledge.pdf.

71 *Ibid.*

72 Due to the large number of States associating themselves with this document, the Austrian Pledge was “internationalized” and renamed the Humanitarian Pledge in May 2015 during the NPT Review Conference. The list of States (120 by mid-2015) endorsing the Humanitarian Pledge is available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14vienna_update_pledge_support.pdf.

The Vienna Conference had thus made important progress on the humanitarian initiative in two ways. Firstly, it consolidated the substantive discussions that had taken place in the three conferences into a set of substantive and strong conclusions with respect to the humanitarian consequences of nuclear weapons, the risks associated with their existence, and the legal and moral dimensions of such weaponry. Secondly, it presented – through the line of argument contained in the Austrian Pledge – a set of political conclusions that should be drawn as a result of the humanitarian initiative. Even though all of this was done in non-negotiated and therefore non-binding documents, these issues and questions were nevertheless “out in the open” and impacting on the nuclear weapons discourse, not the least in the run-up to and during the 2015 NPT Review Conference that took place in New York from 27 April to 22 May 2015.⁷³

The 2015 NPT Review Conference

Even though the 2015 NPT Review Conference ended without an agreed outcome,⁷⁴ it demonstrated clearly the extent to which the humanitarian initiative had generated momentum since the previous Review Conference in 2010.⁷⁵ In addition to the two cross-regional statements of 159 and twenty-four States respectively,⁷⁶ over eighty delegations emphasized the importance of the humanitarian impact of nuclear weapons in their respective national statements.⁷⁷ Moreover, many working papers submitted to the Review Conference proposed concrete recommendations to highlight and follow up on different aspects of the humanitarian initiative.⁷⁸ Of particular note in this respect is Working Paper No. 30, which was introduced by a cross-regional group comprising most States of the Group of 16.⁷⁹ This contained a number of concrete recommendations for inclusion in a final conference outcome document. These recommendations drew heavily on the facts, findings and conclusions developed at the three conferences

73 See the 2015 NPT Review Conference website, available at: www.un.org/en/conf/npt/2015/.

74 The US, UK and Canadian delegations stated that they were not in a position to accept the draft final document that had been presented by the chair of the conference due to issues related to the Middle East. This document subsequently became Working Paper No. 58, available at: www.un.org/en/ga/search/view_doc.asp?symbol=NPT/CONF.2015/WP.58. The US closing statement is available at: www.reachingcriticalwill.org/images/documents/Disarmament-foa/npt/revcon2015/statements/22May_US.pdf. The UK closing statement is available at: www.reachingcriticalwill.org/images/documents/Disarmament-foa/npt/revcon2015/statements/22May_UK.pdf.

75 Final Document of the 2010 NPT Review Conference, above note 5.

76 Joint Statement delivered by Austria on behalf of 159 States, above note 20; Joint Statement delivered by Australia on behalf of twenty-four States, above note 20.

77 See Ray Acheson, “Editorial: We the People”, *NPT News in Review*, Vol. 13, No. 2, 2015, available at: www.reachingcriticalwill.org/disarmament-foa/npt/2015/nir/9732-4-may-2015-vol-13-no-2.

78 See, e.g., Working Papers No. 15, 16, 27, 29, 30, 40, 42, 44 and 52, as well as national reports, available at: www.un.org/en/conf/npt/2015/documents.shtml.

79 See Joint Statement by Austria *et al.*, above note 11. Norway and Denmark decided not to co-sponsor this working paper, which was, however, supported by Sweden, which had not been part of the original Group of 16. Working Paper No. 30 was finally introduced by Austria, Chile, Costa Rica, Egypt, the Holy See, Indonesia, Ireland, Malaysia, Mexico, New Zealand, Nigeria, the Philippines, South Africa, Sweden and Switzerland, available at: www.un.org/en/conf/npt/2015/pdf/NPT%20CONF2015%20WP.30_E.pdf.

in Oslo, Nayarit and Vienna, and aimed to translate them into commitments and a call for urgent action on nuclear disarmament by all NPT States Parties.

The negotiations during the Review Conference on nuclear disarmament, however, proved to be extremely difficult. Despite the overwhelming support for the humanitarian initiative, the nuclear weapon States – albeit to a varying degree – were reluctant to engage on or even dismissive of the substantive humanitarian conclusions, namely that the new facts and findings which had emerged in the context of the three conferences demanded a greater sense of urgency for progress on nuclear disarmament. Nuclear weapon States argued,⁸⁰ *inter alia*, that their nuclear deterrence doctrine had been developed in full knowledge of the humanitarian consequences of nuclear weapons and that no new relevant information regarding the impact and the risks of nuclear weapons had been presented, and stressed the – in their view – significant nuclear disarmament steps they had already taken. As a consequence, they rejected the inclusion of recommendations such as those contained in Working Paper No. 30.⁸¹

Since no agreement was achieved in the subsidiary bodies of the NPT Review Conference, the disarmament negotiations were moved into an informal format during the last week of the event. A small group of the most active delegations were invited by the president of the conference, Ambassador Taous Feroukhi, to the Algerian Mission in New York to try to work out an agreement on the nuclear disarmament aspect of the conference. These negotiations – for which no records are available – failed to foster agreement on any of the nuclear disarmament issues, among which the differences of perspectives between nuclear weapon States and non-nuclear weapon States on the humanitarian initiative and how to reflect its relevance and the substantive conclusions were maybe the most contentious. Faced with a complete lack of agreement, the president stopped the negotiations two days before the end of the conference and announced that she would produce a “last ditch – take it or leave it” Final Document under her own responsibility, which she would put before the States Parties for their consideration and possible adoption.⁸² For many States, the text that was finally submitted by the chair fell far short of expectations with regard to nuclear disarmament and the importance of the humanitarian initiative.⁸³ However, in the final plenary session of the conference, the question of the adoption of this document soon became irrelevant due to the fact that it was rejected by the US, UK and Canadian delegations because of the issue of the Middle East.⁸⁴

Despite this negative outcome, the humanitarian initiative can be said to have gained significant strength and momentum during the 2015 NPT Review

80 A large part of the disarmament negotiations took place in a subsidiary body of the conference without written records. Summaries of the discussions and selected statements are available at: www.reachingcriticalwill.org/disarmament-fora/npt/2015.

81 See Working Paper No. 30, above note 79.

82 Chair’s Draft Final Document, issued subsequently as Working Paper No. 58, above note 74.

83 See, e.g., the Joint Closing Statement delivered by Austria on behalf of forty-nine States at the 2015 Review Conference, 22 May 2015, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/statements/22May_Austria.pdf.

84 US closing statement, above note 74; UK closing statement, above note 74.

Conference. The humanitarian impact and the risks associated with the existence of nuclear weapons were the central focus and the key innovative element of the entire Review Conference discussion, and this demonstrated clearly that the humanitarian initiative was now firmly established on the international agenda and would thus have to be an integral part of future multilateral work on nuclear weapons. In addition, one could also argue that the humanitarian initiative gained strength *because* of the predominantly negative attitude of nuclear weapon States and the lack of consensus on any of the nuclear disarmament issues. The more contentious the negotiations on nuclear disarmament became and the clearer the picture emerged that nuclear weapon States would not agree to a document with strong nuclear disarmament commitments, the stronger the support for the Humanitarian Pledge became. During the four-week conference alone, support for this document grew from seventy to 109 States – indeed, many civil society organizations referred to the Humanitarian Pledge as the real outcome of the NPT Review Conference.⁸⁵

Implications for the nuclear disarmament debate

It is remarkable how much support and interest this initiative has generated in a very short period of time. Within two and a half years, the dual track of Joint Statements and international conferences has grown from a reference in an NPT Review Conference outcome document in 2010⁸⁶ into a process expressly supported by over three quarters of the international community. This strong response has surprised proponents and sceptics alike. The lasting ability of the humanitarian initiative to lead to tangible progress in the intractable nuclear disarmament debate is as yet difficult to assess. There are, however, several aspects which seem to indicate that a substantial shift has indeed taken place in this debate, and that the humanitarian initiative constitutes a new – widely shared – common ground and is the basis from which the vast majority of States wish to conduct future multilateral work on nuclear weapons.

Firstly, a large part of the appeal of the humanitarian initiative, the Joint Statements and the international conferences lies in the openness of the process. In the humanitarian initiative, all States, including those that normally have a less visible role or voice in multilateral disarmament efforts, can participate and make substantive contributions from a humanitarian perspective rather than the traditional military security or nuclear deterrence-based perspective. This debate is neither substantially nor procedurally controlled, in contrast to the multilateral frameworks and treaty bodies where nuclear weapons are usually discussed.

85 See, e.g., Ray Acheson, “2015 NPT Review Conference Outcome is the Humanitarian Pledge”, *Peace and Health Blog*, IPPNW, 23 May 2015, available at: <http://peaceandhealthblog.com/2015/05/23/npt-outcome-is-pledge/>.

86 Final Document of the 2010 NPT Review Conference, above note 5, p. 19.

The Geneva-based Conference on Disarmament⁸⁷ that is mandated to negotiate multilateral disarmament treaties already has limited democratic legitimacy with its membership of only sixty-five States. In addition, it is set up in such a way that all decisions – even minute procedural ones – have to be taken by consensus. In part as a result of this, the CD has been unable to agree even on a programme of work, and no negotiations have taken place in this body for almost twenty years. The New York-based United Nations Disarmament Commission (UNDC)⁸⁸ has universal membership and the mandate to make consensus recommendations for negotiations, *inter alia*, to be taken up by the CD on nuclear disarmament. However, the UNDC has also been unable to agree on any substantive recommendations since 1999. There is a growing frustration among non-nuclear weapon States about the dysfunction of this set-up, which ensures full procedural control of the disarmament discourse by the nuclear weapon States, enabling them to deny any development that they do not support. The humanitarian initiative is a framework for non-nuclear weapon States to discuss and set an agenda on nuclear disarmament that can be followed without being procedurally stifled and even without the NPT nuclear weapon States, at least initially, participating.

Moreover, civil society organizations and academia, whose access to these fora is still limited, are not merely allowed to participate in the humanitarian initiative, but their participation and contribution is invited and welcomed as an important and vital element of a broad and societal discourse on nuclear weapons that also involves stakeholders beyond the confines of the diplomatic disarmament and arms control community. This contributes to a dynamic atmosphere in the context of the humanitarian debate against which the proceedings in the more traditional disarmament fora appear anachronistic and undemocratic.

Secondly, the development of the humanitarian initiative and its increasing momentum should also be seen in parallel with two opposing developments of recent years. As stated before, the origins of the humanitarian initiative on nuclear weapons coincided partly with President Obama's Prague speech⁸⁹ and the resulting reinvigoration of the multilateral nuclear disarmament debate. The relative success of the 2010 NPT Review Conference was a direct consequence of the more positive momentum and the high expectations that significant progress on nuclear disarmament would be achieved at last.

As high as expectations may have been in 2009 and 2010, however, the developments that followed did not live up to them. In the following years, it became progressively apparent that there was little determination among nuclear weapon States – though to a varying degree – to implement the concrete actions of the 2010 Action Plan with any particular urgency. Quite to the contrary,

87 For more information on the CD, see the United Nations Disarmament Commission website, available at: www.un.org/disarmament/HomePage/DisarmamentCommission/UNDiscom.shtml.

88 For more information on the UNDC, see *ibid*.

89 B. Obama, above note 8.

significant budget allocations and plans for the long-term modernization of nuclear weapons and nuclear weapons infrastructure were put in place or are being discussed in all of the NPT nuclear weapon States.⁹⁰ This indicated a clear intent to continue to hold on to nuclear weapons for the long term rather than to seriously pursue nuclear disarmament. These trends contributed to an increasing credibility and trust deficit among non-nuclear weapon States as to the extent to which nuclear disarmament was actually an urgent objective that was shared by all. It appeared that, similar to the disarmament promises made in the NPT Review Conferences in 1995 and 2000,⁹¹ the 2010 Action Plan would again be left largely unfulfilled. The humanitarian initiative thus gained strength also as a function of the increasing credibility and trust deficit experienced by non-nuclear weapon States and as an outlet for expressing a sense of urgency with regard to nuclear disarmament.

Thirdly and perhaps most importantly, the substantive findings that have emerged in the course of the humanitarian initiative seriously challenge the nuclear deterrence orthodoxy. The case for nuclear deterrence rests on the credible threat of inflicting unacceptable destruction upon a possible adversary, thus enforcing restraint and rational behaviour on the part of all sides. The credibility of this threat is to be maintained with multiple nuclear strike and counter-strike capabilities of nuclear arsenals. All nuclear possessor States, of course, bank on the assumption that the threat alone will succeed and that these capacities will never have to be deployed. However, the credibility of the threat requires readiness to use nuclear weapons. The key findings of the humanitarian initiative highlight the serious flaws in this logic.

As established in the course of the three international conferences on the humanitarian impact of nuclear weapons, the mid- and longer-term atmospheric, climate and food-security consequences of even “limited nuclear war” would be considerably more serious than previously understood and most likely global in their effects, in addition to the immediate humanitarian emergency. The notion of credible nuclear first strike and counter-strike capabilities becomes largely irrelevant in such a context. “Winning” a nuclear conflict in the “classical” understanding of victory in a military conflict is an impossibility. In light of this new evidence, deterrence based on nuclear weapons thus rests not only on the readiness to inflict mass destruction and death on a global scale, but also on the readiness to commit, with full awareness, to an essentially suicidal course of action. This does not square with the underlying foundation of nuclear deterrence that it leads to rational behaviour on the part of all actors involved. The threat is either credible, which requires – in light of the new evidence – readiness to act

90 See, e.g., Hans M. Kristensen, “Nuclear Weapons Modernization: A Threat to the NPT?”, *Arms Control Today*, 1 May 2015, available at: www.armscontrol.org/act/2014_05/Nuclear-Weapons-Modernization-A-Threat-to-the-NPT. See also H. M. Kristensen and M. McKinzie, above note 59.

91 Final Document of the 1995 NPT Review and Extension Conference, available at: www.un.org/disarmament/WMD/Nuclear/1995-NPT/1995NPT_OfficialDocs.shtml. The Final Document of the 2000 NPT Review Conference is available at: www.un.org/disarmament/WMD/Nuclear/2000-NPT/pdf/FD-PartIand2.pdf.

suicidally and hence entirely irrationally, or incredible, since rational analysis cannot lead to the conclusion of risking the use of nuclear weapons. If the consequences for friend and foe alike are essentially suicidal, the threat itself becomes incredible. What is left is the considerable danger of escalation of crisis situations to such a level of tension and the trust that it in the end it will not come to the worst. However, the reasoning that governments are always rational enough to handle nuclear deterrence and that nuclear deterrence works because it makes governments always act rationally is essentially a dangerous circular argument.⁹²

Moreover, in order to avoid these suicidal consequences, nuclear deterrence is *required* never to fail. The findings on risk that have been presented in the course of the humanitarian initiative, however, clearly show that such a requirement simply cannot be fulfilled. There is an inherent contradiction between maintaining nuclear weapons in a manner that demonstrates readiness to *always* use them, as required for the credibility of nuclear deterrence, and the need to ensure that they will *never* be used by accident or by human or technical error.⁹³ The findings on the range of different risk drivers and the examples of “near misses” have demonstrated the worrying degree to which good fortune has in the past prevented nuclear accidents or miscalculation that could have resulted in nuclear war. The measures that would be necessary to reduce the risk associated with nuclear weapons, however, are the ones that would restrict the readiness to – always – use nuclear weapons, thereby undermining the very case for nuclear deterrence.

Proponents of nuclear deterrence are thus stuck in a vicious circle of either maintaining an irresponsible and uncontrollable level of risk of inflicting suicidal global consequences, or reducing this risk, which essentially weakens the arguments in favour of nuclear deterrence itself. Added to this is the clear understanding that no capacity exists, neither among nuclear weapons possessing States or States without nuclear weapons, nor at the international level, to respond in a remotely adequate manner to the consequences of nuclear explosions, should the nuclear deterrence construct ever fail. The conclusions drawn from the humanitarian initiative thus constitute a powerful set of arguments that challenge the equation on the security dimension of nuclear weapons which still prevails in nuclear weapons possessing States. In light of these conclusions, the arguments for the retention of nuclear weapons are considered by an increasing number of States as a high-risk and ultimately irresponsible gamble based on an illusion of security and safety.

One of the concerns that NPT nuclear weapon States have voiced about the humanitarian initiative was that it could aim to make nuclear weapons illegal under IHL or lead to another attempt to invoke the ICJ. In reality, though, it is not the *legality* of nuclear weapons that has emerged as *the* core issue or *the* key result of the humanitarian initiative. Rather, the *legitimacy* of nuclear weapons and a

92 See Alexander Kmentt, “Nuclear Deterrence as a Belief System”, *Security Index (International Edition)*, Vol. 103, No. 2, 2013, available at: www.pircenter.org/en/security-index/160-security-index.

93 See Eric Schlosser, “The Most Dangerous Machines”, presentation given at Vienna Conference, available at: www.youtube.com/watch?v=MTzbIE69Q4U&index=3&list=PLOX6GHcKYM_vZ-oSBpe2KTzJrMxl-u6D.

security approach based on nuclear deterrence has come into clear focus through the humanitarian initiative and is being profoundly challenged. Nuclear weapons have *catastrophic consequences*, their possession carries many *considerable risks*, their use would be *illegal* – except maybe for a small range of largely hypothetical scenarios – and the combination of these factors, together with the underlying readiness to commit mass destruction and mass murder, makes them *immoral*. These conclusions have gained significant ground in the international community as a result of the humanitarian initiative. The initiative thus makes the case that the mere existence of nuclear weapons poses such unacceptable dangers and risks that these weapons as such must be considered irresponsible and illegitimate. This leads to the next question, on what the best way should be to codify this *illegitimacy* into a legal framework for the prohibition and elimination of nuclear weapons. Following on from the humanitarian initiative, there should therefore be a serious, determined and urgent discussion on how this should be achieved and how progress can be made. This demand by non-nuclear weapon States is likely to be made with increasing urgency in the future.

This narrative about nuclear weapons is fundamentally different to the approach that has been advocated by NPT nuclear weapon States and their allies. The fourth significant impact of the humanitarian initiative is therefore the emergence of a clear rift in the international community on the approach towards nuclear weapons and what should be done to address the challenges posed by these weapons. States that continue to rely on nuclear weapons continue to argue for a gradual – albeit hardly credible – approach towards nuclear disarmament that essentially allows for the maintenance of nuclear deterrence.⁹⁴ Nevertheless, the argumentative stretch for those States who insist that they need nuclear weapons for their own security but that these weapons should be kept out of the hands of everybody else – while still maintaining that they are in favour of nuclear disarmament – has become significantly more difficult as a result of the humanitarian initiative. The humanitarian initiative has thus not only exposed a significant double standard, but also puts into focus the question of whether reliance on nuclear deterrence and professed support for nuclear disarmament are not essentially mutually exclusive concepts.

This rift between the nuclear weapon States, their allies and the vast majority of other States has crystallized in the discourse on the humanitarian impact of nuclear weapons. It will be problematic for the future of the nuclear disarmament and non-proliferation regime if this rift cannot be overcome, but this will require a clear shift in the policies of nuclear weapon States and their allies. They need to realize that, in the final analysis, one cannot have it both ways. In order to maintain global support for the NPT and the entire nuclear disarmament and non-proliferation regime, much more credibility needs to be

94 NATO, for example, has stated that “[a]s long as nuclear weapons exist, NATO will remain a nuclear alliance”. See NATO, “Active Engagement, Modern Defence: Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation adopted by Heads of State and Government in Lisbon”, 23 May 2012, available at: www.nato.int/cps/en/natolive/official_texts_68580.htm.

added to nuclear disarmament efforts. The alternative would be an irreparable undermining of the NPT, with the potential consequence of more and more actors seeking to develop nuclear weapons.

It is difficult to imagine how support for non-proliferation can be maintained in the long run if the NPT nuclear weapon States who also are the five permanent members of the UN Security Council and their allies continue to advocate a security concept that is increasingly seen as illegitimate by the vast majority of States. The negotiations on the Iranian nuclear programme that were conducted by the P5 plus Germany (E3/EU+3), for example, enjoyed broad support from the international community. Nevertheless, the fact – and the irony – that these are all States who stress the importance of nuclear weapons for their own security, while insisting on their unacceptability for other States, certainly did not go unnoticed. Proliferating the *concept* and the *value* of nuclear weapons through one's own actions and preaching non-proliferation at the same time is profoundly damaging for the entire nuclear disarmament and non-proliferation regime. The credibility of all non-proliferation efforts would be greatly enhanced if it were accompanied with a determined move away from nuclear weapons reliance.

This leads to the fifth and final potentially lasting impact of the humanitarian initiative: it strengthens the taboo against nuclear weapons as such. Building the case for the illegitimacy of nuclear weapons based on their consequences and associated risks works as a powerful set of arguments for disarmament and non-proliferation alike. The humanitarian focus is thus maybe the best hope to shore up support for the NPT, to create and maintain a strong nuclear disarmament and non-proliferation regime, and ultimately to move away from this form of weaponry altogether. It should be seen as a wake-up call and as an issue that unites the international community into urgent and determined action away from a reliance on nuclear weapons.

Changing the discourse on nuclear weapons: The humanitarian initiative

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Abstract

This article examines the progress of the humanitarian initiative to reframe the nuclear weapons discourse internationally. The initiative seeks to shift debate away from theories of strategic stability and towards a focus on the impact of nuclear weapons themselves. This effort has now gathered significant support at an international level, and its implications are increasingly recognized by both nuclear-armed and non-nuclear-armed States. The initiative has been underpinned by the deliberate logic of humanitarian disarmament. A treaty banning nuclear weapons, around which momentum is gathering, would be an achievable, legally coherent and logical next step developing from the initiative.

Keywords: nuclear weapons, humanitarian initiative, disarmament, prohibition, ban treaty.

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Since 2010, the unacceptable humanitarian consequences of nuclear weapons have been the subject of increased attention, analysis and discussion internationally. Looking at nuclear weapons from a humanitarian perspective challenges prevalent framings of the purpose and role of these weapons that have previously been focused on State security and strategic stability. A humanitarian perspective fundamentally questions the acceptability of nuclear weapons. Committed States,

civil society and international organizations have pursued this change in the discourse as a deliberate strategy to reframe the debate on nuclear weapons and establish foundations for their stigmatization, prohibition and elimination. As an approach, it draws inspiration from previous humanitarian disarmament initiatives to ban anti-personnel landmines and cluster munitions. This paper traces the progress of the State-level humanitarian initiative so far; explores the thinking and strategy behind it; considers its current limitations; and discusses where its growing momentum could take the initiative next, with significant interest now building amongst States in negotiating a new treaty to ban nuclear weapons based on their unacceptable humanitarian consequences.

Opportunities for change, and a growing focus on humanitarian impacts

The global discourse on nuclear weapons has been dominated for a number of decades by arguments that these weapons ensure inter-State security. The doctrine of nuclear deterrence proposes that the possession of nuclear weapons by some States introduces higher levels of caution into relations between States, lowering the likelihood of conflict. These propositions can be challenged both theoretically and empirically.¹ A focus on the humanitarian consequences of any deliberate or accidental nuclear explosion, however, aims to change the terms of the debate completely. It seeks a shift from the debate over security theory to using the demonstrably unacceptable effects on people of the weapons themselves as a starting point. This change of emphasis has implications for nuclear-armed States and their nuclear-dependent allies,² whose perceived interests and perspectives provide the basis for State security-focused framings. Examination of the effects of nuclear weapons has suggested that their possession is incompatible with humanitarian considerations.³ This poses basic questions about the acceptability of any State's retention of them or reliance on them in security doctrines. It shifts the burden of proof onto nuclear-armed and nuclear-dependent States to show the legitimacy of their position, rather than challenging the idea of "deterrence" on its own terms.

A humanitarian reframing of the nuclear weapons discourse aims to bring to the fore the unresolvable tension between retaining nuclear weapons and the

- 1 See, for example, Nick Ritchie, *Nuclear Risk: The British Case*, Article 36, London, 2014, available at: www.article36.org/wp-content/uploads/2013/06/Nuclear-risk-paper.pdf (all internet references were accessed in March 2015); Rebecca Johnson, "The NPT in 2010–2012: A Control Regime Trapped in Time", in Rebecca Johnson, Tim Caughley and John Borrie, *Decline or Transform: Nuclear Disarmament and Security beyond the NPT Review Process*, Acronym Institute for Disarmament Diplomacy, London, 2012; Ward Wilson, "The Myth of Nuclear Deterrence" *Nonproliferation Review*, Vol. 15, No. 3, 2008.
- 2 States in security alliances with nuclear-armed States, subscribing to the doctrine of "extended nuclear deterrence" (the guarantee of a nuclear response in the event of a nuclear attack).
- 3 See Beatrice Fihn (ed.), *Unspeakable Suffering – The Humanitarian Impact of Nuclear Weapons*, Reaching Critical Will, Geneva, January 2013, available at: www.icanw.org/wp-content/uploads/2012/08/Unspeakable.pdf.

unacceptable impacts of their use – a tension that is already implicit to the idea of deterrence, which relies in part on the assumed inability or unwillingness of any State to manage the catastrophic devastation that would result if nuclear weapons were used against it. Deep acceptance of the validity of deterrence has arguably undermined the influence of other considerations. Since the invention of nuclear weapons, their horrific consequences have been an object of serious concern to the public and scientific community, and the subject of intermittent State-level interest, for example at the United Nations (UN) General Assembly in resolutions and discussion.⁴ The preamble of the Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT) also mentions humanitarian concerns.⁵ However, this concern has not managed to affect the practice of deterrence doctrines over time. Following the collapse of the bi-polar world order of the Cold War, renewed proliferation and more uncertain and dynamic nuclear relations, the conditions for challenging deterrence framings with a humanitarian perspective are now more favourable.⁶ The recent re-emergence of humanitarian concerns into international discussion amongst States in particular was linked to two key developments.

Firstly, from 2009 the International Red Cross and Red Crescent Movement (the Movement) re-engaged with the issue of nuclear weapons from a humanitarian perspective. In April 2010, Jakob Kellenberger, then president of the International Committee of the Red Cross (ICRC), made a public statement to diplomats in Geneva. This set out in stark terms the unacceptable humanitarian consequences of nuclear weapons, and demanded urgent action from States to eliminate the threat that these weapons pose.⁷ It was followed in November 2011 by a resolution of the Council of Delegates of the International Red Cross and Red Crescent Movement. Emphasizing “the incalculable human suffering that can be expected to result from any use of nuclear weapons [and] the lack of any adequate humanitarian response capacity”, it called on the Movement to engage in raising awareness of the “catastrophic humanitarian consequences of any use of nuclear weapons”.⁸ A four-year action plan was subsequently adopted, in 2013, to implement the resolution.⁹

Secondly, the “catastrophic humanitarian consequences that would result from the use of nuclear weapons” and the continued risk these weapons pose

4 Tom A. Sauer and Joelien Pretorius, “Nuclear Weapons and the Humanitarian Approach”, *Global Change, Peace & Security*, Vol. 26, No. 3, 2014, pp. 238–240.

5 Treaty on the Non-Proliferation of Nuclear Weapons (NPT), 729 UNTS 10485, 1 July 1968 (entered into force 5 March 1970).

6 T. A. Sauer and J. Pretorius, above note 4, p. 440.

7 Jakob Kellenberger, “Bringing the Era of Nuclear Weapons to an End”, statement, 20 April 2010, available at: www.icrc.org/eng/resources/documents/statement/nuclear-weapons-statement-200410.htm. This document is also available in the “Reports and Documents” section of this issue of the *Review*.

8 Council of Delegates of the International Red Cross and Red Crescent Movement, “Council of Delegates 2011: Resolution 1. Working towards the Elimination of Nuclear Weapons”, 26 November 2011, available at: www.icrc.org/eng/resources/documents/resolution/council-delegates-resolution-1-2011.htm.

9 Council of Delegates of the International Red Cross and Red Crescent Movement, “Working towards the Elimination of Nuclear Weapons: Four-Year Action Plan”, Sydney, Australia, 17–18 November 2013, available at: www.icrc.org/eng/assets/files/red-cross-crescent-movement/council-delegates-2013/cod13-r1-nuclear-weapons-adopted-eng.pdf.

were noted as matters of concern in the Final Document of the 2010 Review Conference of the Parties to the NPT.¹⁰ This introduced the issue into the NPT review cycle on the initiative of Switzerland, encouraged by engagement on the issue from the Red Cross. The previous year, President Obama's endorsement of the goal of a world free of nuclear weapons in his Prague speech had helped to create a positive political context for the NPT Review Conference, and to re-energize those working on nuclear disarmament at a diplomatic level.¹¹

Increasing State interest in humanitarian consequences

Since 2010, engagement of States on the subject of the humanitarian consequences of nuclear weapons has been building in international fora. Growing political support for this framing and focus on the issue has been more sustained than for any other recent initiative to encourage renewed activity on nuclear disarmament.¹²

Within the NPT framework, statements expressing concern at the catastrophic impact of any use of nuclear weapons and the need for action were given on behalf of sixteen countries by Switzerland at the 2012 Preparatory Committee.¹³ That same concern was raised on behalf of eighty countries by South Africa at the 2013 Preparatory Committee.¹⁴ The chair's factual summaries of both Preparatory Committees highlight States' "deep concern" at the catastrophic humanitarian consequences of nuclear weapons, and the expectation that this topic will continue to be discussed in the review cycle.¹⁵ The topic also featured in the report of the final, 2014 Preparatory Committee, which contains recommendations to the 2015 Review Conference. This noted that the catastrophic humanitarian consequences of nuclear weapons were proposed for further consideration at the Review Conference.¹⁶ At the Review Conference itself, 159 countries endorsed a

10 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, UN Doc. NPT/CONF.2010/50, Vol. 1, 2010, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2010/FinalDocument.pdf.

11 R. Johnson, above note 1, p. 16.

12 Nuclear Threat Initiative, *Nuclear Disarmament Resource Collection*, available at: www.nti.org/analysis/reports/nuclear-disarmament/.

13 Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, First Session, Joint Statement on the Humanitarian Dimension of Nuclear Disarmament, 2 May 2012, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom12/statements/2May_IHL.pdf.

14 Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Second Session, Joint Statement on the Humanitarian Impact of Nuclear Weapons, 24 April 2013, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom13/statements/24April_SouthAfrica.pdf.

15 Chairman's Factual Summary, UN Doc. NPT/CONF.2015/PC.II/CRP.2, 2 May 2013, available at: <http://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom13/documents/CRP2.pdf>; and Chairman's Factual Summary, UN Doc. NPT/CONF.2015/PC.I/WP.53, 10 May 2013, available at: <http://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom12/documents/WP53.pdf>.

16 Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Report of the Preparatory Committee containing Recommendations to the Review Conference, UN Doc. NPT/CONF.2015/PC.III/CRP.7, 7 May 2014, available at: <http://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom14/documents/draft-recommendations.pdf>.

Joint Statement delivered by Austria on the humanitarian consequences of nuclear weapons.¹⁷

Joint Statements to the UN General Assembly First Committee on the humanitarian consequences of nuclear weapons have similarly gathered support. Switzerland delivered such a statement on behalf of thirty-five countries in 2012.¹⁸ Statements endorsed by 125 countries in 2013¹⁹ and 155 countries in 2014²⁰ were delivered by New Zealand. These Joint Statements have generally expressed deep concern at the evidence on the impacts of nuclear weapons, have stated that they should not be used again under any circumstances, and have highlighted the imperative of taking effective action towards disarmament and elimination based on this. In 2015, these concerns were enshrined in a UN General Assembly resolution, passed by vote at its First Committee.²¹

In 2013, the potential humanitarian impacts of nuclear weapons were also part of States' calls for disarmament during the open-ended working group to develop proposals to take forward multilateral nuclear disarmament negotiations for the achievement and maintenance of a world without nuclear weapons, and the High-Level Meeting on Nuclear Disarmament.²² Outside of UN fora, the Community of Latin American and Caribbean States (Comunidad de Estados Latinoamericanos y Caribeños, CELAC) has also emphasized its concern for the humanitarian consequences of nuclear weapons in a number of declarations.²³

The emergence of a specific forum and partners

Most importantly for the growing significance of the humanitarian challenge to the prevailing discourse on nuclear weapons, three stand-alone meetings of the humanitarian initiative on nuclear weapons have been convened since early 2013. The first of these conferences was held in Oslo, Norway, in March 2013. The organizers of this conference, in collaboration with various like-minded

17 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Joint Statement on the Humanitarian Consequences of Nuclear Weapons, 2015, available at: www.bmeia.gv.at/das-ministerium/presse/reden-und-interviews/2015/04/2015-review-conference-of-the-parties-to-the-treaty-on-the-non-proliferation-of-nuclear-weapons/.

18 UN General Assembly First Committee, 67th Session, Joint Statement on the Humanitarian Dimension of Nuclear Disarmament, 22 October 2012, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com12/statements/22Oct_Switzerland.pdf.

19 UN General Assembly First Committee, 68th Session, Joint Statement on the Humanitarian Consequences of Nuclear Weapons, 21 October 2013, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com13/statements/21Oct_Joint.pdf.

20 UN General Assembly First Committee, 69th Session, Joint Statement on the Humanitarian Consequences of Nuclear Weapons, 20 October 2014, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com14/statements/20Oct_NewZealand.pdf.

21 UNGA Res. A/C.1/70/L.37, 21 October 2015.

22 For records of these meetings, see Reaching Critical Will, *Other Disarmament Fora*, available at: <http://reachingcriticalwill.org/disarmament-fora/others>.

23 The latest of which is Special Declaration 16 of CELAC on the Urgent Need for a Nuclear Weapon Free World, 29 January 2015, available at: www.sela.org/media/1876366/special_declaration_16_of_celac_on_the_urgent_need_for_a_nuclear_weapon_free_world.pdf.

individuals and organizations, decided that the initiation of specific meetings on humanitarian impacts had become necessary in order to build the momentum of this reframing of the nuclear weapons problem. In 2014, further meetings were hosted in Nayarit, Mexico, in February, and Vienna, Austria, in December.²⁴ 179 States attended one or more of these meetings.

Each conference has been preceded by a civil society forum held by the International Campaign to Abolish Nuclear Weapons (ICAN).²⁵ This has considerably increased ICAN's profile as a coalition. ICAN and its partner organizations, along with other civil society organizations, academic and UN researchers, and humanitarian organizations, have gathered key evidence on humanitarian consequences, which has then been presented at the conferences. The sizeable presence and persistent engagement of ICAN in particular (as the largest civil society umbrella grouping focused on advocating for a comprehensive prohibition on nuclear weapons based on their unacceptable humanitarian consequences), along with a number of other actors, has also indicated the weight of civil society concern at the humanitarian impact of nuclear weapons to States attending the conferences. This has been important to the conferences' objective of building support for the humanitarian initiative. The existence of a focused, coherent and global civil society movement has added legitimacy to the State-led initiative, as well as ensuring the encouragement of a principled approach to the topics under discussion.

The presentation of evidence and testimony

The humanitarian impact conferences have allowed a detailed elaboration of existing and new evidence on the catastrophic harm caused by nuclear weapons, by experts from a variety of fields. Presentations made to the conferences have covered the immediate effects of a nuclear explosion; the short- and long-term local and global health impacts of any detonation; impacts on economies, development and global agriculture; the risks of deliberate or accidental nuclear weapon use; and the impossibility of mounting any meaningful humanitarian response.²⁶ Representatives from UN agencies, the Movement, and academic and non-governmental research institutes and think tanks, as well as civil society organizations, have contributed. This wide participation of a range of actors beyond disarmament and arms control specialists has been important to the effort to take the debate in a new direction and bring different considerations to bear on States.

24 For records of these meetings, see Reaching Critical Will, *Humanitarian Impact of Nuclear Weapons*, available at: <http://reachingcriticalwill.org/disarmament-fora/hinw>.

25 See the ICAN homepage, available at: www.icanw.org.

26 Presentations available at: <http://reachingcriticalwill.org/disarmament-fora/hinw>. For studies on many of these points, see B. Fihn (ed.), above note 3; John Borrie and Tim Caughley, *An Illusion of Safety: Challenges of Nuclear Weapon Detonations for United Nations Humanitarian Coordination and Response*, United Nations Institute for Disarmament Research (UNIDIR), New York and Geneva, 2014, available at: www.unidir.org/files/publications/pdfs/an-illusion-of-safety-en-611.pdf.

Crucially, victims and survivors of nuclear tests around the world and the nuclear bombings of Japan have also given testimonies to the conferences. These voices have often been excluded from inter-State security-based considerations of nuclear weapons.²⁷ For a full consideration of the effects of weapons on human beings and societies to be undertaken, the viewpoints of those who have experienced these effects are vital. The inclusion of survivors in a way that does not exploit or objectify their experience but gives agency and empowerment has a logical centrality to the development of a humanitarian discourse. The rights and needs of many victims and survivors of nuclear weapons have still not been adequately addressed. From the humanitarian perspective, any action developing out of a changing discourse on nuclear weapons must also include consideration of victims' and survivors' rights.²⁸

Resistance to reframing, changing power dynamics

The three humanitarian initiative conferences have provided a venue for developing acknowledgement of and buy-in for a humanitarian framing for debate on nuclear weapons and disarmament. Following the Oslo Conference, the numbers of States endorsing Joint Statements on the humanitarian impact of nuclear weapons at the NPT and First Committee increased considerably. As well as increased recognition by the majority of States who are not nuclear-armed, however, the conferences have also drawn resistance to the attempt at a humanitarian reframing from a number of nuclear-armed States and their allies.

The five nuclear-armed States of the NPT framework (China, France, Russia, the United Kingdom and the United States) initially took a joint position to boycott the humanitarian initiative meetings. Two nuclear-armed States that are not NPT signatories, India and Pakistan, have attended all the meetings. The humanitarian initiative challenges the status that NPT-member nuclear-armed States have assumed for themselves as the legitimate nuclear weapons possessors – in contrast to illegitimate possessors outside the NPT regime – by considering the fundamental illegitimacy of nuclear weapons possession as a whole. For India and Pakistan, participation in the humanitarian initiative conferences has appeared to have the objective, at least in part, of helping these States to promote themselves as responsible nuclear powers committed to disarmament and elimination, as well as being a function of the relations between these two countries.²⁹

In a statement prior to the Oslo Conference announcing their non-participation, the nuclear-armed NPT members expressed concern that the

27 John Borrie, "Humanitarian Reframing of Nuclear Weapons and the Logic of a Ban", *International Affairs*, Vol. 90, No. 3, 2014.

28 See Article 36, "Victim Assistance" in a Treaty Banning Nuclear Weapons, London, January 2015, available at: www.article36.org/wp-content/uploads/2015/01/victims-nuclear-weapons.pdf.

29 See, for example, Arka Biswas and Faiqa Mahmood, "India, Pakistan, and the Nuclear Humanitarian Initiative: Let's Be Real", *Bulletin of Atomic Scientists*, April 2015, available at: <http://thebulletin.org/india-pakistan-and-nuclear-humanitarian-initiative-let%E2%80%99s-be-real8256>.

humanitarian initiative would “divert discussion away from practical steps to create conditions for further nuclear weapons reductions”.³⁰ They have raised this line of argument subsequently, individually or collectively. These five States have variously asserted that the humanitarian initiative would undermine the NPT, discussions at the Conference on Disarmament, or the so-called step-by-step approach to nuclear disarmament as a whole.³¹ This counter-narrative has not discouraged the decisive majority of NPT States Parties from attending humanitarian impact conferences. On the contrary, States endorsing Joint Statements on the humanitarian impact of nuclear weapons have highlighted the urgent need to integrate humanitarian perspectives into all nuclear disarmament fora and discussions.³²

Using language that would later be replicated in other statements made by individual countries of the NPT nuclear-armed States group, the pre-Oslo announcement emphasised that these five States collectively “understand” the “serious consequences” of any nuclear weapons use, and that they gave the “highest priority to avoiding such contingencies”.³³ The implication that no further discussion, consideration or presentation of new evidence on the subject is necessary is emphasized with the phrase “fully understand” in subsequent statements.³⁴ At the 2015 NPT Review Conference, France took this further, asserting that no new evidence on the risks and consequences of nuclear weapons had been presented for “decades” – effectively denying that the humanitarian initiative had taken place at all.³⁵ Again, this does not appear to have deterred a growing majority of States from acknowledging the importance and utility of engaging with the humanitarian discourse across different fora. Those attending the humanitarian impact conferences have included States in nuclear alliances with members of the NPT nuclear-armed group, including States in NATO’s nuclear planning group.³⁶

At the Vienna Conference, the United States and United Kingdom broke with the other NPT nuclear-armed States and decided to attend.³⁷ Though released internal documents have indicated that the UK was amenable to

30 Announcement of non-attendance to the Oslo Conference, March 2013, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/oslo-2013/P5_Oslo.pdf.

31 See, for example, John Borrie and Tim Caughley, *After Oslo: Humanitarian Perspectives and the Changing Nuclear Weapons Discourse*, UNDIR, 2013, available at: www.unidir.org/files/publications/pdfs/after-oslo-en-469.pdf; Baroness Miller of Chilthorne Domer, “Nuclear Weapons: House of Lords Written Question”, 21 March 2013, available at: www.theyworkforyou.com/wrans/?id=2013-03-21a.182.0.

32 Joint Statement, above note 20.

33 Announcement, above note 30.

34 See, for example, Alistair Burt, Statement on behalf of France, the United Kingdom and the United States, United Nations General Assembly High Level Meeting on Nuclear Disarmament, 26 September 2013, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/HLM/26Sep_UKUSFrance.pdf.

35 Matthew Bolton, “No New Information on the Consequences of Nuclear Weapons?”, *Political Minefields*, 14 May 2015, available at: <http://politicalminefields.com/2015/05/14/no-new-information-on-the-consequences-of-nuclear-weapons/>.

36 T. A. Sauer and J. Pretorius, above note 4, pp. 242, 248.

37 An official from China was also present at the Vienna Conference, but was attending in an unofficial capacity as an academic.

attending previous humanitarian initiative meetings,³⁸ and the former minister responsible for disarmament has since expressed some regret that the UK did not attend Nayarit,³⁹ its decision to attend Vienna, following much deliberation, only came after the United States announced its attendance. The United States took the opportunity in this announcement to re-emphasize that it “fully understands the serious consequences of nuclear weapons use”.⁴⁰ Nevertheless, its decision that it was necessary to engage with the humanitarian impact meetings, and its assessment that specific political advantages could be derived from this, indicate the growing importance of the humanitarian discourse on nuclear weapons.⁴¹

This progression from a boycott to defensive engagement arguably shows the start of a change in power dynamics. States without nuclear weapons, as well as a broader like-minded coalition of civil society and international organizations, have the initiative as well as the moral authority in a humanitarian reframing. The humanitarian movement has empowered and provided a rallying point for non-nuclear-armed States frustrated with the failure of nuclear-armed States to take effective action on their disarmament commitments.⁴² At the 2015 NPT Review Conference, Costa Rica declared that the humanitarian impact conferences showed “democracy has come to nuclear disarmament”.⁴³ The former UN High Representative for Disarmament, Angela Kane, remarked of the humanitarian initiative that “this movement is supported by almost 80 per cent of UN Member States. The numbers cannot be ignored.”⁴⁴ These dynamics put the nuclear-armed States and their allies on the back foot, and are likely to increasingly oblige them to engage on others’ terms if they wish to contribute to this debate at all.

This emerging development appears to have influenced some of the nuclear-dependent States to make efforts to stall the humanitarian discourse and obscure its implications, engaging it on its own terms in doing so. For example, Australia, which asserts the protection of US nuclear weapons despite its being part of a nuclear weapon-free zone, has initiated Joint Statements “on the humanitarian consequences of nuclear weapons” at the UN General Assembly First Committee since 2013. These statements, endorsed almost exclusively by

38 See Article 36, “Documents Suggest UK Boycott of Key Nuclear Weapons Meeting was Driven by P5 Partners”, 4 June 2013, available at: www.article36.org/nuclear-weapons/documents-suggest-uk-boycott-of-key-nuclear-weapons-meeting-was-driven-by-p5-partners/.

39 See Alistair Burt, “Backbench Business: Nuclear Non-Proliferation Treaty Review Conference”, *Column 100*, 9 March 2015, available at: www.publications.parliament.uk/pa/cm201415/cmhansrd/cm150309/debtext/150309-0003.htm#15030930000002.

40 “United States Will Attend the Vienna Conference on the Humanitarian Impact of Nuclear Weapons”, media note, 7 November 2014, available at: www.state.gov/r/pa/prs/ps/2014/11/233868.htm.

41 John Borrie, “Outrunning a Bear Is a Relative Thing: US and UK Participation in the Vienna Conference”, *International Law and Policy Institute (ILPI)*, 9 January 2015, available at: <http://unidir.ilpi.org/?p=66>.

42 J. Borrie and T. Caughley, above note 31.

43 Costa Rica, Statement at the 2015 Review Conference of the Non Proliferation Treaty, 29 April 2015, available at: www.un.org/en/conf/npt/2015/statements/pdf/CR_en.pdf.

44 Angela Kane, High Representative for Disarmament Affairs, UN Disarmament Commission, Opening Remarks, 6 April 2015, available at: <https://unoda-web.s3.amazonaws.com/wp-content/uploads/2015/04/hr-undc-2015.pdf>.

States in a nuclear alliance with the United States, have expressed concern about humanitarian consequences, acknowledged the need to spread awareness of these, and welcomed the larger Joint Statements on the humanitarian issue. However, while the Australian-led statements appear to buy into a humanitarian framing in this way, they go on to reject such a framing by emphasizing that the “security ... dimensions of nuclear weapons” are a crucial element needed to achieve disarmament going forward, and that these dimensions are missing from the humanitarian consequences discussion, constituting a serious omission.⁴⁵

This appears to be a deliberate attempt to return the discourse to the nuclear-armed and nuclear-dependent conception of a “realistic approach to effective disarmament”, which “must involve the nuclear weapons States and take account of the security dimensions of nuclear weapons”,⁴⁶ and to push back on what the next steps of the humanitarian initiative are likely to entail. However, the Australian-led statements still provide an acknowledgement of the importance of the humanitarian framing, which seeks to displace the primacy of inter-State security theories in the consideration of nuclear weapons. In attempting to push back on its implications, the authors of the statements nevertheless apparently found it necessary to engage and affirm the humanitarian narrative. Similarly, at the Vienna Conference, Australia asserted the importance of nuclear deterrence whilst acknowledging that humanitarian concern “underpins all our efforts to promote effective and practical nuclear disarmament and non-proliferation”.⁴⁷ Such statements arguably also serve to expose the tension in the position that deterrence is an acceptable and legitimate strategy precisely because of the unacceptable consequences of nuclear weapon use.

Movement towards action

The UK has criticized the humanitarian initiative conferences on the grounds that they have lacked any specific objective.⁴⁸ The conferences have not been working meetings requiring agreed outcomes, and have not been framed as venues for any specific resolution to action by States. Their objective has been to support the reframing of the nuclear weapons problem – which the UK understands. Freedom of Information requests revealed that the UK recognized the Oslo Conference as a forum where “the focus and format ... will not lend itself to the UK setting out

45 Joint Statement on the Humanitarian Consequences of Nuclear Weapons, UNGA 69 First Committee, 20 October 2014, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com14/statements/20Oct_Australia.pdf.

46 Freedom of Information (FOI) Ref. No. 14/51652, Australian Department for Foreign Affairs and Trade, available at: <http://dfat.gov.au/about-us/corporate/freedom-of-information/pages/foi-disclosure-log.aspx>.

47 Australian Statement at the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 December 2014, available at: http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/vienna-2014/9Dec_Australia.pdf.

48 See, for example, House of Commons, “Oral Answers to Questions: Nuclear Weapons (Vienna Conference)”, Column 153, 28 October 2014, available at: www.publications.parliament.uk/pa/cm201415/cmhansrd/cm141028/debtext/141028-0001.htm.

our narrative and key messages”;⁴⁹ it would be a venue for the shifting of the debate away from the UK’s preferred framing.

At the Vienna Conference, Austria went beyond giving a Chair’s Summary and made a pledge to cooperate with all stakeholders to “identify and pursue effective measures to fill the legal gap for the prohibition and elimination of nuclear weapons” in order to support the implementation of Article VI of the NPT, and to work with others “in efforts to stigmatise, prohibit and eliminate nuclear weapons in light of their unacceptable humanitarian consequences and associated risks”.⁵⁰ At the previous conference in Nayarit, the Chair’s Summary called for the humanitarian initiative’s next step to be the commencement of a time-bound diplomatic process to achieve an international legally binding instrument on nuclear weapons.⁵¹ This was reportedly uncomfortable for the nuclear-dependent and nuclear-armed States present, who did not find this concrete proposal acceptable in a Chair’s Summary, and whose national security policies sit awkwardly with a humanitarian consequences discourse.⁵²

The humanitarian initiative has gathered significant support amongst States and has generated an expectation of action. The Humanitarian Pledge issued by Austria takes a step towards this, with States invited to endorse the Pledge to join the initiative it proposes. Over 120 States have done so at the time of writing, with a resolution on the Pledge passed in the UN General Assembly’s First Committee with 128 votes.⁵³ Another resolution linked to the humanitarian initiative establishes an open-ended working group for 2016 to “substantively address concrete effective legal measures, legal provisions and norms that will need to be concluded to attain and maintain a world without nuclear weapons”.⁵⁴ Before examining where this momentum could carry the humanitarian initiative next, this paper discusses the strategic thinking behind it, and its links to previous disarmament initiatives.

A deliberate strategy of reframing

In February 2010, the minister of foreign affairs of Norway, Jonas Gahr Støre, made a speech suggesting that the experiences of humanitarian disarmament initiatives on anti-personnel landmines and cluster munitions could be applied to nuclear weapons.⁵⁵ Since the conclusion of the Mine Ban Treaty, and particularly since

49 Article 36, above note 38.

50 Austrian Foreign Ministry, “Humanitarian Pledge”, December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abbruestung/HINW14/HINW14_Austrian_Pledge.pdf.

51 Second Conference on the Humanitarian Impact of Nuclear Weapons, Chair’s Summary, 14 February 2014, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/nayarit-2014/chairs-summary.pdf.

52 J. Borrie, above note 27, p. 644.

53 See ICAN, “Humanitarian Pledge: Stigmatize, Prohibit and Eliminate Nuclear Weapons”, 8 December 2015, available at: www.icanw.org/pledge.

54 UNGA Res. A/C.1/70/L.13/Rev.1, 29 October 2015.

55 Jonas Gahr Støre, “Disarmament – Reframing the Challenge”, 1 February 2010, available at: www.regjeringen.no/en/aktuelt/disarmament/id592550/.

the Convention on Cluster Munitions in 2008, the individuals and groups involved in these processes have worked to apply their experiences of success to other challenging disarmament problems.⁵⁶ The issues surrounding landmines and cluster munitions were different, and the campaigns and diplomatic processes used to ban each of them were by no means identical. Nuclear weapons pose other challenges in turn.⁵⁷ However, the humanitarian initiative rests on the idea that a similar basic approach can be applied: reframing a problem in order to make an unproductive policy environment more promising, through shifting thinking.⁵⁸ Some of the organizations and individuals involved in previous humanitarian disarmament initiatives within States, NGOs and international organizations (including the ICRC) either helped to initiate or are now involved in the humanitarian reframing of nuclear weapons.

The humanitarian disarmament approach considers weapons systems from the perspective of whether their use causes unacceptable harm. This includes but goes beyond questions of legality to include moral and political assessments of the effects of certain weapons on both civilians and combatants, and whether the use of such weapons can withstand this scrutiny by responsible States and military commanders. By taking a broader framing than purely legal argumentation and concentrating on the humanitarian question as a whole, the humanitarian disarmament approach seeks to avoid the potential for competing interpretations of the law to become a sticking point and a barrier to progress. Situating nuclear weapons within this conceptual framework denies the special status claimed for them (as weapons of mass destruction whose possession is nevertheless maintained to be legitimate for some States, which ascribe unique properties of deterrence to them). Humanitarian disarmament considers weapons from an apolitical perspective, concentrating on their effects on people and places rather than their military utility and strategic beliefs about them.

However, a humanitarian approach is not value-neutral⁵⁹ – through drawing attention to unacceptable harm, it aims to end the use of particular weapons and eliminate them. By seeking to change what the important facts about a weapon are considered to be, this approach aims to introduce doubt for policy-makers and military commanders about their established views of a weapon's usefulness and legitimacy, which now have to be proved on different terms. Doubt about accepted practices is introduced, leading to changes in

56 See, for example, Richard Moyes and Thomas Nash, *Global Coalitions: An Introduction to Working in International Civil Society Partnerships*, Action on Armed Violence, London, 2011; Brian Rappert, *A Convention Beyond the Convention: Stigma, Humanitarian Standards and the Oslo Process*, Landmine Action, London, May 2008; John Borrie, Maya Brehm, Silvia Cattaneo and David Atwood, "Learn, Adapt, Succeed: Potential Lessons from the Ottawa and Oslo Processes for Other Disarmament and Arms Control Challenges", *Ideas for Peace and Security*, Vol. 1, 2009. This paper was based on a 2008 workshop to consider this issue.

57 John Borrie and Tim Caughley, "How are Humanitarian Approaches Relevant to Achieving Progress on Nuclear Disarmament?", in R. Johnson, T. Caughley and J. Borrie, above note 1.

58 *Ibid.*

59 John Borrie, *Viewing Nuclear Weapons through a Humanitarian Lens: Context and Implications*, UNIDIR, 2013, p. 9, available at: www.unidir.org/files/publications/pdfs/viewing-nuclear-weapons-through-a-humanitarian-lens-en-413.pdf.

opinion and the introduction of new laws and policies in response. In particular for States who value being seen as responsible and humanitarian in their conduct, the reframing of a weapon as taboo can change their policy calculations in relation to it. As the former UN High Representative for Disarmament remarked in relation to the stigma that exists around other weapons of mass destruction, “how many States today boast that they are ‘biological-weapon States’ ... who speaks of a bioweapon umbrella?”⁶⁰

For nuclear weapons, breaking the deadlock and inertia on global nuclear disarmament has been the imperative behind the attempt to change the discourse. Changes in the global context, as well as the increased visibility of international humanitarian law in inter-State relations, facilitate the adoption of a humanitarian approach. This approach focuses on delegitimizing the weapon itself, on a global scale. Because of this, the involvement of nuclear-armed States is not necessary to change the terms of the conversation. Although they have substantial populations, nuclear-armed States constitute a very small proportion of States worldwide. This gives an advantage to other States seeking to establish new ideas of acceptability, through their force of numbers. A humanitarian framing does, however, fundamentally challenge nuclear-armed States and their beliefs about these weapons. It brings pressure by creating a tension between the practice of nuclear deterrence and careful documentation and critical argumentation demonstrating the catastrophic humanitarian impacts of nuclear weapons. Its ultimate aim is to end nuclear weapon possession. A shift in the discourse is the first step towards policy and legal responses that, although they may not involve nuclear-armed States initially, will ultimately impact their behaviour. Such influence will come from the creation of new international standards and changes in the landscape of political and military cooperation that cannot be ignored.

Practitioners and researchers involved in previous humanitarian disarmament campaigns and diplomatic initiatives have looked at the elements that have contributed to past successes, and theorized the discourse changes involved.⁶¹ Campaigners and States currently involved in changing the nuclear weapons discourse have used these lessons. Elements for building a successful process framed around humanitarian impact include: effectively mobilizing networks; using existing experience to advance causes; concentrating on the human impact of nuclear weapons, including through the use of survivor testimony; projecting credibility through quality research and practitioner perspectives; contesting current discourses to shift the burden of proof to weapons users; building diverse partnerships based on trust; and maintaining clear objectives and strategy.⁶²

Reframing a disarmament problem along the lines of the acceptability of the weapon involves several aspects, and is a dynamic process, according to John Borrie, a senior researcher at the United Nations Institute for Disarmament

60 High Representative Angela Kane, *The New Zealand Lectures on Disarmament*, UNODA Occasional Papers, No. 26, June 2014, available at: www.un.org/disarmament/publications/occasionalpapers/en/op26.pdf.

61 See, for example, the works cited above in notes 27 and 56.

62 R. Moyes and T. Nash, above note 56.

Research (UNIDIR).⁶³ These aspects include “frame bridging”, which entails linking a problem to others that have been resolved in similar ways – for example, as nuclear weapons have been linked to the outlawing of other weapons of mass destruction, as well as landmines and cluster munitions.⁶⁴ “Frame amplification” involves drawing attention to the distance between a purported concern for the protection of civilians and humanitarian legal norms, and the possession of weapons of mass destruction. This has featured in statements from States on the consequences of nuclear weapons.⁶⁵ In parallel, “frame extension” seeks to match the change in discourse and action sought to the norms that States assert are important to them, aligning this change to States’ interests and identities. “Frame transformation” completes the redefining of views and activities towards a convergence on consideration of a weapon’s acceptability. At this point, opposition to this framing only serves to show its validity. This can be seen in the shifting nuclear weapons discourse, as dismissal by nuclear-armed States of humanitarian concerns only serves to reinforce civil society’s and some governments’ interpretations that current nuclear disarmament efforts are insufficiently progressive and effective.⁶⁶ Such resistance also builds confidence amongst those involved that the process of reframing is succeeding, given that there is pushback from those whose behaviour it ultimately seeks to change.

On the civil society side, this humanitarian approach has mobilized a wide range of actors to the ICAN coalition in particular, including organizations already engaged on nuclear issues, humanitarian disarmament campaigners and a new generation of nuclear disarmament activists. Having grown steadily with the humanitarian initiative, in particular over the past two years, at the time of writing ICAN comprised over 400 partners in over ninety countries, making it a significant presence in the field.⁶⁷ The humanitarian initiative has used and mobilized existing networks of trust among civil society organizations and amenable States, which have been added to and built upon in the effort to reframe the nuclear issue.⁶⁸ State and civil society activity to raise the profile of humanitarian consequences has been underpinned strategically by the humanitarian disarmament approach, its lessons and its key actors.

Limitations to discursive change

The humanitarian initiative has now generated considerable interest and buy-in from non-nuclear-armed States – and an unease from nuclear-armed States and their allies that demonstrates its growing importance. It has not, however, led to a comprehensive change in the policy discourse on nuclear weapons or universal

63 J. Borrie, above note 27.

64 *Ibid.*, p 637.

65 *Ibid.*, p 639.

66 *Ibid.*, p 643.

67 See the ICAN homepage, available at: www.icanw.org.

68 J. Borrie, above note 59, p 9.

reframing of the problem. This is unsurprising given that it is a relatively new initiative, currently without a process such as treaty negotiations around which to rally public attention.

In public discourse, the humanitarian initiative has gained some coverage in the global media. This (as well as the humanitarian reframing's implications) had been enough of a cause for concern for Australia to take steps to try and "reset the international discourse on this issue" with an op-ed ahead of the Nayarit Conference that criticized the approach.⁶⁹ Media stories on nuclear weapons issues, however, often focus on subjects such as North Korea's possession of nuclear weapons, potential proliferation to Iran, possibilities for the conflict in Ukraine to renew Cold War-style nuclear relations, and the modernization of nuclear arsenals by the United States and United Kingdom. These are not typically covered from a humanitarian perspective but use State-security based framings and accepted ideas about who constitutes a legitimate nuclear weapons possessor.⁷⁰

At the national level, established debate in NPT nuclear-armed States and their closest nuclear allies does not appear to have shifted far on account of the humanitarian initiative – though Australia and others clearly fear that it will. One exception may be Japan. Debate was sparked about Japan's role in nuclear disarmament when the government did not sign the humanitarian Joint Statement at the NPT in 2012, and because of its justification that the statement was incompatible with Japan's reliance on extended nuclear deterrence. Following criticism from the Mayor of Nagasaki on the anniversary of the atomic bombings of Japan in 2013, media coverage, protests and strong engagement from parliamentarians, survivors and civil society, the government decided to change its stance, signing the Joint Statement delivered at the UN General Assembly First Committee in 2013.⁷¹ Japan's position in the global nuclear debate has become increasingly destabilized by the humanitarian initiative, with the United States, Britain and France abstaining in 2015 from its annual First Committee resolution on the abolition of nuclear weapons due to the inclusion of language on humanitarian consequences.⁷²

Elsewhere, however (for example, in the United States), mainstream institutions considering nuclear policy have begun to mention the initiative, but not as the major current opportunity to advance nuclear disarmament.⁷³ A group

69 FOI Ref. No. 14/51952, above note 46. The op-ed was published as Julie Bishop, "We Must Engage, Not Enrage Nuclear Countries", *Sydney Morning Herald*, 14 February 2014, available at: www.smh.com.au/comment/we-must-engage-not-enrage-nuclear-countries-20140213-32n1s.html.

70 For example, Kate Brannen "How to Dismantle an Atomic Bomb? With a Money Crunch", *Foreign Policy*, 5 March 2015, available at: https://foreignpolicy.com/2015/03/05/nuclear-weapons-pentagon-modernization-money/?utm_source=Sailthru&utm_medium=email&utm_term=*Situation%20Report&utm_campaign=Sit%20Rep%20March%206%202015.

71 ICAN, "Japan to Join Humanitarian Initiative at UN First Committee", 12 October 2013, available at: www.icanw.org/campaign-news/japan-to-join-humanitarian-initiative-at-un-first-committee/.

72 "Japan Loses Support of U.S., Britain, France for U.N. Resolution on Abolishing Nukes", *Asahi Shimbun*, 4 November 2015, available at: https://ajw.asahi.com/article/behind_news/politics/AJ201511040076.

73 See, for example, recent work by the James Martin Center for Non-Proliferation Studies, Middlebury Institute of International Studies at Monterey, available at: www.nonproliferation.org.

of French parliamentarians at a side event to the Vienna Conference emphasized the ongoing difficulty of challenging nuclear deterrence doctrines in their country.⁷⁴ This paper cannot aim to assess all national contexts, but offers some further indications from the example of the UK, where the author's organization is based.

In the UK, the humanitarian initiative has been raised by a small number of parliamentarians.⁷⁵ However, as yet it has made little impact on the debate regarding the UK's nuclear weapon modernization programme. A motion in the House of Commons in early 2015 proposing that the UK's nuclear weapons should not be renewed was rejected by 364 to thirty-seven votes following debate, indicating the deep acceptance of the UK's "deterrent" that existed across the political spectrum at that time.⁷⁶ This is coming under some challenge with the election of Scottish National Party candidates to almost all Scottish seats in the 2015 election – a party whose rejection of UK nuclear weapons includes concern about the risks and consequences of a nuclear detonation – as well as the election to the leadership of the main opposition Labour Party of a long-time anti-nuclear activist.

Responses to parliamentary questions on the UK's engagement with the humanitarian initiative say little to acknowledge the framing, emphasizing the value of nuclear weapons to the UK's security and the need to continue work within existing fora as the only option.⁷⁷ A request to publicly release the UK government's own assessments of the humanitarian impacts of any nuclear detonation has been refused on the grounds of national security and relations with "other States".⁷⁸ A cross-party commission convened by the British American Security Information Council (BASIC) – a prominent nuclear disarmament and non-proliferation UK think tank – concluded that the UK should keep its nuclear weapons.⁷⁹ Controversy was generated in the UK military establishment by the proposition from the Liberal Democrat Party that the size of the UK's nuclear submarine fleet might be reduced to three,⁸⁰ similarly showing the continued dominance of deterrence framings in UK debate.

74 Message from ten French parliamentarians from various political parties to the International Conference on the Humanitarian Impact of Nuclear Weapons, Vienna, 8–9 December 2014, delivered by Jean-Marie Collin, PNND France Coordinator, to the Parliamentary Roundtable side event held in the Austrian Parliament, available at: www.pnnd.org/sites/default/files/i/photos/events/20141209-vienna/french_parliamentarians_message_for_the_vienna_conference_-_english_tra.pdf.

75 ICAN UK, "Humanitarian Initiative Raised by MPs at Trident Debate", 22 January 2015, available at: <http://uk.icanw.org/action/humanitarian-concerns-raised-by-mps-at-trident-debate/>.

76 House of Commons, Ministerial Statement and Debate Summary, "Trident Renewal", Column 90, 20 January 2015, available at: www.publications.parliament.uk/pa/cm201415/cmhansrd/cm150120/debtext/150120-0001.htm.

77 Parliamentary questions and answers are archived by the Acronym Institute for Disarmament Diplomacy, available at: www.acronym.org.uk/parliamentary-records.

78 House of Commons, Written Answers to Questions, "Nuclear Weapons", Written Question 219273, 6 January 2015, available at: www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2014-12-17/219273/.

79 BASIC, "Trident Commission", available at: www.basicint.org/tridentcommission/.

80 Ewan MacAskill, "Trident Gets Thumbs Up in Report that Will Dismay Anti-Nuclear Campaigners", *The Guardian*, 1 July 2014, available at: www.theguardian.com/uk-news/2014/jul/01/trident-nuclear-missile-renewal-study.

It seems likely that the international context must change further in order for the humanitarian discourse to seriously affect domestic considerations in the UK and other nuclear-armed States, though its destabilizing potential is more immediate for their nuclear-dependent allies. Movement from framing discussion to new actions to advance nuclear disarmament would attract greater media attention and generate public interest. It would likely impact domestic political calculations and interests more strongly than the humanitarian initiative can do currently. What these actions might be and how they could change the discourse and policy landscape further, domestically and internationally, is discussed in the final section of this paper.

The way forward for the humanitarian initiative

UK officials, in the context of deliberating whether to attend the Oslo Conference on the Humanitarian Impact of Nuclear Weapons, observed the following:

At the heart of the “humanitarian disarmament movement” is the thread that any weapons which are indiscriminate in their effect should be outlawed. This is how the Cluster Munitions Convention campaign began. The Oslo meeting will seek to establish as gospel that nuclear weapons have such an indiscriminate effect, and must therefore be banned. So we need to establish a strong counter-narrative which reflects our broader disarmament and deterrence strategy.⁸¹

This is an accurate characterization of how many of those involved in pursuing a change in the nuclear weapons discourse, amongst States, legislators, international organisations and civil society, plan and expect the humanitarian initiative to progress. Argumentation for a stand-alone treaty banning nuclear weapons, with or without the participation of the nuclear-armed States, has developed alongside the humanitarian initiative.⁸² For ICAN and many States, commencement of negotiations on a ban treaty is the immediate purpose of pursuing a humanitarian reframing, and ICAN’s major role has been to persuade States of this objective.⁸³

A treaty banning nuclear weapons would address the legal anomaly that these are the only weapons of mass destruction not specifically outlawed by a

81 Extract from an email sent on 7 January 2013 by a Foreign and Commonwealth Office official when the UK approach to the Oslo Conference was under discussion, released through an FOI request made by Brian Brady of the *Independent on Sunday*. File with author.

82 See, for example, Article 36, *Banning Nuclear Weapons*, 23 February 2013, available at: www.article36.org/wp-content/uploads/2013/02/Report_web_23.02.13.pdf; Article 36 and Reaching Critical Will, *A Treaty Banning Nuclear Weapons*, 27 April 2014, available at: www.article36.org/wp-content/uploads/2014/04/AR06_TREATY_REPORT_27.4.14.pdf.

83 Magnus Løvold, Beatrice Fihn and Thomas Nash, “Humanitarian Perspectives and the Campaign for an International Ban on Nuclear Weapons” in John Borrie and Tim Caughley (eds), *Viewing Nuclear Weapons through a Humanitarian Lens*, UNIDIR, 2013, available at: www.unidir.org/files/publications/pdfs/viewing-nuclear-weapons-through-a-humanitarian-lens-en-601.pdf.

comprehensive international treaty.⁸⁴ It would build on existing agreements such as Nuclear Weapon Free Zone treaties, creating a global instrument that universalises their intentions. It would contribute to the stigmatization of nuclear weapons and produce further change in the global discourse. A ban treaty would also provide an effective point of mobilization in its simplicity, clear intentions and practicability. Other proposed frameworks such as the draft nuclear weapons convention require the participation of nuclear-armed States from the onset in how they are conceived, meaning that these States are able to stall progress.⁸⁵ A ban treaty, however, could be negotiated and concluded by those States who are willing to do so, even if nuclear-armed States do not join initially. By not only banning the use of these weapons but also articulating a comprehensive prohibition against them – as other weapons treaties do – it would both establish a framework and create more favourable conditions for elimination. A ban treaty could also include prohibitions on assistance with prohibited acts, such as financing companies producing nuclear weapons, which in turn would move commercial incentives away from these weapons. Furthermore, such a treaty could provide a framework for ensuring the rights of people affected by the use or testing of nuclear weapons, and for the restoration of affected environments.⁸⁶ A ban treaty would have normative and practical effects to facilitate nuclear disarmament and would fill many of the gaps in international law relevant to nuclear weapons.⁸⁷

There is considerable support for the pursuit of the prohibition of nuclear weapons. More than seventy States have made individual statements supporting the outlawing of nuclear weapons at the time of writing. Regional groupings and organizations such as the Association of Southeast Asian Nations, the Caribbean Community and Common Market and CELAC have expressed support for prohibition.⁸⁸ The first Joint Statements on the humanitarian consequences of nuclear weapons at the NPT and UN General Assembly First Committee also called explicitly for States to work on outlawing nuclear weapons.⁸⁹ Subsequent Joint Statements by States on the humanitarian impacts of nuclear weapons have not explicitly stated this position, however, likely in order to facilitate wider support.

84 The International Court of Justice (ICJ) ruled in its 1996 Advisory Opinion on nuclear weapons, by eleven votes to three, that “there is in neither customary nor conventional international law any comprehensive and universal prohibition of the threat or use of nuclear weapons as such”. ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996*, 8 July 1996, para. 99, available at: www.icj-cij.org/docket/files/95/7495.pdf. The NPT does not explicitly or universally prohibit use or possession of nuclear weapons. For a summary of the gaps in the legal regime with respect to the prohibition of nuclear weapons, see Article 36 and Reaching Critical Will, *Filling the Legal Gap: The Prohibition of Nuclear Weapons*, London and New York, May 2015, available at: www.article36.org/wp-content/uploads/2015/05/A36-RCW-gaps-table-updated.pdf.

85 Patricia M. Lewis, “A New Approach to Nuclear Disarmament: Learning from International Humanitarian Law Success”, International Commission on Nuclear Non-Proliferation and Disarmament, Paper No. 13, January 2009.

86 Article 36 and Reaching Critical Will, above note 82.

87 For a summary of the legal gaps with respect to prohibition, see *ibid*.

88 ICAN, *Support for a Ban*, available at: www.icanw.org/why-a-ban/positions/.

89 Joint Statement, above note 14; Joint Statement, above note 17.

Not all States endorsing the need for consideration of humanitarian consequences yet support a ban, and not all those supporting the prohibition of nuclear weapons currently have the same solution in mind.⁹⁰ The Humanitarian Pledge is a call to fill the “legal gap” on the “prohibition and elimination” of nuclear weapons in the context of NPT obligations.⁹¹ However, given that a ban treaty’s negotiation does not depend on the participation of the nuclear-armed States, it presents the clearest course of action for achieving prohibition in the shortest time frame.

Contrary to the messaging of the NPT nuclear-armed States and their allies, the humanitarian initiative and the negotiation of a ban treaty would actually support the stated objectives of existing nuclear disarmament frameworks.⁹² Such a treaty is clearly an object of concern to these States, and pushback on the humanitarian initiative from nuclear-armed States and their allies has increasingly included references to it. The UK, for example, did not attend the Nayarit Conference because “many supporters of the conference appear to have ... prohibiting nuclear weapons outright as their ultimate goal”.⁹³ UK representatives have also expressed concern that a ban treaty would break down the distinction between the nuclear-armed States within the NPT and the nuclear-armed States outside it, which has been a key feature of the humanitarian initiative.⁹⁴ Australia has noted in internal documents that the humanitarian initiative was being “leveraged” by ban advocates, and that “we expect momentum for a near term nuclear weapons ban treaty will grow ... as more states are swayed by the simplistic call to ban nuclear weapons”; it more recently expressed concern that after the NPT Review Conference, “the pursuit of a ban treaty becomes the next cab off the rank”.⁹⁵ The United States has also *démarched* its allies not to endorse the Humanitarian Pledge.⁹⁶ The commencement of negotiations itself would generate considerable

90 For example, the working paper submitted by Ireland on behalf of the New Agenda Coalition to the 2015 NPT Review Conference acknowledged a convention on nuclear weapons that delineates verifiable time-bound elimination stages from the onset as an option put forward by some. A ban treaty is also presented as an option for “achieving and maintaining a world free of nuclear weapons” in the context of the knowledge of catastrophic humanitarian consequences and an “incomplete nuclear disarmament framework”. Working Paper Submitted by New Zealand on Behalf of the New Agenda Coalition (Brazil, Egypt, Ireland, Mexico, New Zealand and South Africa), UN Doc. NPT/CONF.2015/WP.9, 9 March 2015, available at: <http://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/documents/WP9.pdf>.

91 Austrian Foreign Ministry, above note 50.

92 Nick Ritchie, *The Story So Far: The Humanitarian Initiative on the Impacts of Nuclear Weapons*, ILPI–UNIDIR Vienna Conference Series, 2014, available at: www.unidir.org/files/publications/pdfs/the-story-so-far-en-616.pdf.

93 House of Commons, Written Answers to Questions, Foreign & Commonwealth Office, “Nuclear Weapons”, Column 57W, 24 February 2014, available at: www.publications.parliament.uk/pa/cm201314/cmhansrd/cm140224/text/140224w0002.htm.

94 Comments by a representative of the UK at a UN General Assembly side event, October 2015. Based on notes taken by author.

95 FOI Ref. No. 14/51952, above note.46; FOI Ref. No. 15/2850, Australian Department for Foreign Affairs and Trade, 26 June 2014, available at: <https://dfat.gov.au/about-us/corporate/freedom-of-information/Documents/dfat-foi-F1210.pdf>.

96 ICAN, “US Attempts to Bully Allies into Inaction”, 18 March 2015, available at: www.icanw.org/campaign-news/us-attempts-to-bully-allies-into-inaction/.

attention and could begin to affect domestic political calculations.⁹⁷ In the longer term, a ban treaty would cause nuclear-armed States and their allies to lose greater control of the narrative on nuclear weapons, with unpredictable political and practical consequences for them.

The significant momentum towards a world without nuclear weapons built up by the humanitarian initiative must be channelled into action. As a way of framing the nuclear weapons problem, the humanitarian initiative has gained ground and revitalized debate, but further activity is needed in order for the initiative to generate results in terms of changes in nuclear weapon policies worldwide. Focus on a ban treaty as the most effective next step is gathering support in international fora. It is achievable, legally coherent and a logical development from the humanitarian initiative. Such a treaty could be concluded with or without the participation of the nuclear-armed States and still have highly significant normative and practical impacts. The responsibility for taking this initiative forward is with the non-nuclear-armed States, which must provide leadership, with the principled encouragement of civil society.

97 Rebecca Sharkey and Laura Boillot, "Momentum towards a Nuclear Weapons Ban Treaty: What Does It Mean for the UK?", *Sustainable Security*, 14 March 2015, available at: <http://sustainablesecurity.org/2015/03/14/momentum-towards-a-nuclear-weapons-ban-treaty-what-does-it-mean-for-the-uk/>.

Protecting humanity from the catastrophic humanitarian consequences of nuclear weapons: Reframing the debate towards the humanitarian impact

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Abstract

The international community has been struggling to reach agreement on the non-proliferation and elimination of nuclear weapons since they were first used in 1945.

* The authors would like to thank Associate Professor Tilman Ruff for his comments and suggestions on the initial draft.

Encouragingly, recent global debate has, for the first time, focused on the devastating humanitarian consequences that the use of nuclear weapons will have not only for nuclear weapons States but for all humanity. The fact that the risks and overwhelming humanitarian consequences of a nuclear event are so high, combined with the inability of the global community to adequately respond to the needs of victims, has compelled policy-makers to consider new ways to work towards the prohibition of the use of nuclear weapons under international law. This article examines how the “humanitarian initiative” has reframed the nuclear weapons debate away from the traditional realm of State security, deterrence and military utility, and towards the grim reality of the humanitarian impacts that would confront humankind if nuclear weapons were ever used again.

Keywords: nuclear weapons, humanitarian impacts, Humanitarian Pledge, IHL.

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In 1945, Hiroshima and Nagasaki were instantly destroyed by nuclear weapons. The earthly and human boundaries of these cities were overwhelmed by the immediate blast; the firestorm in Hiroshima incinerated everything within a 4.4-mile radius.¹ The effects destroyed the natural and built environment and ravaged human life and health. The evidence now reveals that nuclear weapons are “gene-targeting” weapons that induce cancer throughout a survivor’s lifetime.² The bombings left a profound scar on our collective human consciousness by revealing our willingness to inflict complete devastation upon one another. It was the first and last time nuclear weapons were used in war.

The aftermath of the Hiroshima and Nagasaki bombings rapidly revealed the devastating humanitarian consequences of nuclear weapons. From that moment, it was evident to many—in particular those affected and the humanitarian responders—that nuclear weapons should never be used again. Unfortunately, in 2015, seventy years after the first nuclear weapons devastated these cities and their people, the international community continues to struggle to achieve a world free from nuclear weapons.

At the end of World War II (WWII) and during the Cold War, a number of States pursued nuclear weapons tests with the intention of adding such weapons to their military arsenals. By 1960 the United Kingdom, the former Union of Soviet Socialist Republics and France had all tested nuclear weapons.³ Today, States possessing nuclear weapons continue to support the position that these weapons bolster national, regional and international security, because the threat of their use discourages military action by belligerent States. Many non-nuclear weapons

1 Joseph M. Siracusa, *Nuclear Weapons: A Short Introduction*, Oxford University Press, Oxford, 2015, p. 23.

2 Masao Tomonaga, “The Lifelong Health Effects of Atomic Bombs by Immediate DNA Damage”, presentation to the Second Intergovernmental Conference on the Humanitarian Impact of Nuclear Weapons, Oslo, 4–5 March 2013, available at: www.regjeringen.no/globalassets/upload/ud/vedlegg/hum/hum_tomonaga.pdf (all internet references were accessed in October 2015).

3 See Nuclear Threat Initiative, “Nuclear Disarmament Timeline”, 19 August 2011, available at: www.nti.org/analysis/articles/nuclear-disarmament-timeline/.

States claim protection under a “nuclear umbrella” through so-called “extended nuclear deterrence”,⁴ wherein a nuclear weapons State can threaten to use a nuclear weapon on their behalf.

Three intergovernmental conferences on the humanitarian impact of nuclear weapons, convened between 2012 and 2014, have re-examined the evidence of the short-, medium- and long-term humanitarian consequences of the use of nuclear weapons.⁵ The blast injuries, burns and effects of radiation from a nuclear explosion are now understood to be more severe than previously thought. In addition to the immediate suffering, there is no capacity for the international health-care system or humanitarian agencies to respond adequately to nuclear detonation, and the environmental consequences would also be catastrophic. This new information has led to renewed calls for the elimination of nuclear weapons, and has resulted in a shift in discourse away from military and security arguments for these weapons and towards a deep concern for the humanitarian consequences that they continue to pose.⁶

There is now growing confidence on the part of States, international organizations, the International Red Cross Red Crescent Movement (the Movement) and civil society groups that the emphasis on the humanitarian consequences of nuclear weapons provides a fresh opportunity to negotiate their eventual elimination. The Movement’s advocacy has played a critical role in this debate since 2010, and has been both persuasive and unrelenting.⁷ What has become known as the “humanitarian initiative” has gained momentum, both among States and in civil society, and it is arguable that we are now at a turning point in history for the prohibition of nuclear weapons.

This article will examine the evolution of the discourse on nuclear weapons. It will outline how the perception of the use of nuclear weapons immediately after WWII was used to build arguments in support of deterrence. It will then look briefly at disarmament, the Cold War and the legal discourse surrounding nuclear weapons. Finally, it will look at how the humanitarian consequences discourse has developed in the last five years, and how it has been possible, in such a short

4 Extended nuclear deterrence is the establishment of a so-called “nuclear umbrella”, under which a group of States that do not possess nuclear weapons claim protection from the nuclear weapons of another State. See Glenn Snyder, *Deterrence and Defense: Toward a Theory of National Security*, Princeton University Press, Princeton, NJ, 1961, pp. 276–277.

5 The most recent evidence presented at the Intergovernmental Conference on the Humanitarian Impacts of Nuclear Weapons, held in Vienna in December 2014, is available online and covers, *inter alia*, climatic effects, long-term health effects, the risk of a nuclear detonation, emergency response capabilities and the blast effects a detonation. All presentations are available at: www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons-and-nuclear-terrorism/vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/presentations/.

6 For an overview, see John Borrie and Tim Caughley (eds), *Viewing Nuclear Weapons through a Humanitarian Lens*, United Nations Publishers, Geneva, 2013.

7 Nuclear weapons and weapons of mass destruction have been mentioned in several International Conference of the Red Cross and Red Crescent resolutions, but in recent times the Movement’s voice has been most prominently developed through its strong Council of Delegates 2011: Resolution 1, “Working Towards the Elimination of Nuclear Weapons”, Geneva, 26 November 2011 (2011 Resolution), and the detailed follow-up “Working Towards the Elimination of Nuclear Weapons: Four-Year Action Plan”, Sydney, 17–18 November 2013 (2013 Resolution).

time, to reinvigorate an old debate with a renewed desire to achieve the prohibition of nuclear weapons.

Nuclear weapons use: Perceptions of the atomic bombings in Japan and fashioning deterrence

The damage and suffering caused by the nuclear bombings of Hiroshima and Nagasaki were devastating. The Japanese Red Cross and the International Committee of the Red Cross (ICRC) were amongst the first responders to bring relief to the victims, and Dr Marcel Junod, an ICRC delegate, was the first foreign doctor to arrive in Hiroshima and provide medical relief. His reports to ICRC headquarters revealed that the bomb had spared no living or inanimate object.⁸ It exposed the inadequacy of the emergency response in the face of overwhelming death and destruction. Through Junod's reports and decades of subsequent reports,⁹ medical studies and education,¹⁰ the catastrophic humanitarian consequences of the use of nuclear weapons have become evident.

The creation of the atomic bomb marked a shift in the application of science and technology to military causes, by creating a weapon that has the potential to make life on earth unfeasible.¹¹ Nuclear weapons represent the ability to instantly unleash immense damage and incalculable human suffering in a single bomb. Evidence of this destructive capacity helped support the dominant post-WWII discourse that the nuclear bombings forced Japan to surrender to the Allied forces. Nuclear weapons, despite their destruction, were presented in the West as a necessary evil responsible for bringing WWII to a close. "Less people died than had the war continued" was a common defence of the weapons' use, and continues to be invoked today.¹²

Recently released archives have allowed historians to consider other factors that led to the surrender of Japan at the end of WWII. New evidence indicates that the entry of the USSR into the Pacific theatre of war was a more significant factor in

8 Marcel Junod, "The Hiroshima Disaster (I)", *International Review of the Red Cross*, Vol. 64, No. 230, 1982, available at: www.loc.gov/rr/frd/Military_Law/pdf/RC_Sep-Oct-1982.pdf; Marcel Junod, "The Hiroshima Disaster (II)", *International Review of the Red Cross*, Vol. 64, No. 231, 1982, available at: www.loc.gov/rr/frd/Military_Law/pdf/RC_Nov-Dec-1982.pdf.

9 See, e.g., Reaching Critical Will, *Unspeakable Suffering: The Humanitarian Impact of Nuclear Weapons*, 2013, available at: www.reachingcriticalwill.org/resources/publications-and-research/publications/7422-unspeakable-suffering-the-humanitarian-impact-of-nuclear-weapons.

10 International Physicians for the Prevention of Nuclear War (IPPNW) won the 1985 Nobel Peace Prize for their work to highlight the health effects of the use of nuclear weapons and educate the public about these effects. More information is available at: www.nobelprize.org/nobel_prizes/peace/laureates/1985/physicians-history.html.

11 Owen Toon, Alan Robock and Richard Turco, "The Environmental Consequences of Nuclear War", *Physics Today*, Vol. 61, No. 12, 2008.

12 For example, in the August 2014 issue of *The Diplomat*, Zachary Keck employs many of the best-known arguments in support of the premise that the Hiroshima and Nagasaki bombings saved millions of lives and have since prevented further use of atomic warheads. Zachery Keck, "How Hiroshima and Nagasaki Saved Millions of Lives", *The Diplomat*, 7 August 2014, available at: <http://thediplomat.com/2014/08/how-hiroshima-and-nagasaki-saved-millions-of-lives/>.

the surrender of Japan than the atomic bombings of Hiroshima and Nagasaki.¹³ It is now suggested that Japan had neither the economic nor military resources to continue the war, and a weak military strategy had allowed the USSR to invade Manchuria.¹⁴ Japan's capitulation was therefore due to the entry of the USSR into territory occupied by Japan and the prospect of war on two fronts, and not simply or exclusively due to the bombings of Hiroshima and Nagasaki.¹⁵

The narrative of the nuclear end to WWII benefited the victorious Allied forces, and especially the United States. The notion that nuclear weapons brought an end to WWII helped the United States' economic, political and military interests. Economically, the investment in the Manhattan Project was significant, and the expense was rationalized by its military utility in ending the war. This helped the United States establish itself as the principal political and military "superpower" after WWII.¹⁶

Consequently, viewing the bombings of Hiroshima and Nagasaki as the decisive moment at the end of WWII has allowed nuclear weapons to acquire an undeserved moral, political and military legitimacy. Their use was rationalized, or at least promoted, as the only means to end the most gruesome war in recent history. This potent narrative prospered in the years after WWII and continues today. Nuclear weapons are often seen as a necessary evil, and it is argued that international security is maintained on the basis of deterrence – through the threat of the use of nuclear weapons.¹⁷

The Cold War discourse: From massive retaliation to MAD and beyond

After WWII, nuclear weapons became a symbol of political and military power and were quickly obtained by the United Kingdom and the former USSR,¹⁸ now the Russian Federation since the end of the Cold War. With the proliferation of nuclear weapons came new considerations about their purpose. For the States possessing them, the immediate question was the role that they should play in

13 Ken Berry, Patricia Lewis, Benoit Pelopidas, Nikolai Sokov and Ward Wilson, *Delegitimizing Nuclear Weapons: Examining the Validity of Nuclear Deterrence*, Monterey Institute of International Studies, 2010, Appendices 1 and 2, "A More Detailed Analysis of the Nuclear Bombings of Hiroshima and Nagasaki", pp. 60–71.

14 *Ibid.*

15 *Ibid.*

16 See, e.g., Ivo H. Daalder, "Stepping Down the Nuclear Ladder: How Low Can We Go?", in Ivo H. Daalder and Terry Terriff (eds), *Rethinking the Unthinkable: New Directions for Nuclear Arms Control*, Routledge, New York, 2013, p. 81.

17 The North Atlantic Treaty Organisation (NATO) declares that "deterrence, based on an appropriate mix of nuclear and conventional capabilities, remains a core element of our overall strategy. The circumstances in which any use of nuclear weapons might have to be contemplated are extremely remote. As long as nuclear weapons exist, NATO will remain a nuclear alliance." NATO, *Active Engagement, Modern Defence: Strategic Concept for the Defence and Security of the Members of NATO*, 2010, p.14.

18 The former USSR carried out its first nuclear test on 29 August 1949, and the United Kingdom tested its first nuclear device on 3 October 1952.

military and security doctrines. As tensions developed between the United States and its allies and the former USSR, the doctrine of nuclear deterrence was developed.¹⁹ This doctrine, couched in military logic and strategy, was fashioned to justify the existence of nuclear weapons. During the Cold War, the deterrence discourse successfully overshadowed arguments about the military utility or humanitarian consequences of employing nuclear weapons.

Nuclear deterrence itself is a straightforward concept, defined as the use of threats of nuclear weapons use to convince another party to refrain from initiating some course of action.²⁰ Nuclear deterrence was expressed in the West in various forms during the Cold War, beginning with the US doctrine of “massive retaliation”. Massive retaliation consisted of the threat of the launch of US nuclear warheads on Soviet cities and military targets in answer to a Soviet act of aggression. As the arms race escalated and the USSR modernized and expanded its nuclear arsenal, massive retaliation was escalated to the aptly named doctrine of “mutual assured destruction” (MAD) in the 1960s.

MAD was developed because the United States and the former USSR saw the need for a “second strike capability” in case primary nuclear bunkers were targeted or destroyed.²¹ Under MAD, thousands of nuclear weapons were kept on hair-trigger alert, and could be launched within minutes. MAD, along with the resulting arms race, was the result of the belief that a reciprocal threat promoted stability and non-use.²² At the height of the Cold War, 60,000 nuclear warheads were in existence as a result of the arms race and the doctrine of MAD.²³

The *Bulletin of the Atomic Scientists*, known for its “Doomsday Clock”,²⁴ understood that deterrence only works in theory if enemies can communicate reciprocal threat levels. In what came to be the closing years of the Cold War, all communications between the United States and the former USSR, barring

19 G. Snyder, above note 4.

20 For an analysis of deterrence theory and its viability, see Paul K. Huth, “Deterrence and International Conflict: Empirical Findings and Theoretical Debate”, *Annual Review of Political Science*, Vol. 2, 1999. See also Keith B. Payne, *Deterrence in the Second Nuclear Age*, University of Kentucky Press, Lexington, KY, 1996, pp. 81–87.

21 For an exploration of the security and military arguments relating to nuclear deterrence, see Robert Green, *Security without Nuclear Deterrence*, Astron Media, Christchurch, 2010.

22 Between 2007 and 2013, under the aegis of the “Nuclear Security Project”, former US secretary of State Henry A. Kissinger, former US secretary of state George P. Shultz, former US secretary of defence William J. Perry and former US senator Sam Nunn co-authored a series of op-eds/statements in *The Wall Street Journal* rebuffing many of their earlier claims about the effectiveness of nuclear deterrence, especially in today’s context. See George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, “Next Steps in Reducing Nuclear Risks: The Pace of Nonproliferation Work Today Doesn’t Match the Urgency of the Threat”, *The Wall Street Journal*, 6 March 2013; “Deterrence in the Age of Nuclear Proliferation”, *The Wall Street Journal*, 7 March 2011; “How to Protect Our Nuclear Deterrent”, *The Wall Street Journal*, 19 January 2010; “Toward a Nuclear-Free World”, *The Wall Street Journal*, 15 January 2008; and “A World Free of Nuclear Weapons”, *The Wall Street Journal*, 4 January 2007, all available at: www.nuclearsecurityproject.org/publications/wall-street-journal-op-eds.

23 See Hans M. Kristensen and Robert S. Norris, “Global Nuclear Weapons Inventories, 1945–2013”, *Bulletin of the Atomic Scientists*, Vol. 69, No. 5, 2013.

24 The Doomsday Clock is a clock face which represents how close humanity is to global catastrophe. Formerly, if the Clock reached midnight it meant that nuclear war had commenced, but now the Clock encompasses not only the threat of nuclear war but also issues such as climate change.

propaganda, had broken down. Without any knowledge of the other side's military status, any real or imagined threat risked being answered by a US or Soviet nuclear strike, and with second strike capability in place, the launch of thousands of nuclear warheads following an initial strike was likely. In 1983, as a result of these circumstances, the *Bulletin* set the Doomsday Clock to two minutes to midnight. This represented the journal's concern that nuclear war, represented by midnight, was imminent.²⁵

There are many problems with the MAD doctrine and the way it was promoted. It was clear that the destruction would not be limited to the United States and USSR, with the destruction of Europe by nuclear war the most likely outcome, especially because of nuclear sharing arrangements.²⁶ It was also an affront to the principles of the United Nations (UN) Charter and the maintenance of international peace, with cities and civilians threatened as targets worldwide. Meanwhile, the rest of the world would have been cast into a decades-long nuclear winter, a fate which has been verified recently with state-of-the-art climate modelling used to evaluate anthropogenic climate change.²⁷

Global disarmament efforts: Proceed with caution, risk annihilation

It is appealing to believe that upon entering the atomic age and creating the means for humanity to ensure its own destruction, the international community immediately pursued nuclear disarmament – and in part, this is true. It is significant that the very first resolution of the UN General Assembly (UNGA), Resolution 1(1), established the Atomic Energy Commission to deal with the problems associated with the emergence of atomic energy, and reaffirmed the UN mandate to facilitate disarmament efforts.²⁸ The first chairman of the Atomic Energy Commission was the Australian H. V. “Doc” Evatt, who went on to become president of the UNGA and to preside over the passing of the Universal Declaration of Human Rights. Yet alarmingly, as the UN dedicated itself to disarmament in the first years of its existence, States with nuclear weapons continued to manufacture them, and other States procured them or sought the means to build them. Nuclear disarmament efforts have developed and continued within this context, symptomatic of the tension between the national prerogatives of States and the global interests of humanity.

A nuclear disarmament timeline would be too long to publish in this paper, but it is worth noting that one example of such a timeline, from the International

25 *Bulletin of the Atomic Scientists*, Doomsday Clock Timeline, available at: <http://thebulletin.org/timeline>.

26 Nuclear sharing occurs when non-nuclear weapons States host nuclear weapons on their territories.

27 See, e.g., Alan Robock, “Nuclear Winter Is a Real and Present Danger”, *Nature*, Vol. 473, 2011; Alan Robock, Luke Oman, Georgiy L. Stenchikov, Owen B. Toon, Charles Bardeen and Richard P. Turco, “Climatic Consequences of Regional Nuclear Conflicts”, *Atmospheric Chemistry and Physics*, Vol. 7, 2007.

28 UNGA Res. 1(1), “Establishment of a Commission to Deal with the Problems Raised by the Discovery of Atomic Energy”, 24 January 1946.

Atomic Energy Agency (IAEA), charts no less than 140 significant events since 1945.²⁹ The IAEA list is just one of the many timelines published, and reveals the range of issues under the disarmament track, including nuclear weapons testing, UNGA and UN Security Council resolutions relating to nuclear weapons, international summits on nuclear disarmament, the peaks and troughs of the Cold War nuclear arms race, and the agreement of a vast number of bilateral and multilateral nuclear weapons treaties.

The UN is the axis around which nuclear disarmament rotates. Global disarmament is so indelibly implanted within the UN that former Secretary-General Dag Hammarskjöld described it as a “hardy perennial”.³⁰ It is a cross-cutting theme addressed by the UN’s main bodies, as well as UN-established institutions such as the Conference on Disarmament (CD). The disarmament discourse has achieved many notable milestones, including the agreement of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and other treaties protecting the natural environment. However, the agreement of these treaties has taken decades, and some, such as the CTBT, have not come into force. During this time, nuclear weapons testing and proliferation have continued. Most regrettably, in recent decades the disarmament discourse, in particular within the CD, has slowed to a standstill as States have struggled to agree on a programme of work.

The NPT is the most important nuclear weapons treaty. It was agreed in 1968, and entered into force just two years later in 1970. The NPT was established in response to increased concern regarding the imminent threat of nuclear war following the Cuban Missile Crisis. A significant obligation in the NPT is found in Article VI, which requires States Parties to progress the global prohibition and elimination of nuclear weapons; it calls on all States to “undertake, in good faith, negotiations to lead to complete [nuclear] disarmament”.³¹

The NPT aspires to achieve general and complete disarmament, but it stipulates neither the international legal means to achieve this end, nor the time frame in which to do it. Commentary on the formation of the Treaty³² suggests that this “vagueness” was to ensure acquiescence to the NPT by all States. The aspirational language of Article VI gave States without nuclear weapons a vision of a nuclear-free future while avoiding delineation of process, verification, or punitive measures towards States already possessing nuclear weapons. The result is a treaty reflecting a mindset of non-proliferation rather than prohibition, and the division of the world into nuclear and non-nuclear States. By avoiding the

29 International Atomic Energy Agency, “The Treaty of the Non-Proliferation of Nuclear Weapons and the IAEA: A Chronology”, available at: www.iaea.org/Publications/Factsheets/English/npt_chrono.html#1940.

30 Dag Hammarskjöld, transcript of press conference, New York, 19 May 1955, in Andrew W. Cordier and Wilder Foote (eds), *Public Papers of the Secretaries-General of the United Nations: Dag Hammarskjöld*, Vol. 2, Columbia University Press, New York, 1972, p. 487.

31 Treaty on the Non-Proliferation of Nuclear Weapons (NPT), 729 UNTS 161, 1 July 1968 (entered into force 5 March 1970).

32 K. Berry, P. Lewis, B. Pelopidas, N. Sokov and W. Wilson, above note 13.

issues of how and when States should achieve general and complete nuclear disarmament, the NPT also allowed the continued possession of nuclear weapons in the interim.

Even if the “when” and “how” questions remain unanswered by the NPT, the “why” question is very clear. The preamble of the NPT³³ considers that to ensure the security of all peoples, every effort must be made to avoid nuclear war and its inevitable devastating outcomes. Forty-five years after the NPT’s entry into force, no multilateral negotiations have commenced to achieve this purpose, despite the Article VI good-faith obligations to pursue disarmament.

The establishment of a Conference on Disarmament³⁴ working group could begin the process of negotiations for a prohibition treaty in fulfilment of Article VI of the NPT. In 2013, in response to a lack of progress in the CD, the UNGA established an open-ended working group “to develop proposals to take forward multilateral nuclear disarmament negotiations for the achievement and maintenance of a world without nuclear weapons”.³⁵ Despite the promise of this working group breathing new life into the possibility of nuclear disarmament negotiations, the first session of the CD in 2015 showed no signs of progress.³⁶

The lack of progress by States in fulfilling their Article VI obligations reflects larger problems with the NPT in the twenty-first century. Since the establishment of the UN, the agreement of the Vienna Convention on the Law of Treaties, the proliferation of international treaty law and the increased codification of customary international law, there has been an increasing expectation that States should fulfil their international legal obligations. Additionally, the influence of non-NPT States on the process and outcomes of the Review Conference threatens the integrity of negotiations.³⁷ If the NPT is itself unable to realize progress towards either the prohibition or elimination of nuclear weapons, there is a chance that some States may go outside the NPT process and begin an independent process to prohibit nuclear weapons under international law.

Moving to a forum outside of the CD is not a new idea, although it might still be considered unconventional. In the 1990s, a group of like-minded States with the support of civil society groups saw an urgent need to progress a ban on landmines due to their unacceptable humanitarian consequences. Concerned by

33 The preamble reads: “Considering the devastation that would be visited upon all mankind by a nuclear war and the consequent need to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples ...”.

34 The Conference on Disarmament is the sole negotiating forum for disarmament issues, including nuclear weapons.

35 UNGA Res. 67/56, “Taking Forward Multilateral Nuclear Disarmament Negotiations”, UN Doc A/RES/67/56, 3 December 2012.

36 Reaching Critical Will stated that it will no longer monitor the CD because “after 17 years of inaction” in advancing nuclear disarmament, the group of States appears to work “in a vacuum”. Reaching Critical Will, *March 2015 E-News*, available at: www.reachingcriticalwill.org/news/latest-news/9565-march-2015-e-news.

37 See Ray Acheson, “Editorial: Uprising”, *NPT News in Review*, Vol. 13, No. 17, 25 May 2015, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/NIR2015/No17.pdf.

the limitations of the Convention on Certain Conventional Weapons,³⁸ States began a treaty negotiating process outside the CD. This process concluded in Ottawa, and resulted in the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction.³⁹ At this point in time it appears that the NPT disarmament track is being outpaced by the humanitarian initiative, which could in fact begin an Ottawa-type process of its own.

The NPT reflected the aspiration of States to achieve a world free from nuclear weapons, while at the same time revealing the limitations of the CD framework set up to achieve these ends. The requirement of consensus has become a scapegoat for the lack of progress in the CD, but blaming a rule that member States imposed on themselves appears to be circular reasoning. Ultimately it is up to States to find common ground across their competing political priorities, within the framework they agreed, to ensure that nuclear disarmament negotiations advance. If the seemingly intractable problems of the CD are not resolved, a real prospect is that a group of States which support the prohibition of nuclear weapons will seek to establish an alternative forum for negotiations towards that end.⁴⁰

Imposing legal limits on weapons of mass destruction

The legal discourse has focused on the legality of both the use and possession of nuclear weapons. The most persuasive legal arguments for the prohibition of nuclear weapons are those that assess their use within the limits of international humanitarian law (IHL). These arguments propose that any use of such weapons contradicts both the general principles and the specific rules of IHL.

The legality of the use of nuclear weapons was not addressed by international tribunals in the years immediately following the bombings of Hiroshima and Nagasaki. The Allies of WWII established both the International Military Tribunal in Nuremberg and the International Military Tribunal for the Far East. Neither of these tribunals dealt with the issue of indiscriminate bombing by any forces during WWII or the use of nuclear weapons by the Allies.⁴¹ As a result of the failure to address the use of nuclear weapons under international

38 Convention on Certain Conventional Weapons, 1342 UNTS 137, 10 April 1981 (entered into force 2 December 1983).

39 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, 2056 UNTS 241, 18 September 1997 (entered into force 1 March 1999) (Ottawa Treaty).

40 For an explanation of the challenges of progressing nuclear disarmament at the United Nations see Randy Rydell, *Explaining Hammarskjöld's "Hardy Perennial": The Role of the United Nations in Nuclear Disarmament*, United Nations Association – UK, 2013.

41 For an exploration of why the atomic bombings were not dealt with under international law immediately after WWII, see Yuki Tanaka, "The Atomic Bombing, the Tokyo Tribunal and the Shimoda Case: Lesson for Anti-Nuclear Legal Movements", in Yuki Tanaka, Tim McCormack and Gerry Simpson (eds), *Beyond Victor's Justice? The Tokyo War Crimes Trial Revisited*, Martinus Nijhoff, Leiden, 2011. See also Richard Falk, "The Shimoda Case; A Legal Appraisal of the Atomic Attacks on Hiroshima and Nagasaki", *American Journal of International Law*, Vol. 59, No. 4, 1965.

law, the historical narrative about the necessity of the use of nuclear weapons to end WWII took hold, and the prerogative of States to threaten to use nuclear weapons during war remained unchallenged. As a result, the default legal position was that possession and use of nuclear weapons were permissible under international law until demonstrated otherwise.

On 5 September 1945, within one month of the nuclear bombings, the ICRC sent a circular to all National Red Cross and Red Crescent Societies (National Societies) questioning the legality of nuclear weapons because of the impacts of their use on civilians.⁴² Within four years of the bombings, the opportunity arose to explicitly outlaw nuclear weapons under IHL at the negotiation of the 1949 Geneva Conventions.

The use of nuclear weapons and airborne bombing was not on the agenda in the lead-up to the negotiation of the 1949 Geneva Conventions,⁴³ and the plenary ruled out a Soviet proposal to address their use during the conference. Immediately following the 1949 diplomatic conference, the ICRC expressed its desire to see States reach an agreement banning the use of nuclear weapons under IHL.⁴⁴ Despite further consideration by States, the Movement and civil society, any discussion of an explicit ban on nuclear weapons under IHL was specifically left out of the negotiations for the 1977 Additional Protocols to the Geneva Conventions.⁴⁵ This should not be viewed as a failure – IHL is a framework in which to appraise all weapons use, and an explicit reference to nuclear weapons is not required for their use to be regulated or restricted by the principles of IHL articulated in these instruments.

Even though the use of nuclear weapons had not been expressly prohibited under IHL, their use cannot be reconciled with the specific principles of IHL including, *inter alia*, the prohibition of attacks directed at civilians⁴⁶ and the rules of distinction,⁴⁷ proportionality⁴⁸ and against unnecessary suffering.⁴⁹ These basic principles, contained in Additional Protocol I (1977), are considered customary international law.⁵⁰ Unfortunately, the problem that has dogged the progression

42 Max Huber, “La fin des hostilités et les tâches futures de la Croix-Rouge” (“The End of Hostilities and the Future Tasks of the Red Cross”), *International Review of the Red Cross*, Vol. 27, No. 321, 1945, available at: <http://journals.cambridge.org/action/displayFulltext?type=1&pdftype=1&fid=6675344&jid=IRC&volumeId=27&issueId=321&aid=6675340>.

43 For a comprehensive overview of the ICRC’s position on nuclear weapons and the Movement’s five decades of resolutions and statements calling for their prohibition, see Francois 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, No. 859, 2005.

44 International Committee of the Red Cross Appeal to the High Contracting Parties Signatory to the Geneva Conventions for the Protection of the Victims of War: Atomic Weapons and Non-Directed Missiles, Geneva, 5 April 1950.

45 See F. Bugnion, above note 43.

46 Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Arts 51(1), 51(2).

47 AP I, Art. 51(4).

48 AP I, Art. 51(5).

49 AP I, Art. 35(2).

50 See Lou Maresca, “The Catastrophic Humanitarian Consequences of Nuclear Weapons: The Key Issues and Perspective of the International Committee of the Red Cross”, in J. Borrie and T. Caughley (eds), above note 6, p. 137.

towards general and complete disarmament has also detracted from the legal arguments against the use of nuclear weapons; States continue to invoke arguments of sovereignty and security to justify the possession of nuclear weapons as a latent threat towards perceived enemies.⁵¹

The most conclusive moment for the legal discourse came in 1996, when the International Court of Justice (ICJ) delivered its Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons* (Nuclear Weapons Advisory Opinion).⁵² The Advisory Opinion was obtained through the extensive lobbying and advocacy activities of a global network of civil society groups, driven by groups including the World Court Project, International Association of Lawyers against Nuclear Arms, International Physicians for the Prevention of Nuclear War (IPPNW), International Peace Bureau and International Commission of Jurists.⁵³

The process and outcome of the Nuclear Weapons Advisory Opinion had a lasting effect on the nuclear weapons debate. The ICJ received statements and evidence from parties it had not previously embraced, including non-State actors, individuals, *hibakusha* (the survivors of the Hiroshima and Nagasaki bombings) and victims of nuclear testing in the Pacific Islands.⁵⁴ Previous appeals to the ICJ, especially New Zealand's challenge to the legality of French nuclear testing in the Pacific, had achieved small wins against nuclear weapons testing, including prompting the secession of atmospheric testing by France in the Pacific,⁵⁵ but had failed to deal with the legality of their use.

The Nuclear Weapons Advisory Opinion confirmed that the principles and rules of IHL apply to nuclear weapons and concluded that the threat or use of such weapons would generally be contrary to the principles and rules of IHL. It also unanimously recognized the existence of an obligation under the NPT to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects.⁵⁶ Disappointingly, the hope that the ICJ would

51 For example, Russia threatened to aim its nuclear warheads at the Ukraine in 2008, well before the controversial referendum that led to Crimea's incorporation into Russia in 2014. See Luke Harding, "Putin Issues Nuclear Threat to Ukraine over Plan to Host US Shield", *The Guardian*, 13 February 2008, available at: www.theguardian.com/world/2008/feb/13/russia.putin; and the United States, through its nuclear posture review, stated that as long as nuclear weapons exist, it will maintain them as a credible deterrent and the measure of the consequences for an attack launched by an adversary. See United States Government, *Nuclear Posture Review*, 2010, available at: www.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf.

52 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996* (Nuclear Weapons Advisory Opinion), available at: www.icj-cij.org/docket/index.php?p1=3&p2=4&k=e1&case=95&code=unan&p3=2.

53 For an exploration of the campaign to establish the World Court Project, the progression of the Nuclear Weapons Advisory Opinion in court, and the outcomes, see Catherine Dewes, "The World Court Project: The Evolution and Impact of an Effective Citizens' Movement", PhD thesis, University of New England, 1998.

54 The public record of oral statements presented during proceedings of the Nuclear Weapons Advisory Opinion, above note 52.

55 For a synopsis of New Zealand's challenge to French nuclear testing at the ICJ, see Arthur Watts, "Nuclear Tests Cases", in Rüdiger Wolfrum (ed.), *Max Planck Encyclopedia of Public International Law*, online ed., 2015.

56 Nuclear Weapons Advisory Opinion, above note 52.

find the use of nuclear weapons to be categorically illegal had not been fulfilled. Instead, States possessing nuclear weapons, with the support of their allies, argued that the Advisory Opinion confirmed that nuclear weapons were not explicitly illegal under international law, and that there were some extreme circumstances of self-defence that could justify their use.⁵⁷ Despite the many other facets of the Advisory Opinion, particularly the confirmation that use of nuclear weapons would generally be contrary to the principles and rules of IHL,⁵⁸ this legal gap came to be used as a justification for the continued possession of nuclear weapons.

The benefit of the Nuclear Weapons Advisory Opinion was that States, the Movement and civil society groups could appeal to its authority and encourage States to fulfil their obligations under Article VI of the NPT and pursue the elimination of nuclear weapons through an internationally legally binding agreement. The recognition of the existence of an obligation under Article VI of the NPT has been described as “a tremendous step forward, making it crystal clear that these weapons offended the basic principles of humanitarian law”⁵⁹ and that an obligation rests with nuclear powers to take meaningful steps to do away with their nuclear arsenals.

The international legal discourse⁶⁰ following the Nuclear Weapons Advisory Opinion focused on the development of a model nuclear weapons convention. The model convention is an “ideal-type” treaty developed in 1996, demonstrating how a verifiable, comprehensive and universally binding treaty to prohibit and eliminate nuclear weapons could be crafted. The model convention, a civil society initiative, was updated in 2007 and presented and endorsed by the UNGA as an official document of the 62nd Session of the UNGA.⁶¹ The model convention represents the most comprehensive means to ban nuclear weapons: not only does it prohibit the use of nuclear weapons, but it also addresses the verification of disarmament, testing and implementation, and provides a dispute resolution mechanism.⁶²

A new and increasingly dominant discourse was emerging – one which suggested that the nuclear weapons debate should focus not on the potential security benefits, but on the human security risks. Concerns regarding the global impacts and humanitarian consequences of any use of nuclear weapons gained

57 For example, see support for nuclear deterrence after the Nuclear Weapons Advisory Opinion from leading UK expert Michael Quinlan, *Thinking about Nuclear Weapons*, Royal United Services Institute for Defence Studies, London, 1997.

58 Nuclear Weapons Advisory Opinion, above note 52.

59 Christopher Weeramantry, *Towards One World: The Memoirs of Judge C. G. Weeramantry*, Vol. 3, Stamford Lake Publishers, Pannipitiya, 2014, p. 204.

60 For a view of international legal considerations on nuclear weapons outside of humanitarian law, see Gro Nystuen, “Legal Aspects of Nuclear Weapons: A ‘Bird’s Eye View’ of International Law and Nuclear Weapons”, ILPI Vienna Conference Series Paper No. 6, 2014, available at: <http://d2dczhp6dhfxqb.cloudfront.net/sites/30/2014/12/No-6-nuking-the-law.pdf>.

61 Letter dated 17 December 2007 from the Permanent Representatives of Costa Rica and Malaysia to the United Nations, addressed to the Secretary-General, 62nd session, UN Doc. A/62/650, 2008.

62 See Treasa Dunworth, “Effective Measures Relating to Nuclear Disarmament: Some International Legal Issues”, discussion paper commissioned by the government of New Zealand, 2014.

momentum. This was no longer a question solely for nuclear weapons States, but a concern for all humanity.

Towards a humanitarian understanding of nuclear weapons

After the challenges of obtaining and interpreting the Nuclear Weapons Advisory Opinion, it took a number of years for the humanitarian arguments for the elimination of nuclear weapons to gain renewed support. It is difficult to attribute this to any specific event, but three developments stand out as bolstering the initiative: the 2007 publication of an academic article about the climatic effects of nuclear war;⁶³ the establishment of the International Campaign to Abolish Nuclear Weapons (ICAN), also in 2007; and the renewed commitment and strength of the Movement to this cause, precipitated in part by a 2010 public appeal to governments to increase their efforts to rid the world of nuclear weapons by then ICRC President Jakob Kellenberger.⁶⁴

The 2007 climate study, by some of the world's most eminent climate scientists, examined and modelled the effects of a nuclear war in a regional conflict employing only the smallest nuclear weapons. It confirmed that a protracted nuclear war would have devastating immediate and long-term effects on the earth's atmosphere and climate.⁶⁵ The consequences of this climatic change would bring about the collapse of the international agricultural system and food supplies, and threaten global starvation on a scale beyond that previously imagined. What can be concluded from the study is that the detonation of any form of nuclear weapon poses an existential threat to humanity as a whole. To avoid a so-called "nuclear winter", current stockpiles of nuclear weapons must be reduced dramatically,⁶⁶ with the elimination of nuclear weapons being the only way to completely safeguard humanity from the humanitarian consequences of nuclear detonation.

In the same year, ICAN was launched in Vienna. ICAN is fashioned in the image of the successful International Campaign to Ban Landmines,⁶⁷ a global network of civil society groups whose efforts resulted in States agreeing the Ottawa Treaty banning landmines. ICAN is an umbrella group for hundreds of civil society organizations and individuals, bringing together a diverse network of

63 Alan Robock, Luke Oman and Georgiy L. Stenchikov, "Nuclear Winter Revisited with a Modern Climate Model and Current Nuclear Arsenals: Still Catastrophic Consequences", *Journal of Geophysical Research*, Vol. 112, No. D13, 2007.

64 Jacob Kellenberger, "Bringing the Era of Nuclear Weapons to an End", Statement to the Geneva Diplomatic Corps, 20 April 2010, available at: www.icrc.org/eng/resources/documents/statement/nuclear-weapons-statement-200410.htm, also available in the "Reports and Documents" section of this issue of the *Review*.

65 See A. Robock, L. Oman and G. L. Stenchikov, above note 63.

66 *Ibid.*, p. 1.

67 Tim Wright, "Negotiations for a Nuclear Weapons Convention: Distant Dream or Present Possibility?", *Melbourne Journal of International Law*, Vol. 10, No. 1, 2009, p. 8. The International Campaign to Ban Landmines is a global network of civil society groups whose efforts resulted in States agreeing the Ottawa Treaty banning landmines.

anti-nuclear advocates including mayors, physicians, scientists, Nobel Prize winners, activists and celebrities.⁶⁸ From its inception it has been campaigning for the global prohibition and elimination of nuclear weapons. Its projects include a worldwide parliamentary appeal to gain support for a ban treaty, and a study into investment in nuclear armaments. ICAN continues to galvanize civil society groups in support of the humanitarian initiative against nuclear weapons, and there is no doubt that its tireless work continues to influence the decisions of States in regards to a treaty banning nuclear weapons.⁶⁹ ICAN was to become the key civil society partner for intergovernmental conferences exploring the humanitarian impacts of nuclear weapons.

The public appeal by the ICRC's then President Jakob Kellenberger about the humanitarian consequences of nuclear weapons was a surprise to many campaigners, advocates and governments. In April 2010, before an audience of the diplomatic corps in Geneva, President Kellenberger stressed that the debate about nuclear weapons must go beyond the legal and security considerations to encompass the ethical and humanitarian considerations. Further, he stated that the discussion on the efficacy of nuclear weapons must ultimately be about people and the future of humanity.⁷⁰

President Kellenberger delivered his speech one month before the 2010 NPT Review Conference in an attempt to encourage States to consider the humanitarian impacts of nuclear weapons during their deliberations. This was authoritative public positioning on the elimination of nuclear weapons from the ICRC, an organization whose signature approach to engaging with States is customarily confidential. This has been especially true in relation to nuclear weapons, in large part because most nuclear weapons dialogue has been grounded in security and political concerns. President Kellenberger enabled the entire Movement to promote its support for the prohibition of nuclear weapons by focusing the debate, and the concern of the Movement, in an entirely neutral, humanitarian context. Restating the Movement's position on nuclear weapons was a bold public gesture from President Kellenberger. His use of universal humanitarian values, IHL, the humanitarian consequences of a nuclear detonation for human health and organic life, the Movement's emergency and disaster relief expertise, and the direct experience of the Japanese Red Cross and the ICRC in WWII was persuasive, and the speech publicly reinjected the Movement into the nuclear weapons debate.

Two months after Kellenberger's speech, the 189 States Parties at the NPT Review Conference unanimously expressed their "deep concern at the ... catastrophic humanitarian consequences that would result from the use of

68 For an overview of the activities of ICAN, see the organization's website at: www.icanw.org.

69 ICAN is currently working to secure declarations by States in support of the Austrian Pledge from the Vienna Intergovernmental Conference on the Humanitarian Impact of Nuclear Weapons. See ICAN, "Humanitarian Pledge: Stigmatize, Prohibit and Eliminate Nuclear Weapons", available at: www.icanw.org/pledge.

70 J. Kellenberger, above note 64.

nuclear weapons”.⁷¹ At previous Review Conferences, the States party to the NPT had affirmed the risk that nuclear weapons pose to humanity, but never before had they explicitly employed the language of “humanitarian consequences”. By including this language, they recognized the legitimacy of the humanitarian perspective towards nuclear weapons, and indirectly acknowledged President Kellenberger’s speech to the diplomatic corps in Geneva.

The humanitarian discourse gains momentum

The humanitarian discourse on nuclear weapons has continued to gain momentum, and the role of civil society has been critical in pushing it forward. What has now become increasingly known as the “humanitarian initiative”⁷² has gained the full support of the Movement and ICAN and their partner organizations.

The role of the International Red Cross and Red Crescent Movement

By November 2011, eighteen months after President Kellenberger’s speech, the Movement recognized the need to make an official commitment to its long-standing work and advocacy on the elimination of nuclear weapons. At the Council of Delegates Statutory Meetings in 2011, a resolution was passed formally committing all components of the Movement – the ICRC, the International Federation of Red Cross and Red Crescent Societies, and 189 National Societies – to using the framework of humanitarian diplomacy in seeking the elimination of nuclear weapons.⁷³

The 2011 Resolution committed the Movement to engaging with decision-makers, opinion leaders, health professionals, scientists and the public in order to raise awareness about the catastrophic humanitarian consequences of nuclear weapons, and the need for concrete actions leading to their elimination. It specifically spoke of the need to engage with governments about the humanitarian and IHL issues associated with nuclear weapons, urging them to pursue in good faith negotiations to prohibit and eliminate such weapons.⁷⁴ The 2011 Resolution articulates that the Movement finds it difficult to envisage how any use of nuclear weapons could be compatible with the rules of IHL, and highlights the lack of any adequate humanitarian response capacity in the face of

71 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons: Final Document, Vol. 1, UN Doc. NPT/CONF.2010/50, 2010, p. 12.

72 At the Preparatory Committee for the 2015 Review Conference of the States Party to the NPT, 2nd Session, South Africa delivered for the first time a statement on behalf of the “humanitarian initiative”, available at: <http://papersmart.unmeetings.org/secretariat/unoda/npt/second-session-of-the-preparatory-committee-2013/statements/>.

73 2011 Resolution, above note 7.

74 *Ibid.*

the incalculable human suffering that can be expected as a result of any use of nuclear weapons.⁷⁵

The impact of this resolution on the broader humanitarian initiative was significant. It gave legitimacy to independent action by National Societies working with their governments towards the elimination of nuclear weapons. It also showed that the entire Movement was taking significant and strong action to work towards the elimination of nuclear weapons as a priority, and was willing to lead the nuclear weapons discourse alongside States and civil society groups. Many National Societies embraced the momentum towards nuclear elimination and worked tirelessly in their own communities to revitalize the debate and engender a new awareness of the danger that nuclear weapons represent. The Norwegian Red Cross, Netherlands Red Cross and Australian Red Cross were particularly active in ensuring that nuclear weapons remained high on the Movement's agenda.

In 2012, IPPNW met in Hiroshima, and its Congress Statement was indicative of the progress of the humanitarian dialogue. In it, the organization welcomed the strong position and "renewed resolve"⁷⁶ of the Movement, and noted too that at the NPT Preparatory Committee in Vienna, the Norwegian government had offered to host the first ever intergovernmental conference looking exclusively at the humanitarian impact of nuclear weapons.

The Movement's position was reinforced when it met in November 2013 in Sydney, Australia, and again reiterated its commitment to working actively for the elimination and prohibition of nuclear weapons through a second Council of Delegates resolution.⁷⁷ The 2013 Resolution set out a clear plan of action for all components of the Movement to engage their publics and governments on "the need for concrete action leading to a prohibition on the use of nuclear weapons and their elimination".⁷⁸

Intergovernmental conferences on humanitarian consequences

The first conference focusing solely on the humanitarian impact of nuclear weapons was convened by the Norwegian government in Oslo, in March 2013. It brought together 128 States, the UN, the Movement, non-governmental organizations (NGOs) and other members of civil society: ICAN was the leading civil society partner. The conference was remarkable as the first ever intergovernmental gathering focused on the humanitarian consequences of nuclear weapons. States were present and curious as to how the conference would progress. While none of the nuclear weapons-possessing permanent five members of the Security Council attended, Pakistan and India were both present. At the time, the States present at the conference were sceptical about whether the humanitarian

⁷⁵ *Ibid.*

⁷⁶ IPPNW, 20th World Congress Statement, 25 August 2012, available at: www.sfbaypsr.org/pdfs/HiroshimaCongressStatement0812.pdf?d0054e.

⁷⁷ 2013 Resolution, above note 7.

⁷⁸ *Ibid.*

discourse could bring any significant or serious offerings to the nuclear disarmament debate.⁷⁹ They were to be surprised.

The Oslo Conference agenda focused on preparedness and first-line response, as well as the medium- and long-term humanitarian, health, environmental, economic and development effects of a nuclear weapons detonation.⁸⁰ The chair noted the key learnings from the conference in his summary: that a humanitarian response to a nuclear weapons detonation might not be possible, that the long-term effects of nuclear weapons have been demonstrated, and that the destructive potential of nuclear weapons remains and would not be limited by national borders.⁸¹

It was becoming evident that the humanitarian impacts of nuclear weapons were “an issue of fundamental significance” for the international community and could no longer be ignored.⁸² The NGO Reaching Critical Will noted that “in the end, the conference was important not only because it provided the space needed to reframe the discourse around nuclear weapons but also because it was a significant first move towards negotiation of a treaty banning nuclear weapons”.⁸³ While this interpretation of the findings is perhaps generous, certainly there was a significant shift, and the government of Mexico, deeply concerned and committed to the discussions, offered to hold a second follow-up conference eleven months later, in early 2014 in Nayarit, Mexico.

The intent of the Nayarit Conference was to build upon the findings of the Oslo Conference and look at the challenges of a nuclear weapon detonation to national, regional and global economic growth and sustainable development, the public health impacts, and the very real risk of a nuclear blast in an era of cyber-warfare, terrorism and increased proliferation of nuclear weapons possessor States.

The conference confirmed many of the assumptions made about nuclear weapons since 1945. This includes the assumption that a nuclear weapons detonation would hamper economic development and growth, damage the natural environment and cause widespread suffering, particularly among the poor and vulnerable. Rebuilding a society after such an event would take decades, causing immense harm to the community as a whole. New evidence about the risk of a nuclear weapons detonation by accident, or by an act of terrorism or cyber-attack, gave rise to new concerns for the international community, and the risk of a detonation continues to grow with the proliferation of nuclear weapons.⁸⁴

79 Robert Tickner, CEO of Australian Red Cross, attended this conference, and these are personal reflections from that experience.

80 The Oslo Conference on the Humanitarian Impact of Nuclear Weapons Agenda is available at: www.regjeringen.no/globalassets/upload/ud/vedlegg/hum/program0226.pdf.

81 Espen Barth Eide, Chair’s Summary, Conference on the Humanitarian Impact of Nuclear Weapons, Oslo, 5 March 2013, available at: www.regjeringen.no/en/aktuelt/nuclear_summary/id716343/.

82 See Patricia Lewis and Heather Williams, “The Meaning of the Oslo Conference on the Humanitarian Impacts of Nuclear Weapons”, in J. Borrie and T. Caughley (eds), above note 6.

83 Reaching Critical Will, *Conference Report: Humanitarian Impact of Nuclear Weapons*, 4–5 March 2013, available at: www.reachingcriticalwill.org/images/documents/Disarmament-fora/oslo-2013/HINW-report.pdf.

84 Juan M. Gomez Robledo, Chair’s Summary, Second Conference on the Humanitarian Impact of Nuclear Weapons, Nayarit, 13–14 February 2014.

The Nayarit Conference continued to note the inability of the international community, either States or the humanitarian community, to respond adequately to any nuclear detonation. The chair noted that the increasing awareness of the humanitarian impacts of nuclear weapons was “changing ... hearts and minds worldwide” and that “Nayarit was the point of no return”,⁸⁵ and stated that it was now time for States to begin a diplomatic process to achieve the prohibition and total elimination of nuclear weapons.⁸⁶ This conclusion took some States by surprise, and indeed in the months leading up to the third intergovernmental conference on the humanitarian impact of nuclear weapons, the Austrian government spent a significant amount of diplomatic energy assuring States that the Vienna Conference was not a negotiating forum for a new nuclear weapons agreement, but a continuation of the lessons and discussion on humanitarian impacts alone.⁸⁷

Throughout 2014 there was some concern by nuclear weapons possessor and umbrella States regarding a push for negotiation of a treaty outside of existing international legal mechanisms. These States affirmed the need for a step-by-step process within existing disarmament mechanisms. It was considered that any negotiations regarding nuclear weapons should take place inside the Conference on Disarmament and the NPT.⁸⁸ At the same time, the United States and United Kingdom were encouraged to attend the Vienna Conference. Some nuclear-aligned States felt that dialogue had continued for too long without their presence, and the Austrian government assured them that the conference would be focused on humanitarian impacts and not on suggested modalities for negotiations of a treaty.

While there may have been no intent in Vienna to begin negotiations for a legal instrument banning nuclear weapons, the increased resolve to achieve this end was evident.⁸⁹ There were 158 States represented, nearly a 10% increase in States since the Nayarit Conference. The ICRC strengthened its position in Vienna, noting that the new evidence shared as a result of the previous conferences casts further doubt on whether nuclear weapons could be used in accordance with the

85 *Ibid.*

86 *Ibid.*

87 See the overview by the Austrian government on the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, available at: www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons-and-nuclear-terrorism/vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/.

88 For example, the Australian statement at the Vienna Conference on the Humanitarian Impact of Nuclear Weapons outlined Australia’s desire to keep nuclear weapons negotiations within the existing framework: “Australia is pursuing a path that offers the most practical and realistic chance for disarmament. To be effective, disarmament must be based on high-level political will, supported by practical, sustained efforts, which we are pursuing, including through implementation of the 2010 Nuclear Non-Proliferation Treaty Action Plan and our membership of the Non-Proliferation and Disarmament Initiative.” Australian Statement at the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/Statements/HINW14_Statement_Australia.pdf.

89 For an overview, see Nick Ritchie, “The Story So Far: The Humanitarian Initiative on the Impacts of Nuclear Weapons”, ILPI-UNIDIR Vienna Conference Series, 2014, available at: www.unidir.org/files/publications/pdfs/the-story-so-far-en-616.pdf.

customary rules of IHL.⁹⁰ The Chair's Summary reiterated many of the findings of the Nayarit Conference, and confirmed that new evidence from the three conferences has shown that nuclear weapons threaten the very survival of human life, that the scope of and interrelationship between the humanitarian consequences of a nuclear weapons detonation are more complex than previously thought, and that the risk of a detonation, already high, increases over time.⁹¹

Certainly a sense of urgency about the need to prohibit nuclear weapons was emerging, not only in the discourse but also among participants in Vienna. The recognition of the risks to all of humankind provided a very real sense that we are at a turning point in history, a point where it is possible to make decisions that will advance the world either towards or away from self-destruction.

The Austrian/Humanitarian Pledge

Austria added to the sense of urgency when, immediately following the release of the relatively conservative Chair's Summary, the Austrian Pledge was revealed.⁹² The government of Austria outlined the need to consider human security broadly, and to promote the protection of civilians against nuclear attacks. To this end, it urged nuclear-armed States to reduce the operational status of their nuclear weapons, and called upon all States Parties to renew their commitment to the urgent and full implementation of existing obligations under Article VI of the NPT. Austria pledged to work with all stakeholders, including the Movement, to pursue measures to fill the legal gap in regard to nuclear weapons, including by promoting the evidence of the Vienna Conference at all relevant fora.⁹³ This pledge was an interesting diplomatic device as it significantly increased the pressure on nuclear weapons States and their dependents by placing the nuclear weapons issue firmly in the arena of civilian protection and human security, and while some diplomats passed it off as a "stunt", the Pledge has gained significant momentum.

In January 2015, the Austrian government invited States by a diplomatic *note verbale* to sign up to the Pledge, and on 29 January 2015, following the Third Summit of the Community of Latin American and Caribbean States, all thirty-three members of the Community endorsed the Austrian Pledge and endorsed the call to "fill the legal gap".⁹⁴ ICAN promoted the Pledge extensively throughout the NPT Review Conference in 2015, and it became renamed the Humanitarian Pledge. To date, 114 States have signed the Pledge.⁹⁵ This

90 Helen Durham, "The Use of Nuclear Weapons and International Humanitarian Law", presentation, Third Conference on the Humanitarian Impacts of Nuclear Weapons, Vienna, December 2015.

91 See J. M. Gomez Robledo, above note 84.

92 Sebastian Kurz, Austrian Pledge from the Third Conference on the Humanitarian Impact of Nuclear Weapons, delivered Vienna, 2014.

93 *Ibid.*

94 ICAN, "33 Latin American and Caribbean States Endorse Austrian Pledge and Call for Negotiations on a Ban Treaty", press release, 30 January 2015, available at: www.icanw.org/campaign-news/33-latin-american-and-caribbean-states-endorse-austrian-pledge-and-call-for-negotiations-on-a-ban-treaty/.

95 For more info on the Humanitarian Pledge, see ICAN, above note 69.

represents a significant number of States committed to filling the legal gap and working towards the prohibition of nuclear weapons.

Humanitarian discourse at the UN

While the series of intergovernmental conferences has been progressing, the humanitarian discourse has also been heard loudly at the UN. In 2013, there was the inaugural debate on humanitarian impacts at the First Committee of the UNGA.⁹⁶ The First Committee deals with disarmament and international security, and seeks solutions to challenges in the international security regime. It was this committee that in 1945 recommended the first UNGA resolution, entitled “Establishment of a Commission to Deal with the Problems Raised by the Discovery of Atomic Energy”, as discussed above.⁹⁷ However, despite the Committee’s noble history and continuous concern for nuclear weapons, it was not until 2013 that it held the first debate focused not on the relative security merits of nuclear weapons, but on their humanitarian impacts.

In addition to general debate, and as a successor to the Swiss-sponsored statement⁹⁸ at the NPT Preparatory Committee in Vienna in 2012, the New Zealand government sponsored a statement, co-signed by 125 States, calling on all States to consider the humanitarian consequences of nuclear weapons and to fulfil their existing international commitments towards the prohibition and elimination of such weapons.⁹⁹ Twelve months later in October 2014, 155 States co-signed a similar statement. These statements, combined with the growing attendance at the three intergovernmental conferences on the humanitarian impact of nuclear weapons, build a picture of strengthening and irreversible momentum towards the establishment of a legally binding instrument for the prohibition and elimination of nuclear weapons.

On 18 February 2015, two months out from the commencement of the 2015 NPT Review Conference, there was a second significant and timely intervention from the ICRC. The current ICRC president, Peter Maurer, addressed the Permanent Missions in Geneva. He noted that with all the new evidence made available through the three inter-governmental conferences, it was more difficult than ever to envisage that the use of nuclear weapons could be consistent with IHL.¹⁰⁰

96 See UN Office for Disarmament Affairs, *First Committee Press Releases, Draft Resolutions, Statements, Secretary-General’s Reports, and Side Events*, available at: www.un.org/disarmament/meetings/firstcommittee-68/.

97 See above note 28.

98 Switzerland, “Joint Statement on the Humanitarian Dimension of Nuclear Disarmament”, First NPT Preparatory Committee, 2 May 2012.

99 New Zealand, “Joint Statement on the Humanitarian Impact of Nuclear Weapons”, UNGA, 21 October 2013.”

100 Peter Maurer, “Nuclear Weapons: Ending a Threat to Humanity”, speech to the Geneva Diplomatic Corps, 18 February 2015, available at: www.icrc.org/en/document/nuclear-weapons-ending-threat-humanity, also available in the “Reports and Documents” section of this issue of the *Review*.

President Maurer reiterated the important messages that have been developed through the conferences and reflected on the destructive power of nuclear weapons, the human suffering they would cause and the catastrophic, long-lasting consequences for health, the environment, climate, food production and socio-economic development. He reiterated concern for the weapons' long-term effects, and noted that in the immediate aftermath of a detonation there is no way of effectively treating or bringing relief to those affected. In addition to this, the effects would go well beyond the national borders of the country where the detonation occurred, and therefore any use of nuclear weapons must be of global concern. President Maurer argued that the elimination of nuclear weapons is now a "humanitarian imperative"¹⁰¹ and called on governments to establish a time-bound process to negotiate a legally binding instrument to this end, including the form such an instrument should take.

Concluding remarks

The pressure is on. There is no doubt that we are at a turning point in history. Throughout the last seventy years, the nuclear weapons discourse has focused on security and deterrence. The question of "whose security?" has not been of concern for the nuclear weapons States and those sheltering under their umbrella. What we now know is that the days of MAD were not only mutual assured destruction for the United States and the former USSR. Advances in science and research tell us that any action which would have led to the destruction of those two countries would also lead to the destruction of life as we know it. Indeed, detonation of a substantial portion of any of the world's nuclear arsenals would result in "self-assured destruction".¹⁰²

Nuclear weapons continue to exist and remain in the possession of a select number of States, yet it is increasingly the clear that the use of nuclear weapons would be illegal and their devastating effects are most likely irreversible. What the humanitarian discourse has done, so compellingly, is demonstrate why these weapons are of concern to us all. While we may accept that States have the sovereign right to security, we cannot accept security on the basis of weapons that are a threat to all life on Earth. As the ICRC's President Maurer has noted: "Protecting humanity from the catastrophic humanitarian consequences of nuclear weapons requires courage, sustained commitment and concerted action."¹⁰³ Now is the time.

¹⁰¹ *Ibid.*

¹⁰² See Alan Robock and Owen Toon, "Self-Assured Destruction: The Climate Impact of Nuclear War", *Bulletin of the Atomic Scientists*, Vol. 68, No. 5, 2012.

¹⁰³ P. Maurer, above note 100.

An African contribution to the nuclear weapons debate

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Abstract

The current initiative on the humanitarian consequences of nuclear weapons has offered States the opportunity to reinvigorate the disarmament debate. While Africa has taken this opportunity to engage on nuclear disarmament, the impact of its efforts remains to be seen. The purpose of this article is to recall the value of African engagement, and to identify the important role that South Africa could play in leading the African continent in its call for a world free of nuclear weapons.

Keywords: Africa, nuclear weapons, disarmament, South Africa, Treaty of Pelindaba.

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Introduction

The international community has never been as close as it is today to an absolute ban on the use of nuclear weapons. A shift from a pure security discourse to a focus on the humanitarian consequences of these weapons has allowed many States to enter a debate that for decades appeared reserved for powerful and

* With thanks to Mutsa Mangezi for her valuable input. This article was written in a personal capacity and does not necessarily reflect the views of the ICRC.

wealthy governments. With the strength of fifty-four States and its moral standing as a nuclear weapons-free continent, Africa has the opportunity to contribute to the humanitarian consequences debate and to have a significant impact on the advancement of nuclear disarmament. Yet while African States have long joined the call for a world free of nuclear weapons and have been actively participating in discussions at various multilateral fora, the power of the African voice in influencing and advancing the debate has remained limited. Given the inclusive nature of the humanitarian consequences process and the interest that Africa has expressed on the issue, the continent's limited influence could be ascribed to a lack of leadership. Neither the African Union (AU) nor individual African governments have demonstrated a concrete interest in coordinating an African position or strategy. While this may not be surprising for the most part, it is indeed unexpected with respect to South Africa, the country with the most moral authority worldwide to speak on the topic of nuclear disarmament. South Africa is well known as the first and only country to have voluntarily dismantled its own nuclear weapons programme towards the end of the apartheid regime. It belongs to, and has played an important role in promoting, the African nuclear weapons-free zone. Its commitment to nuclear disarmament has been clearly expressed within the framework of its *Ubuntu* diplomacy,¹ and its own moral authority, Archbishop Desmond Tutu, has long been an advocate for a nuclear ban. This puts South Africa in a strong position to stand as a visible African leader and bridge-builder in the current ongoing process leading to a world free of nuclear weapons. This article argues that the stage has been set for increased African involvement in the nuclear disarmament debate, and considers the leadership role that South Africa could play in this regard.

Africa's role in the debate

The contribution that Africa can make to the nuclear disarmament debate should be seen not as a lofty ideal but rather as an attainable objective that fits within a pattern of engagement by numerous African States on arms control and non-proliferation issues. African States were vocal participants during negotiations for the 1997 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-personnel Mines and on their Destruction, as this was an issue that directly affected many States on the continent.² A number of African

- 1 *Ubuntu* diplomacy can be loosely translated as humanitarian diplomacy. See "2011 White Paper on South Africa's Foreign Policy: Building a Better World, the Diplomacy of Ubuntu", 13 May 2011, available at: www.gov.za/documents/white-paper-south-african-foreign-policy-building-better-world-diplomacy-ubuntu (all internet references were accessed in November 2015). A white paper is a discussion document that serves as a broad statement of government policy. See "How a Law is Made", available at: www.parliament.gov.za/live/content.php?Item_ID=1843. For more on the principle of *Ubuntu*, see below.
- 2 Sarah J. Swart, "A New Dawn in the Nuclear Weapons Debate: A Role for Africa?", *African Yearbook on International Humanitarian Law*, 2013, p. 17.

States,³ most prominently Zambia, were just as vocal during negotiations for the 2008 Convention on Cluster Munitions despite the fact that the continent had not been significantly impacted by these weapons, thereby demonstrating its willingness to involve itself in efforts to prohibit weapons based on their inhumanity.⁴ The most recent evidence of such engagement is the negotiation of the Arms Trade Treaty (ATT) regulating the international trade in conventional arms, during which African States demonstrated their staunch support for a strong treaty through common regional positions in the Economic Community of West African States (ECOWAS) and Central Africa, numerous national and sub-regional workshops and promotional events, and an AU common position. Indeed, Africa was pivotal in ensuring that small arms and light weapons, as well as ammunition, were covered by the provisions of the ATT. Given the continent's history of engagement on arms control issues as well as the weight it brings to the disarmament debate, it is not surprising that African States have expressed an interest in more recent initiatives to advance global nuclear disarmament.

As Kwame Nkrumah stated in 1967, “we in Africa wish to live and develop ... we are not freeing ourselves from centuries of imperialism and colonialism only to be maimed and destroyed by nuclear weapons”.⁵ The same argument, used by Nkrumah almost five decades ago, still rings true today – Africa is intrinsic to the nuclear weapons debate. The facts that past nuclear testing has taken place on African soil⁶ and that South Africa is the only country in the world to have voluntarily dismantled its nuclear weapons provide historic reasons for the continent's interest in the issue. The existence of major uranium mining operations across the continent demonstrates the current relevance of the nuclear weapons issue to Africa. In 2012, Niger, Namibia, Malawi and South Africa were named among the top twenty global uranium exporters, and uranium

- 3 For instance, twenty-one African States attended the Wellington Conference in February 2008; thirty-nine African States attended the Vienna Conference in December 2007; seven African States attended the Belgrade Conference for affected States in October 2007; and fourteen African States attended the Lima Conference in May 2007. Gugu Dube, *Negotiating the Convention on Cluster Munitions: The Role of African States*, ISS Paper No. 187, Institute for Security Studies, June 2009, available at: www.issafrica.org/acpst/papers/negotiating-the-convention-on-cluster-munitions-the-role-of-african-states.
- 4 Sheila N. Mweemba, “The Role of African States”, in Arielle Denis (ed.), *Banning Nuclear Weapons: An African Perspective*, International Campaign to Abolish Nuclear Weapons (ICAN), October 2014, p. 8.
- 5 “Wider Impact and Longer-Term Consequences”, International Conference on the Humanitarian Impact of Nuclear Weapons, introductory comments by Ambassador Mxakato-Diseko for Session II, 4 and 5 February 2013, available at: www.regjeringen.no/en/topics/foreign-affairs/humanitarian-efforts/statements_humimpact/id715939/.
- 6 French atmospheric and underground nuclear tests took place in the Sahara in the early 1960s, resulting in “significant radioactive fallout in several African countries”. Helle Winge Laursen, *Africa and Nuclear Weapons: An Introduction to the Issue of Nuclear Weapons in Africa*, International Law and Policy Institute (ILPI) Background Paper No. 1/2012, February 2012, pp. 5–11, available at: <http://nwp.ilpi.org/?p=1489#more-1489>.

deposits are said to also exist in Algeria, Botswana, the Central African Republic, the Democratic Republic of the Congo (DRC), Gabon, Guinea, Equatorial Guinea, Mali, Mauritania, Morocco, Nigeria, Tanzania, Zambia and Zimbabwe.⁷ The current relevance of the debate to Africa is also evident in light of the aspirations of a number of African States to establish nuclear energy programmes.⁸ Although the peaceful use of nuclear material is acknowledged as a right under the Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT), there is a need to ensure that this right is exercised in a manner that does not increase the risk of diversion of nuclear material to nuclear weapons programmes. In addition, the continent is unlikely to remain completely unaffected if a nuclear device were to detonate in another part of the world.⁹ The use of nuclear weapons anywhere would impact the future of the African continent.

Given the above, as well as the establishment of the African continent as a nuclear weapons-free zone through the 1996 African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba), it is clear that African States are invested in the nuclear disarmament debate. In light of Africa's past experiences, its lack of direct economic and political stakes in preserving the status quo and its vulnerability as a continent to a nuclear detonation, civil society is calling on Africa to "challenge the moral conscience of the world".¹⁰ This is not a new call – think tanks such as the South Africa-based Institute for Security Studies (ISS) have long been encouraging Africa's active participation in activities related to international nuclear safety, debates with respect to global disarmament and measures to prevent the proliferation of nuclear material for military purposes.¹¹ It is the current initiative on the humanitarian consequences of nuclear weapons that has provided Africa with the ideal opportunity to answer that call.

7 See World Nuclear Association, "Uranium in Africa", February 2015, available at: www.world-nuclear.org/info/Country-Profiles/Others/Uranium-in-Africa/#.UjrkjKymjQI; Amelia Broodryk and Shaun Edge, "International Nuclear Security: Why Africa Must Make Its Voice Heard", *ISS Today*, 24 March 2013, available at: www.issafrica.org/iss-today/international-nuclear-security-why-africa-must-make-its-voice-heard. See also Amelia Broodryk and Noël Stott (eds), *Progress Towards Securing Africa's Nuclear Resources*, ISS, 2011, p. 31.

8 While there is only one nuclear power station currently operating in Africa (that is, two nuclear reactors units at the Koeberg Nuclear Power Station in South Africa), various African States have expressed interest in producing nuclear energy, including Algeria, the DRC, Egypt, Ghana, Libya, Morocco and Nigeria. See International Atomic Energy Agency (IAEA), *Research Reactors in Africa*, November 2011, available at: www.iaea.org/OurWork/ST/NE/NEFW/Technical_Areas/RRS/documents/RR_in_Africa.pdf.

9 According to the International Court of Justice (ICJ) the effects of a nuclear weapons explosion are not constrained by time or space. See ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996*, 8 July 1996, para. 226.

10 S. N. Mweemba, above note 4.

11 The same cannot necessarily be said for South African government institutions: while the South African Council for the Non-Proliferation of Weapons of Mass Destruction is well established, it has arguably played a remarkably backseat role in influencing the government position and in promoting disarmament, at least publicly.

The current humanitarian consequences initiative

Despite ongoing, and legitimate, concerns that a number of States are either growing their nuclear weapons arsenal or expressing interest in doing so, current unprecedented political momentum for nuclear disarmament has created an exciting level of optimism amongst disarmament proponents. This momentum has arguably been increased by the failure of the recent NPT Review Conference, which took place in New York in April and May 2015. Despite years of preparatory meetings and negotiations, and four weeks of intense deliberations, the Conference failed to agree on a substantive final document setting out recommendations for the next five years until the 2020 Review Conference.¹² According to the Tokyo-based UNU Centre for Policy Research, the 2015 NPT represents “an opportunity squandered” – while it remains the single best existing multilateral platform for State negotiations, the failure of States to agree on a way forward for NPT implementation is a warning that “the discord that surrounds nuclear disarmament will not dissipate”.¹³ While most of the disagreement admittedly revolved around the issue of a conference for Middle East States to establish a nuclear weapons-free zone, another potential reason for the Conference’s failure is the sensitivity around discussions on disarmament, which has been growing since the advent of the humanitarian consequences initiative. This failure arguably adds significance and impetus to the humanitarian consequences initiative.

Until recently, discussions on nuclear weapons were constrained to traditional multilateral fora where negotiations often centred on the deterrent and security benefits of these weapons, and the exception for only a few States to maintain nuclear weapons programmes tended to monopolize disarmament efforts. A recent reframing of the nuclear weapons debate has however been the cause of much cautious excitement for civil society, academics and governments alike. For the first time in many years, States without nuclear weapons feel that they have a legitimate contribution to make to the ongoing debate on the usefulness of these weapons, which accords with the call in Article VI of the NPT for all States Parties to pursue negotiations towards nuclear disarmament. A statement to the Geneva Diplomatic Corps in 2010 by the president of the International Committee of the Red Cross (ICRC) at the time, Jakob Kellenberger, clearly depicts the need for the debate to be broadened from a discussion centred on power politics and military strategy:¹⁴ Kellenberger asserted that “the currency of this debate must ultimately be about human beings, about

12 Andrey Baklitskiy, “The 2015 NPT Review Conference and the Future of the Nonproliferation Regime”, *Arms Control Today*, 8 July 2015, available at: https://armscontrol.org/ACT/2015_0708/Features/The-2015-NPT-Review-Conference-and-the-Future-of-the-Nonproliferation-Regime.

13 Wilfred Wan, “Why the 2015 NPT Review Conference Fell Apart”, United Nations University Centre for Policy Research, 28 May 2015, available at: <http://cpr.unu.edu/why-the-2015-npt-review-conference-fell-apart.html>.

14 See Jakob Kellenberger, “Bringing the Era of Nuclear Weapons to an End”, statement to the Geneva Diplomatic Corps, 20 April 2010, available at: www.icrc.org/eng/resources/documents/statement/nuclear-weapons-statement-200410.htm. This document is also available in the “Reports and Documents” section of this issue of the *Review*.

the fundamental rules of international humanitarian law, and about the collective future of humanity”.¹⁵ And States heeded this call. The following paragraphs will describe the humanitarian consequences initiative to date, highlighting the potential it has created for African involvement and leadership.

In March 2013 the Norwegian Ministry of Foreign Affairs convened a two-day international conference in Oslo specifically focused on the humanitarian impact of nuclear weapons. The meeting included discussions on the lack of an available humanitarian response in most countries and at the international level in the event of a nuclear weapon detonation, the historical experience from the use and testing of nuclear weapons, and the wide geographical effects that a nuclear detonation would have.¹⁶ State representation at the conference was relatively high, especially considering that it was the first time that States had gathered on the multilateral stage to consider the effects of nuclear weapons from a humanitarian perspective. Indeed, representatives from 128 States, including States known to possess nuclear weapons, as well as more than 150 representatives from interested stakeholders (including the United Nations (UN), the International Red Cross and Red Crescent Movement and the International Campaign to Abolish Nuclear Weapons) attended the conference. This broad representation was remarked on by the then Norwegian minister of foreign affairs, Mr Barth Eide, at the closing session of the conference, when he noted that “it reflects the increasing global concern regarding the effects of nuclear weapons detonations, as well as the recognition that this is an issue of fundamental significance for us all”.¹⁷ It is worth pointing out, however, that none of the five NPT nuclear weapons States attended the conference, despite (or perhaps due to) their status as States possessing nuclear weapons.

At the conclusion of the Norwegian conference, the government of Mexico announced that it would host a follow-up meeting on 13–14 February 2014 in Nayarit. This announcement was welcomed as a means of ensuring that the issue would remain on the agenda of the international community. The Nayarit conference focused on the long-term humanitarian consequences of the use of nuclear weapons, including new research and technological tools that make it possible to predict and better understand the long-term effects of nuclear weapons on global public health, population displacement and the world economy.¹⁸ State participation increased at this second conference: delegations representing 146 States were present, which meant an additional eighteen governments more than the Norwegian conference. The chair of the conference commented that “the broad and active participation of States and civil society reflects the global concern regarding the effects of nuclear weapons, as well as the

15 *Ibid.*

16 “Conference: Humanitarian Impact of Nuclear Weapons”, 4–5 March 2013, available at: www.regjeringen.no/en/topics/foreign-affairs/humanitarian-efforts/humimpact_2013/id708603/.

17 *Ibid.*

18 Christine Beerli, “Nuclear Weapons Must Be Prohibited and Eliminated Once and for All”, statement at the Second Conference on the Humanitarian Impact of Nuclear Weapons, 13–14 February 2014, available at: www.icrc.org/eng/resources/documents/statement/2014/02-13-nuclear-weapons-statement.htm.

increasing recognition that this is an issue of the utmost importance to all peoples in the world”.¹⁹ The UN, the International Red Cross and Red Crescent Movement and civil society organizations were also in attendance. While none of the five Permanent Members of the UN Security Council were present in Mexico, the chair did suggest that awareness of the humanitarian impact of nuclear weapons was already changing the hearts and minds worldwide of those engaging in discussions concerning nuclear weapons.²⁰

Austria was the next government to take up the baton, offering to host the Third Conference on the Humanitarian Impact of Nuclear Weapons (Vienna Conference) on 8–9 December 2014 at the Hofburg Palace in Vienna. The Vienna Conference further focused on the humanitarian consequences of nuclear weapons, including “effects on human health, the environment, agriculture and food security, migration and the economy, as well as the risks and likelihood of the authorized or unauthorized use of nuclear weapons, international response capabilities and the applicable normative framework”.²¹ This conference saw a further increase in State participation, with 158 governments present, representing twelve States more than the conference in Mexico. Interestingly, the invitation to NPT nuclear-weapon States and to those States not party to the NPT had been reiterated by the Austrian government in the run-up to the conference; it appears that this was a useful step, as the United States and the United Kingdom attended the conference, thereby engaging in the humanitarian consequences discussion for the first time. In a pledge issued following the conference, the Austrian government undertook to continue cooperation with all relevant stakeholders in an effort to “stigmatize, prohibit and eliminate nuclear weapons in light of their unacceptable humanitarian consequences and associated risks”.²² Although more than 122 countries have already endorsed the Austrian pledge,²³ no State has yet confirmed its intention to host a follow-up conference.

African involvement in the above-mentioned conferences has been impressive. Thirty-five African States were present in Oslo, forty-six African States participated in Nayarit and forty-five African States attended the conference in Vienna. It is notable that in total, fifty-three African States participated throughout the various conferences.²⁴ While these numbers are encouraging, participation alone is clearly not enough; an active and substantive contribution from African States is a clearer measure of interest and support. At the third and

19 ICAN, *Nayarit – A Point of No Return: Mexico Conference 2014*, April 2014, p. 7.

20 *Ibid.*

21 “Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8 to 9 December 2014: Report and Summary of Findings of the Conference”, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_Chair_s_Summary.pdf.

22 Pledge presented at the Vienna Conference on the Humanitarian Impact of Nuclear Weapons by Austrian Deputy Foreign Minister Michael Linhart (Austrian pledge), available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_Austrian_Pledge.pdf.

23 ICAN, “Humanitarian Pledge: Stigmatize, Prohibit and Eliminate Nuclear Weapons”, 10 February 2016, available at: www.icanw.org/pledge/.

24 Only Mauritania and Western Sahara have not participated, whereas Morocco attended all three conferences.

most recent conference in Vienna, African States circulated a joint statement expressing their deep concern at the lack of meaningful progress towards the goal of a nuclear weapons-free world and calling on the conference to continue to build a better understanding of the humanitarian consequences of nuclear weapons. The statement also mentions the waste of resources in the sustaining and building of these weapons, which could be better used to achieve the Millennium Development Goals. It concludes by submitting that “the current state of affairs on nuclear disarmament remains ... unsustainable and wholly unacceptable”.²⁵ It is worth noting that this statement was one of only four joint country statements circulated in Vienna.²⁶ It also represents the first joint statement made by the African continent during the humanitarian consequences process.

In addition to the joint statement, numerous African States²⁷ made country statements, accounting for more than one fifth of all statements made at the conference. Many of these statements constituted a strong call for action. Malawi in particular called on the international community to act in order to realize “that long-awaited legal instrument to prohibit nuclear weapons and live in a world free of nuclear weapons”.²⁸ Kenya shared its position that “the very adverse humanitarian consequences of nuclear weapons can help de-legitimize nuclear weapons ... we therefore reiterate that it is time for States to start working on a legal ban on nuclear weapons”.²⁹ In Zimbabwe’s statement, the government noted that “there can never be any moral justification for possessing nuclear arsenals that threaten humanity that it purportedly seeks to safeguard and protect”, and called for the realization of “concrete measures on how the legally binding international instrument that outlaws the use, production, deployment, stockpiling and transfer of nuclear weapons can be realised”.³⁰

According to Patricia Lewis of Chatham House London, leaving the issue of nuclear disarmament to the domain of the “experts” has not taken the international community very far to date, and the myth that the ordinary layperson does not have a right to talk about nuclear weapons is now finally being debunked.³¹ By initiating the humanitarian consequences process, it seems that space has been created for

25 See #HINW14vienna Statements, available at: www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons-and-nuclear-terrorism/vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/statements/.

26 Other joint country statements were issued by the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, by the Non-Aligned Movement, and by the Association of South-East Asian Nations. See *ibid.*

27 Niger, Uganda, Djibouti, Lesotho, Zambia, Libya, Malawi, Guinea-Bissau, Senegal, Ghana, Kenya, Congo, Togo, Algeria, Mali, South Africa, Nigeria, Zimbabwe, Chad and Comoros. See *ibid.*

28 Malawi Statement by Aubrey Kabisala, Delegate, Foreign Service Office (Political Affairs), Ministry of Foreign Affairs and International Cooperation, Vienna, 9 December 2014. See *ibid.*

29 Statement by Michael A. O. Oyugi during the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 December 2014. See *ibid.*

30 Statement delivered by the Ambassador/Permanent Representative of the Republic of Zimbabwe, His Excellency G. T. Mutandiro, on the occasion of the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 December 2014. See *ibid.*

31 Patricia Lewis, “The Humanitarian Impact of Nuclear Weapons: A Workshop for Humanitarian Organizations”, Institute for Security Studies and Chatham House London in South Africa workshop, presentation on file with author, October 2013.

Africa to increase its engagement. It is important to note, however, that the establishment of the humanitarian consequences initiative has not led to the development of an enhanced African position on nuclear disarmament; it has merely given Africa an international platform from which to voice its position and exert its influence. While in the past the role that African countries could play in discussions on the future of global nuclear weapons was questioned, it is today clearer, thanks to the humanitarian consequences initiative, that it is not only possession of nuclear weapons that gives a State the necessary credibility to add its voice to the debate. The ISS has reiterated that given the involvement of African States in various global disarmament efforts, the African continent is well placed and has the necessary experience to try to convince States that possess nuclear weapons to engage in the discussions from a humanitarian perspective.³² This article now turns to examine the extent to which African States are engaging in the debate and the impact that South Africa in particular can have on the advancement of global nuclear disarmament.

African engagement and impact

As evidenced above, African countries are interested in the humanitarian consequences of nuclear weapons, and most are actively engaging in the process. While this article focuses on the current humanitarian consequences process, it would be remiss not to mention the efforts that African States have been making outside of the humanitarian consequences process to express their position on nuclear disarmament. One platform for disarmament discourse is the UN General Assembly First Committee on Disarmament and International Security (First Committee). The First Committee covers threats to peace that affect the international community and challenges to the international security regime. Kenya and Algeria both took the opportunity provided by the general debate of the First Committee during its 69th session in 2014 to share their positions. Kenya stated:

People are beginning to stand up. Very soon they will say “enough”. Every citizen of the world community has the right and duty to oppose the existence of nuclear weapons. Naturally, the talk of banning nuclear weapons is the next logical step. It should not cause anxiety.³³

Algeria, meanwhile, noted that “nuclear disarmament remains its highest priority and expresse[d] its serious concern over the danger to humanity posed by the

32 Noël Stott, “2014: The Year to Negotiate an International Ban on Nuclear Weapons?”, *ISS Today*, 22 January 2014, available at: www.issafrica.org/iss-today/2014-the-year-to-negotiate-an-international-ban-on-nuclear-weapons.

33 Anthony Andanje, Deputy Permanent Representative of the Republic of Kenya to the UN in Geneva, statement during the General Debate of the First Committee on all Disarmament and International Security Agenda Items (Items 87–104), 69th Session of the UN General Assembly on Disarmament and International Security, 13 October 2014, available at: https://unoda-web.s3.amazonaws.com/wp-content/uploads/assets/special/meetings/firstcommittee/69/pdfs/GD_13_Oct_Kenya.pdf.

existence of nuclear weapons and of their possible use or threat of use”.³⁴ African States have also contributed to the First Committee debates through group statements. Since 2012 a number of States have together issued a joint statement on the humanitarian consequences of nuclear weapons. While it initially started as a statement on behalf of sixteen States expressing their deep concern about the catastrophic humanitarian consequences of nuclear weapons, in 2014 New Zealand delivered the joint statement on behalf of over 150 countries.³⁵ In the 2015 First Committee deliberations, South Africa tabled a resolution entitled “Ethical Imperatives for a Nuclear-Weapon-Free World”, which was adopted by 124 votes in favour and thirty-five votes against.³⁶

Another platform for the disarmament debate is the Conference on Disarmament (CD), which is viewed as the world’s only multilateral disarmament negotiating forum. It holds three sessions a year, and operates according to a permanent agenda. It has a limited membership of sixty-five States, which includes twelve African States: Algeria, Cameroon, the DRC, Egypt, Ethiopia, Kenya, Morocco, Nigeria, Senegal, South Africa, Tunisia and Zimbabwe. Africa therefore represents less than one fifth of the CD membership. According to its Rules of Procedure, UN member States have the option of observing the work of the CD and, as of 2011, the following African States have taken part as observers: Ghana, Libya, Mauritius, Mozambique and Sudan.³⁷ The CD has faced criticism, however, for not further expanding its membership. Ghana and Libya have previously requested membership but have been refused, while Tanzania has taken to expressing its frustration at the UN First Committee:

[P]erhaps the tranquil spirit that my delegation brings to these forums could be a positive factor in the Conference on Disarmament. In this regard, it is very appropriate that we also consider the expansion of the machinery to give it a better multilateral appearance.³⁸

While the CD has been deadlocked in its programme of action for many years,³⁹ it is important to note Africa’s interest in participation and its willingness to pursue representation.

34 Sabri Boukadoum, Ambassador, Permanent Representative of Algeria, statement to the UN at the thematic debate of the First Committee on Nuclear Weapons, 69th Session of the UN General Assembly on Disarmament and International Security, 20 October 2014, available at: https://unoda-web.s3.amazonaws.com/wp-content/uploads/assets/special/meetings/firstcommittee/69/pdfs/TD_NW_21_Oct_Algeria.pdf.

35 “Rejecting Calls for ‘Wholesale’ Approaches to Disarmament, United States Speaker Tells First Committee Achievable Results Will Not Be Realized Overnight”, UN General Assembly Meetings Coverage, 20 October 2014, available at: www.un.org/press/en/2014/gadis3506.doc.htm.

36 ICAN, “UNGA First Committee Adopts Resolutions Demanding Action on Humanitarian and Ethical Concerns about Nuclear Weapons”, 11 November 2015, available at: www.icanw.org/campaign-news/unga-first-committee-adopts-resolutions-demanding-action-on-humanitarian-and-ethical-concerns-about-nuclear-weapons/.

37 H. W. Laursen, above note 6.

38 *Ibid.*

39 Nuclear Threat Initiative, “Conference on Disarmament (CD)”, 23 October 2015, available at: www.nti.org/treaties-and-regimes/conference-on-disarmament/.

In addition, while there may be an appearance of apathy from most African countries, where weapons of mass destruction-related issues seem to remain a low priority, there are a number of strong and vocal countries that are contributing to the promotion of nuclear disarmament, notably South Africa, Egypt, Nigeria and Algeria.⁴⁰ Egypt, as a leading country in the Arab League of States and a vocal member of the Non-Aligned Movement (NAM) and New Agenda Coalition (NAC), has played a particularly important role in nuclear disarmament discussions.⁴¹ It also fills an interesting bridge-building position between the Arab region and Africa. Although the Treaty of Pelindaba was adopted in South Africa, the signing ceremony took place in Cairo. According to the International Law and Policy Institute, Egypt is also a central player in promoting the establishment of a weapons of mass destruction-free zone in the Middle East.⁴² Nigeria was heavily involved in the development of the nuclear weapons-free zone in Africa as it formed part of the joint group of experts which was responsible for drafting the Treaty of Pelindaba. It is also a member of the De-alerting Group, which since 2007 has been calling for a reduction in the number of nuclear weapons on high alert.⁴³

Despite this active engagement, however, the impact of the African voice is perceived as limited. While the AU, together with its Commission, has expressed its continued commitment to realizing a world without nuclear weapons, and has a role as the depository for the Treaty of Pelindaba to mobilize African States as entrepreneurs of international nuclear norms, AU participation during the humanitarian consequences process has been limited.⁴⁴ The reasons for such limited participation are unclear, but could once again be linked to an issue of competing priorities. While many African States have attended the various NPT Review Conferences, most, with the exception of South Africa, have not been largely involved in pushing for new policies.⁴⁵ While most African States have attended and made valuable statements at the various conferences on the humanitarian consequences of nuclear weapons, there is still room for a more coordinated and focused continental position. A possible reason for this limited impact could be the lack of a common position on the humanitarian impact of nuclear weapons, which could play an important role in current nuclear disarmament negotiations. The value of a coordinated or common African

40 H. W. Laursen, above note 6.

41 *Ibid.*

42 *Ibid.*

43 Georgina te Heuheu, "De-alerting Group General Debate Statement: 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, 3–28 May 2010", in New Zealand Ministry of Foreign Affairs and Trade, *Statements and Speeches 2010*, 4 May 2010, available at: www.mfat.govt.nz/assets/_securedfiles/Peace-Rights-and-Security/De-alerting-Group-General-Debate-Statement-2010-NPT-Review-Conference.pdf.

44 Noël Stott, "Africa and the Humanitarian Consequences of Nuclear Weapons", *ISS Today*, 1 March 2013, available at: www.issafrica.org/iss-today/africa-and-the-humanitarian-consequences-of-nuclear-weapons; Noël Stott, "Nuclear Weapons and their Consequences: The Relevance of International Humanitarian Law", *ISS Today*, 24 May 2012, available at: www.issafrica.org/iss-today/nuclear-weapons-and-their-consequences-the-relevance-of-international-humanitarian-law.

45 H. W. Laursen, above note 6.

position has been evident in the past. Although the draft AU Common Position on the Arms Trade Treaty was not endorsed before the final ATT negotiations, the document served as a valuable tool in unifying the African voice. An African common position on nuclear disarmament could serve both to consolidate African support for the humanitarian consequences process and to prepare the ground for possible negotiations on a nuclear ban treaty. Indeed, in Malawi's country statement at the 2014 Vienna Conference, it suggested that "we need to take this into the agenda of the highest political fora for our regional multilateral organizations such as the African Union in readiness for a diplomatic negotiation process for a legally binding instrument".⁴⁶

Yet despite the catalyst effect that such a common position could have, no such document has been drafted to date. One reason could be that the right time for such a common position has simply not yet arrived. African States may have been waiting to assess the outcome of the 2015 NPT Review Conference before deciding whether such a common African position would be necessary and significant. However, there has been no evidence of steps to draft a common position following the perceived failure of the Review Conference. A second and more pessimistic explanation could be a question of priority: the AU Commission undoubtedly has a number of competing priorities, and nuclear weapons may simply not be one of them. The third and arguably most probable reason, however, is that no single African State has demonstrated its willingness to lead the process within the AU. Identifying a focal point for coordinating African participation during multilateral negotiations is often an essential and defining step.⁴⁷ In previous African disarmament success stories, there has frequently been a single State championing the cause and leading the African response – Zambia played such a role during the drafting of the Convention on Cluster Munitions,⁴⁸ and Nigeria arguably played a similar role during the more recent ATT negotiations.⁴⁹ The role of a champion State could be to introduce the topic at an AU summit, to draft essential elements for a common position to share with the AU Commission, or to host sub-regional and regional expert meetings in preparation for multilateral negotiations.

And so the question arises: which African State would be best placed to play such a role? Which African State has demonstrated its diplomatic and financial support for African multilateral affairs and negotiations, has highlighted that

46 A. Kabisala, above note 28.

47 S. N. Mweemba, above note 4.

48 In 2008 Zambia hosted a continental conference to draft a joint declaration in anticipation of upcoming treaty negotiations. Borrie refers to the African bloc as a force during the Dublin negotiations due to those countries' coordination by Zambia as well as their unity following the 2008 continental conference. See John Borrie, *Unacceptable Harm: A History of How the Treaty to Ban Cluster Munitions Was Won*, United Nations Institute for Disarmament Research (UNIDIR), New York and Geneva, 2009, p. 258.

49 Nigeria has been recognized for coordinating the African group throughout the process of negotiation of the treaty, as well as for being the first African State to ratify the treaty. See "Nigeria Becomes First African Country to Ratify Arms Trade Treaty", *Premium Times*, 13 August 2013, available at: www.premiumtimesng.com/news/142705-nigeria-becomes-first-african-country-to-ratify-arms-trade-treaty.html.

nuclear disarmament fits squarely within its foreign policy aspirations, and has past experience of initiating thematic discussions at the continental level? Considering these qualifications, it is inevitable that the focus turns to South Africa.

Expectations on South Africa

We must ask the question, which might sound naive to those who have elaborated sophisticated arguments to justify their refusal to eliminate these terrible and terrifying weapons of mass destruction – why do they need them anyway!⁵⁰

Nelson Mandela, 21 September 1998

The present author has previously observed that if there are expectations on Africa to further engage on this issue, perhaps the most predominant candidate to play a leading role is South Africa. The reasons for this are numerous, and relatively obvious. Firstly, South Africa remains the only country to have ever voluntarily relinquished its status as a nuclear power.⁵¹ According to former South African president F. W. de Klerk, “South Africa has illustrated that long-term security can be far better assured by the abrogation of nuclear weapons than by their retention. ... The international community must take concrete steps to control, and finally eliminate, nuclear weapons as a thinkable option.”⁵² Secondly, South Africa is a member of and has actively promoted adherence to the continental nuclear weapons-free zone, which provides it with a legitimate reason for calling for global nuclear disarmament. Thirdly, South Africa is a key player with a strong voice in both the sub-region and the continent. Indeed, due to its unique position but also to its prominent leadership role, “South Africa has an opportunity to steer the direction of the nuclear industry and the global nonproliferation regime in a positive direction. It should take it.”⁵³

However, it is not only the role that South Africa can play as *leader* but also the role it can play as *bridge-builder* that is forcing it into the limelight:

Taking advantage of an unusual nuclear history; an innovative, domestic nuclear power industry; and strong ties with other strategic countries, South Africa is emerging as a crucial bridge between developed and developing

50 Cited in ICAN, “Celebrating 20 years of South African Democracy and Nuclear Disarmament: South Africa Considers Follow-Up to the Vienna Conference”, 20 May 2014, available at: www.icanw.org/campaign-news/south-africa-considers-follow-up-to-the-vienna-conference/.

51 While a number of other States have dismantled their nuclear programmes, South Africa remains the only State to ever voluntarily dismantle its entire nuclear weapons arsenal. For more information on the disarmament process in South Africa, see Nic von Wielligh, *The Bomb: South Africa's Nuclear Weapons Programme*, Litera Publications, Pretoria, 2015.

52 S. J. Swart, above note 2, p. 22.

53 Jack Boureston and Jennifer Lacey, “Shoring Up a Crucial Bridge: South Africa's Pressing Nuclear Choices”, *Arms Control Today*, 1 January 2007, available at: www.armscontrol.org/print/2293.

countries on nuclear issues. South Africa's outspoken support for "all" country's [*sic*] rights to develop nuclear technologies for peaceful purposes and its renewed interest in developing its own nuclear fuel cycle puts it at center stage in non-proliferation debates. At the same time, its record as the only country to develop its own nuclear weapons and then renounce them has allowed it to challenge the nuclear-weapon States to meet their disarmament commitments under the nuclear Nonproliferation Treaty.⁵⁴

Whether South Africa will take advantage of its unique position or not remains the question. This section attempts to examine the above-mentioned reasons for such high expectations on the country, and to suggest whether these expectations are realistic.

The dismantling of the apartheid-era nuclear weapons programme

Despite long-standing suspicion that South Africa had developed a nuclear weapons arsenal, it was only with the announcement of former president F. W. de Klerk on 24 March 1993 before a special joint session of Parliament that these suspicions were confirmed. De Klerk admitted that South Africa had developed six nuclear fission devices and was halfway towards developing another, but noted that in early 1990 the decision was taken to destroy these weapons. According to Adams, this announcement "shocked the world".⁵⁵ South Africa became the first country worldwide to voluntarily disband its nuclear weapons programme and destroy its nuclear weapons,⁵⁶ and in doing so provided the international community with a step-by-step manual for nuclear disarmament. It is useful to briefly consider the motivations behind the programme, as well as the nuclear strategy adopted by the apartheid government, in order to better understand the reasons for its dismantling.

The nuclear programme in South Africa started with the discovery of uranium deposits in the country in the 1940s, and at its peak in the late 1980s saw the development of six nuclear devices, with enough highly enriched uranium available to produce a seventh.⁵⁷ Former president de Klerk has strongly asserted that the Apartheid government never intended to detonate these devices, but instead saw their nuclear arsenal from the outset as a valuable deterrent.⁵⁸ This was due to the pressure the government was under at the time, notably the instability in Angola and Mozambique, the presence of Cuban forces in the region, the threat of a "black uprising" and, according to de Klerk, "South

54 *Ibid.*

55 Isaac Adams, "Limited Capability: A History and Review of South Africa's Nuclear Weapons Programme", *The Monitor: Journal of International Studies*, Vol. 8, No. 1, 2001.

56 It is worth pointing out that other countries have abandoned their nuclear weapons programmes, but unlike South Africa they did so before developing nuclear weapons capability. These include Argentina and South Korea. See David Albright, "South Africa's Nuclear Weapons Program", Institute for Science and International Security, 14 March 2001, available at: http://web.mit.edu/ssp/seminars/wed_archives01spring/albright.htm.

57 *Ibid.*

58 I. Adams, above note 55.

Africa's growing international isolation and the fact that it could not rely on outside assistance in case of an attack".⁵⁹ Indeed, South Africa's nuclear strategy appears to support de Klerk's claims. Albright notes that the country's nuclear strategy had three phases: to perpetuate strategic uncertainty regarding the country's nuclear arsenal; if necessary, to secretly acknowledge the existence of its nuclear weapons programme to certain Western powers in a bid to force their intervention; and finally, a demonstration of its nuclear power through public announcement or even testing.⁶⁰ This strategy, together with the limited number of nuclear devices in its arsenal, suggests that South Africa's nuclear weapons programme was genuinely built with deterrence in mind. Regardless of the real motivation behind the nuclear weapons programme in apartheid South Africa, the current South African government's position is that possessing nuclear weapons will not confer greater security for any State; that nuclear weapons represent a risk to humanity; and that deterrence is not a sufficient reason to build nuclear weapons.⁶¹ This is a position shared by many States worldwide.

Just as many reasons have been put forward for why South Africa established a nuclear weapons programme, many reasons for the disarmament of South Africa's nuclear weapons have been suggested. These include the departure of Cuban forces from Angola, the independence of Namibia, the decline of the Soviet Union, and a desire within the country to regain some standing in the international community.⁶² Adams adds that South Africa's threats to test its nuclear powers were empty, as nuclear testing would have further strained its relationship with the United States, and that the prospect of a new black government with access to nuclear weapons was a clear motivation for the dismantling of the programme.⁶³ Again, what is important to note is that despite its reasons for disarming and despite criticism against the apartheid government for selfish motives in dismantling its nuclear weapons programme, the fact remains that the government of South Africa *did* choose to dismantle its programme, *did* join the NPT regime, *did* allow the International Atomic Energy Agency (IAEA) unprecedented access for verification purposes, and *continues* to call for nuclear non-proliferation and disarmament. Regardless of its motivations for dismantling the programme, the South African government views the country today as more secure than the South Africa that possessed a nuclear weapons arsenal. The current South African government's strong commitment to nuclear disarmament reflects its belief that possession of nuclear weapons makes a State a threat to international peace and security rather than a responsible world

59 F. W. de Klerk "South Africa, the Nation that Gave Up Its Nukes", *Los Angeles Times*, 22 December 2013, available at: www.latimes.com/opinion/op-ed/la-oe-deklerk-south-africa-nukes-20131222-story.html.

60 D. Albright, above note 56.

61 See, e.g., "Media Statement by Deputy Minister Ebrahim on International Relations Issues", 9 April 2013, available at: <http://www.dfa.gov.za/docs/speeches/2013/ebra0409.html>.

62 D. Albright, above note 56.

63 I. Adams, above note 55.

citizen.⁶⁴ Although South Africa still possesses sufficient highly enriched uranium to build nuclear weapons, the country has not reversed its decision to dismantle. Van Wyk argues that this demonstrates South Africa's commitment to taking the moral high ground generally, but especially in the area of nuclear disarmament.⁶⁵

It is worth highlighting the statement that South Africa made during the Vienna Conference, in which it linked the dismantling of its nuclear weapons programme to a moral responsibility with which the State must now comply:

As the only country to have developed and then voluntarily destroyed its nuclear weapons, South Africa has always viewed humanitarian imperatives as the very centre of our efforts. Our position evolved from and was shaped by our experiences during South Africa's struggle for freedom. We know all too well the devastation associated with the nuclear tests conducted in and around the African continent and the constant danger of the apartheid regime's nuclear weapons, which loomed large in our lives and those of our neighbours. We have noted the appeals of some States for practical and realistic measures, yet by our own actions we have illustrated what indeed can and must be done. We therefore not only have a legal obligation, but also a moral responsibility to contribute to the humanitarian initiative.⁶⁶

The Treaty of Pelindaba

The 1996 African Nuclear-Weapon-Free Zone Treaty, more commonly known as the Treaty of Pelindaba, prohibits African States from manufacturing, acquiring, stockpiling, testing or possessing nuclear weapons. The Treaty, which was adopted in June 1995 at the 31st Ordinary Session of the Organisation of African Unity (OAU), is augmented by two protocols directed at the five nuclear weapon-possessing States, requiring them to respect the status of the zone and not to use or threaten to use nuclear weapons in any African country. The Treaty of Pelindaba entered into force in 2009 and to date has been ratified or acceded to by forty States, including the most recent ratification of Angola in June 2014.⁶⁷ The continental nuclear weapons-free zone created under the Treaty of Pelindaba is joined by similar nuclear weapons-free zones in the South Pacific, Central Asia, Latin America and the Caribbean, and South-East Asia.⁶⁸ According to Stott,

64 Ambassador Abdul Samad Minty, Permanent Representative of the Republic of South Africa to the Conference on Disarmament, statement, 1 September 2011, available at: www.dfa.gov.za/docs/speeches/2011/mint0901.html.

65 Jo-Ansie van Wyk, "South Africa's Nuclear Diplomacy since the Termination of the Nuclear Weapons Programme", *South African Journal of Military Studies*, Vol. 42, No. 1, 2014, p. 84.

66 Statement by South Africa at the Third International Conference on the Humanitarian Impact of Nuclear Weapons, Vienna, 9 December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/Statements/HINW14_Statement_South_Africa.pdf.

67 African Union, "List of Countries which Have Signed, Ratified/Acceded to the African Nuclear-Weapon-Free Zone Treaty (The Treaty of Pelindaba)", 28 January 2014, available at: www.au.int/en/treaties/african-nuclear-weapon-free-zone-treaty-pelindaba-treaty.

68 UN Office for Disarmament Affairs, "Nuclear-Weapon-Free-Zones", available at: <http://www.un.org/disarmament/WMD/Nuclear/NWFZ.shtml>.

the Treaty ... plays an important role in preventing nuclear proliferation, reducing the role of nuclear weapons in a region, providing guarantees that nuclear weapons will not be used against States in the region, and building the cooperative mechanisms for security that will help achieve a nuclear-weapons-free world.⁶⁹

Stott argues that the Treaty of Pelindaba strengthens the objectives of the NPT and that it is an important African initiative led by Africans and for Africans.⁷⁰

While the adoption of the Treaty of Pelindaba is an accomplishment that Africa can be proud of, it must be recalled that South Africa's domestic position delayed the drafting of the Treaty for many years. The UN General Assembly adopted a resolution in 1961 calling for a zone in Africa free from nuclear weapons, but it wasn't until 1991, the same year that South Africa joined the NPT, that the OAU (now the African Union) established a joint group of experts to begin drafting a treaty. Some say that South Africa "practically held the continent at ransom until 1991".⁷¹ On the other hand, the South African decision to renounce and completely dismantle its nuclear weapons programme can be seen as a vital catalyst in the Treaty of Pelindaba negotiations: with its decision to dismantle, South Africa demonstrated that a nuclear weapons-free zone in Africa could indeed exist. According to Adeniji, "once the Cold War ended and the South African Government was seen to have begun the dismantlement of apartheid and adherence to the NPT, it was possible to move forward with the denuclearization of Africa".⁷² South Africa's support for the drafting of the Treaty of Pelindaba became clear in the ensuing years: the Treaty was eventually adopted in Pelindaba, near Pretoria, which was the site of the then Atomic Energy Corporation of South Africa, symbolizing a change in South Africa's domestic policy but also signifying its support for a strong African position on nuclear disarmament.

Since the adoption of the Treaty of Pelindaba, South Africa has continued to demonstrate the value it places on the African nuclear weapons-free zone. Firstly, at the first Conference of Parties in 2010, South Africa was endorsed as host of the African Commission on Nuclear Energy (AFCONE), an office envisaged under the provisions of the Treaty.⁷³ The role of AFCONE is to act as a mechanism of compliance, ensuring the proper implementation of the Treaty across the continent. Secondly, a prominent and experienced South African, Ambassador Minty, was nominated as one of the first AFCONE commissioners, as well as the first chairperson of the Commission. His election not only highlights the success of South Africa's diplomatic efforts on the continent but also a genuine

69 Noël Stott, "Nuclear Weapons: The Treaty of Pelindaba and Current Debates", presentation on file with author, 16 August 2012.

70 Noël Stott, "The Treaty of Pelindaba: Towards the Full Implementation of the African NWFZ Treaty", *JSS Guide*, 2011.

71 Jo-Ansie van Wyk, "No Nukes in Africa: South Africa, the Denuclearisation of Africa and the Pelindaba Treaty", *Historia*, Vol. 57, No. 2, 2012.

72 Oluyemi Adeniji, *The Treaty of Pelindaba on the African Nuclear Weapons-Free Zone*, UNIDIR/2002/16, UNIDIR, 2002.

73 African Nuclear-Weapon-Free-Zone (ANWFZ) Treaty (Treaty of Pelindaba), 20 October 2015 (entered into force 15 July 2009), available at: www.nti.org/treaties-and-regimes/african-nuclear-weapon-free-zone-anwfz-treaty-pelindaba-treaty/.

commitment from the South African government to the advancement of nuclear disarmament and to the implementation of the Treaty of Pelindaba. Thirdly, South African civil society has mirrored government efforts to promote the Treaty: think tanks such as ISS have proactively encouraged African adherence through the organization and hosting of promotional events and the provision of expert advice and briefings to African governments.⁷⁴

While South Africa's domestic policy of apartheid prevented the country from supporting initial efforts to draft a treaty providing for a continental nuclear weapons-free zone, South Africa's diplomatic and financial efforts to promote and implement the Treaty of Pelindaba since its own new political dispensation have revealed a strong and genuine interest in nuclear disarmament.

South Africa's position on arms control

South Africa has often demonstrated its willingness to take a stand for nuclear disarmament, in both the domestic and international arenas. On the domestic level, South Africa has recognized the need to prohibit nuclear weapons through the Non-Proliferation of Weapons of Mass Destruction Act, which provides a control regime for weapons of mass destruction, including nuclear weapons. The Act also establishes the South African Council for the Non-Proliferation of Weapons of Mass Destruction, which controls and manages matters relating to the proliferation of such weapons.⁷⁵ The Weapons of Mass Destruction Act was used in 2007 to prosecute a German engineer based in South Africa for his involvement in a global black market for nuclear weapons technology.⁷⁶ According to the facts of the case, the engineer, Gerhard Wisser, played a part in the activities of the infamous Abdul Qadeer Khan network, which was involved in the irresponsible sharing of nuclear technology. Ambassador Minty, senior South African envoy to the IAEA at the time, welcomed Wisser's conviction and noted that such domestic prosecutions were important in order to eradicate the illicit trade in nuclear technology.⁷⁷

On the international level, South Africa frequently expresses its strong national support for nuclear disarmament. South Africa's concern and disappointment at the lack of substantive work and an agreed programme of action at the CD,⁷⁸ as well as its clear position on nuclear weapons as a source of

74 See, e.g., N. Stott, above note 70.

75 Non-Proliferation of Weapons of Mass Destruction Act No. 87, 1993, available at: www.thedti.gov.za/nonproliferation/legislation.htm.

76 See South Africa Transvaal Provincial Division, *The State v. Daniel Geiges and Gerhard Wisser*, Case No. CC332/2005, Indictment, July 2006, available at: www.isis-online.org/peddlingperil/southafrica.

77 South African Government, "A Minty Welcomes Conviction of G Wisser", press release, 5 September 2007, available at: www.gov.za/minty-welcomes-conviction-g-wisser.

78 UN Office at Geneva, "Conference on Disarmament Considers Issues relating to Rules of Procedure: Considers Proposal on Civil Society Participation", 4 February 2015, available at: www.unog.ch/80256EDD006B9C2E/%28http://NewsByYear_en%29/2B4FCBBF5CCFE069C1257DE2006163C4?OpenDocument.

insecurity rather than security,⁷⁹ are evidence of this support. When the Democratic People's Republic of Korea carried out a nuclear test in 2014, South Africa responded by labelling the test as a threat to peace, stability and security.⁸⁰ Statements that South Africa makes at the international level are consistent with the country's strong domestic position, including country statements as well as statements within groupings such as the NAM and the six-State NAC. South Africa has also made strong statements within the humanitarian consequences process – at the most recent conference in Vienna, South Africa noted that

[t]he only way to guarantee the security that we all seek, is through the total elimination of nuclear weapons and their prohibition. It is indeed an anomaly that nuclear weapons remain the only weapons of mass destruction that have yet to be subjected to a comprehensive, global prohibition. South Africa has no doubt that conferences like these offer the international community an inclusive platform and will contribute towards the establishment of higher norms against nuclear weapons.⁸¹

It is also important to highlight that South Africa's foreign policy is built on the diplomacy of *Ubuntu*. *Ubuntu* reflects the concept of humanity, and refers to the idea that we affirm our humanity when we affirm the humanity of others.⁸² South Africa recognizes interconnectedness and interdependency as important aspects of its diplomacy, and aspires to act as a champion for collaboration, cooperation and partnership rather than conflict. Such commitment to and interest in the advancement of multilateral issues can be seen in South Africa's hosting of a number of multilateral bodies – namely the New Partnership for Africa's Development, the African Peer Review Mechanism, AFCON and the Pan African Parliament – as well in its nomination of Nkosazana Dlamini-Zuma as the current chairperson of the AU Commission⁸³ and the more recent successful nomination of Dumisani Dladla as interim head of the ATT Secretariat.⁸⁴ It is in the framework of such foreign policy ambitions that South Africa's commitment to disarmament, non-proliferation and arms control, as well as its continued support for Africa as a nuclear weapons-free zone, is entrenched.⁸⁵

79 South Africa, statement during the thematic debate on nuclear weapons, 69th Session of the UN General Assembly on Disarmament and International Security, 20 October 2014, available at: https://unoda-web.s3.amazonaws.com/wp-content/uploads/assets/special/meetings/firstcommittee/69/pdfs/TD_NW_20_Oct_SouthAfrica.pdf.

80 "SA, Russia Condemn DPRK Nuclear Test", South African Government News Agency, 12 February 2013, available at: www.sanews.gov.za/world/sa-russia-condemn-dprk-nuclear-test.

81 Statement by South Africa, above note 66.

82 "2011 White Paper on South Africa's Foreign Policy", above note 1.

83 Elissa Jobson, "African Union chooses first female leader", *The Guardian*, 16 July 2012, available at: <http://www.theguardian.com/world/2012/jul/16/african-union-first-female-leader>.

84 Jefferson Morley, "ATT Parties Hold First Conference", *Arms Control Today*, 3 September 2015, available at: https://www.armscontrol.org/ACT/2015_09/News/ATT-Parties-Hold-First-Conference.

85 "2011 White Paper on South Africa's Foreign Policy", above note 1.

Realistic expectations

Given the above, it is understandable that there are expectations for South Africa to enhance its leadership role on the issue of nuclear disarmament. South Africa has not been averse to playing such a role in the past: in the lead-up to the NPT preparatory committee meeting in 2013, South Africa invited all parties to the treaty to endorse a two-page statement expressing deep concern about the catastrophic humanitarian consequences of nuclear weapons. Eighty States supported the statement, which was coordinated and led by South Africa. While Australia did not endorse the statement, a diplomatic cable sent from Australia's Permanent Mission in Geneva to officials in Canberra noted that "South Africa has made a good faith effort here [to craft a statement that would be acceptable to a wide range of States] and we consider that if not for the reference to the 2011 ICRC [*sic*] Council of Delegates resolution ... we could recommend joining".⁸⁶ It seems that South Africa had intentionally chosen language that would broaden support for the statement, and even a country that decided against endorsing the statement recognized the role South Africa was playing in garnering support. It is not only through its coordination of country statements that South Africa has demonstrated its willingness to stand as a leading State in the global nuclear arena, however; even the most recent campaign for Ambassador Minty's election as director-general of the IAEA illustrated these ambitions.⁸⁷ His nomination demonstrates the South African government's regard for the IAEA, as well as its undertaking to contribute to the IAEA'S objective of promoting only the peaceful use of nuclear material.

South Africa also finds itself in the delicate but potentially powerful position of bridge-builder, able to bridge the gap between the North and the South, to represent the growing number of "middle power" States and to interact with both nuclear weapons-possessing States and members of nuclear weapons-free zones. In some regards, South Africa has already played this role; for example, it has been hailed for its "deadlock-breaking diplomatic efforts during the 1995 Review Conference of the NPT", at which it participated for the first time as a State Party. South Africa's membership of the BRICS (Brazil, Russia, India, China and South Africa) group of countries, NAM and NAC arguably provides it with the necessary footing to engage in mediation and bridge-building efforts. Strong ties forged between South Africa and India within the framework of BRICS, for example, have resulted in the two countries wielding considerable power on nuclear issues as members of the IAEA Board of Governors.⁸⁸

In light of the relevance of the debate to South Africa, and evidence of the country's existing willingness to carve out a role for itself in advancing nuclear disarmament, there appear to be no obstacles to prevent South Africa from

86 Tim Wright, "Australia's Opposition to a Ban on Nuclear Weapons", ICAN Briefing Paper, 28 August 2013.

87 J. A. van Wyk, above note 65, p. 95.

88 J. Boureston and J. Lacey, above note 53.

playing an increased leadership role in the future. In its statement at the Vienna Conference, South Africa noted that it was “currently considering options, including our role in any follow-on activities and meetings”.⁸⁹ At an event during the conference in Oslo, Norway, on 12–13 May 2014, the acting chief director at the South African Department of International Relations and Cooperation, Ms Titi Molaba, minister counsellor to the South African Permanent Mission to the UN, stated that South Africa is “considering the possibility of hosting a fourth conference” to follow up on the Vienna Conference on the Humanitarian Impact of Nuclear Weapons.⁹⁰ With statements such as these, expectations are understandably high that South Africa will soon step into a visible leadership position on the continent.

Conclusion

Archbishop Desmond Tutu has called for the abolishment of nuclear weapons through “an irrepressible domestic groundswell of popular opposition ... and intense and sustained pressure from the international community”.⁹¹ In the framework of increased space, past successes and a receptive climate, Africa provides the ideal stage for Tutu’s call to be realized.⁹² As argued above, past disarmament efforts have proven that the impact of African engagement is highest when it is led by a specific State or group of States. In the framework of nuclear disarmament, South Africa presents itself as a logical choice to provide such leadership. Not only is South Africa the only State to have dismantled a nuclear weapons programme on its own volition, notably at a time when security was volatile, but since dismantling it has consistently made strong statements in favour of global nuclear disarmament and non-proliferation. South Africa has established itself as a moral authority on the issue, and many are looking to it as the State most ideally positioned to lead African efforts in the advancement of complete nuclear disarmament. To date, South Africa does appear to be encouraging the continent through existing African multilateral fora as well as through direct engagement within the confines of the diplomatic process. Whether South Africa will play a more active and visible role in the future is still to be determined, but should the country announce its intention to host an international or continental conference, this would be a clear step towards a stronger position of leadership on the issue of the humanitarian consequences of nuclear weapons. Without leadership from an African State or group of States, the interest and concern expressed by the African continent to date may amount to little. It is hoped that South Africa will embrace the position in which it finds itself to help further advance Africa’s call for a world free of nuclear weapons.

89 Statement by South Africa, above note 66.

90 ICAN, above note 50.

91 S. N. Mweemba, above note 4, p. 4.

92 *Ibid.*, p. 2.

The humanitarian impact and implications of nuclear test explosions in the Pacific region

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Abstract

The people of the Pacific region have suffered widespread and persisting radioactive contamination, displacement and transgenerational harm from nuclear test explosions. This paper reviews radiation health effects and the global impacts of nuclear testing, as context for the health and environmental consequences of nuclear test explosions in Australia, the Marshall Islands, the central Pacific and French Polynesia. The resulting humanitarian needs include recognition, accountability, monitoring, care, compensation and remediation. Treaty architecture to comprehensively prohibit nuclear weapons and provide for their elimination is considered the most promising way to durably end nuclear testing. Evidence of the

* This paper is humbly dedicated to the victims and survivors of nuclear explosions worldwide working for the eradication of nuclear weapons. The author thanks Nic Maclellan for his helpful suggestions.

humanitarian impacts of nuclear tests, and survivor testimony, can contribute towards fulfilling the humanitarian imperative to eradicate nuclear weapons.

Keywords: nuclear test explosions, nuclear tests, Pacific region, Pacific island countries, radioactive fallout.

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Introduction

The peoples of the Pacific region have been caught up in the nuclear age from its beginnings as, generally without their prior knowledge or consent, their lands and seas have been used for and contaminated by the development, testing and deployment of nuclear weapons by distant powers – France, the United Kingdom and the United States. This has impacted their health, their homelands and their future. In 1945, the aircraft that dropped nuclear bombs on both Hiroshima and Nagasaki took off from Tinian in the Mariana Islands in the Pacific; and US nuclear tests in the Pacific began as early as 1946.¹

Between 1945 and 2015, 2,055 nuclear explosions are known to have been undertaken globally.² Apart from the two bombs dropped on Hiroshima and Nagasaki, and 150 explosions which were ostensibly “peaceful”,³ the rest have been for the purpose of developing new nuclear weapons (making them more destructive, more compact and more deliverable), understanding their effects and developing plans for their use. Despite the conclusion of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) in 1996, the Treaty has not yet entered into force.⁴ However, the Democratic People’s Republic of Korea has been the only State to conduct nuclear test explosions since 1998.⁵

1 Preparatory Commission for the Comprehensive Nuclear Test-Ban-Treaty Organization (CTBTO Preparatory Commission), *The United States’ Nuclear Testing Programme*, available at: www.ctbto.org/nuclear-testing/the-effects-of-nuclear-testing/the-united-states-nuclear-testing-programme/ (all internet references were accessed in November 2015).

2 Stockholm International Peace Research Institute (SIPRI), *SIPRI Yearbook 2014*, Oxford University Press, Oxford, 2015, pp. 349–351.

3 The explosive device used for a peaceful nuclear explosion (PNE) is the same as for a weapons test, and the adverse effects on health and the environment are the same (see CTBTO Preparatory Commission, *Peaceful Nuclear Explosions*, available at: www.ctbto.org/nuclear-testing/history-of-nuclear-testing/peaceful-nuclear-explosions/). In addition, there is no objective way to verify that a nuclear explosion designated as “peaceful” does not have some military purpose. Because PNEs were widely regarded as a “back door” for nuclear weapons, they are prohibited under the CTBT. The best-known case of deceitful use of the designation of PNE is that of India’s 1974 explosion. After conducting an explicit series of nuclear weapons test explosions in 1998, India admitted that its 1974 explosion had also been a nuclear weapon test. See Rebecca Johnson, *Unfinished Business: The Negotiation of the CTBT and the End of Nuclear Testing*, UN Institute for Disarmament Research (UNIDIR), Geneva, 2009, pp. 101, 322.

4 CTBTO Preparatory Commission, *The Treaty*, available at: www.ctbto.org/the-treaty/.

5 CTBTO Preparatory Commission, *Nuclear Testing 1945–Today*, available at: <https://www.ctbto.org/nuclear-testing/history-of-nuclear-testing/nuclear-testing-1945-today/>.

Nuclear test explosions have been conducted in the atmosphere, on the Earth's surface, underground, underwater and in space. All nuclear explosions have similar physical and biological effects. For practical purposes, it is useful to divide them into two categories: atmospheric tests (surface, space and underwater tests, usually and in this report termed "atmospheric" because they release radioactivity directly into air and water) and underground tests, where most radioactivity is retained underground, with long-term risks of groundwater contamination, although some underground tests have vented radioactivity directly into the atmosphere.⁶

Every phase of nuclear weapons production – development, deployment and use, beginning with mining of uranium – involves health and environmental hazards. This paper focuses on the nuclear test explosions conducted in Pacific islands and Australia; their global context; their health and environmental impact, especially but not limited to the health effects of ionizing radiation; the ongoing needs of military and civilian test workers and affected communities for recognition, care, monitoring and compensation; and the need for environmental monitoring, and clean-up and restoration of test sites where feasible. While the overwhelming hazard related to nuclear test explosions is the danger of war using the weapons that the test explosions have played an important role in developing and modernizing, the explosions themselves have left a legacy of ongoing environmental and health harm which requires continuing humanitarian attention even if it proves possible to eradicate nuclear weapons before they are again used in war.

There are only 90,000 of them out there. Who gives a damn?

– Former US Secretary of State Henry Kissinger, commenting on whether the United States should invoke its trustee power of eminent domain over the Trust Territory of the Pacific Islands to seize (rather than buy or lease) land for military purposes.*

The global context for Pacific nuclear test explosions

While nuclear-armed States occupying large continental land masses, including the United States, the Soviet Union, China and India (and some smaller nuclear-armed countries, such as Pakistan and North Korea), have conducted nuclear test explosions within their contiguous territory, it is notable that nuclear test programmes – which were claimed at the time to be without significant adverse health and environmental consequences – were often imposed on rural, minority, disenfranchised and colonized peoples. Though governments that have conducted

6 CTBTO Preparatory Commission, *Types of Nuclear Weapons Tests*, available at: www.ctbto.org/nuclear-testing/history-of-nuclear-testing/types-of-nuclear-weapons-tests/.

* Cited in Walter Hickel, *Who Owns America?*, Prentice-Hall, Englewood Cliffs, NJ, 1971, p. 208.

nuclear tests have been willing to accept harm to their own populations in the name of national security, they have been even more willing to do harm to others. For example, the total explosive yield of US nuclear test explosions in Pacific locations – Bikini and Enewetak Atolls in the Marshall Islands, Johnston Atoll in the central Pacific, and Kiritimati (Christmas Island, lent for the purpose by the British) – at 152.8 megatons (Mt), dwarfs the 1.05 Mt yield of atmospheric tests conducted in the continental US at the Nevada Test Site (land of the Western Shoshone people).⁷

Soviet nuclear tests were conducted in Kazakhstan and in the remote Arctic archipelago of Novaya Zemlya, home to the minority Nenetz people.⁸ Chinese nuclear tests were conducted at Lop Nur, in the Xinjiang Uygur Autonomous Region, home to the Uygur minority.⁹ The United Kingdom undertook its nuclear test explosions in Australia, most in the desert lands of the Maralinga Tjarutja people, and its larger thermonuclear test explosions in its then Pacific territory of the British Gilbert and Ellice Islands Colony.¹⁰ France conducted its nuclear tests in its then colony Algeria, until forced by a rising independence struggle to relocate to the home of the Maohi people in its colony of French Polynesia.¹¹

A secret operation not subject to laws ... no one was to know what was going on.

– W. Henson Moore, US Deputy Secretary of Energy, speaking in June 1989 about nuclear weapons production.*

Attitudes of those conducting the test explosions often differentiated between “civilized” personnel and “primitive” indigenous people, as shown by a British report on the “Danger Area” for the 1957 Grapple nuclear tests on Christmas Island. It set a maximum radiation dose limit for

“primitive” Pacific people exceeding that recommended internationally, and different from that for British personnel:

The [radiation] dosage at this ... level is about 15 times higher (for primitive peoples) than that which would be permitted by the International Commission on Radiological Protection [ICRP] [T]he levels recommended by the ICRP would necessarily be exceeded ... [but] only a

7 Frederick Warner and René J. C. Kirchmann (eds), Scientific Committee on Problems of the Environment (SCOPE) of the International Council for Science, *SCOPE 59. Nuclear Test Explosions: Environmental and Human Impacts*, John Wiley & Sons, New York, 1999, pp. 19–22.

8 CTBTO Preparatory Commission, *The Soviet Union's Nuclear Testing Programme*, available at: www.ctbto.org/nuclear-testing/the-effects-of-nuclear-testing/the-soviet-unionsnuclear-testing-programme/.

9 CTBTO Preparatory Commission, *China's Nuclear Testing Programme*, available at: www.ctbto.org/nuclear-testing/the-effects-of-nuclear-testing/chinas-nuclear-testing-programme/.

10 CTBTO Preparatory Commission, *The United Kingdom's Nuclear Testing Programme*, available at: www.ctbto.org/nuclear-testing/the-effects-of-nuclear-testing/the-united-kingdomsnuclear-testing-programme/.

11 CTBTO Preparatory Commission, *France's Nuclear Testing Programme*, available at: <https://www.ctbto.org/nuclear-testing/the-effects-of-nuclear-testing/frances-nuclear-testing-programme/>.

* Cited in Arjun Makhijani, “A Readiness to Harm: The Health Effects of Nuclear Weapons Complexes”, *Arms Control Today*, 1 July 2005, available at: www.armscontrol.org/print/1852.

very slight health hazard to people would arise, and that only to primitive people.¹²

Despite their relatively small numbers, Pacific island people have borne a disproportionate burden of the health and environmental costs of nuclear weapons development and testing. More than 315 atmospheric, underground and underwater nuclear tests were conducted in the region by Britain, France and the United States between 1946 and 1996 (see Table 1).

Nuclear weapons testing and development programmes have been massive industrial undertakings. In the United States alone, a quarter of a million military personnel participated in nuclear weapons tests, and more than half a million workers in the nuclear weapons development and production complex were exposed to radioactive and chemical hazards, often without proper information, training or protection.¹³ These largely secret operations were not subject to usual laws, accountability or standards of protection for people and the environment.¹⁴ At many test sites, local military and/or civilian personnel were engaged. As discussed further below, Australian personnel (in Australia) and Fijian and New Zealand personnel (at Malden and Christmas Island) performed more hazardous duties with less training, protection and radiation monitoring than their British counterparts.

There have been slow and incomplete developments towards accountability, care and compensation programmes for those harmed in the line of service building and testing nuclear weapons in some countries, such as the United States, Australia and Fiji. In the United States, as of March 2015, over \$2

The use and testing of nuclear weapons have demonstrated their devastating immediate, mid- and long-term effects. Nuclear testing in several parts of the world has left a legacy of serious health and environmental consequences. Radioactive contamination from these tests disproportionately affects women and children. It contaminated food supplies and continues to be measurable in the atmosphere to this day.

– Chair’s Summary, Vienna Conference on the Humanitarian Impacts of Nuclear Weapons, 8–9 December 2014.*

12 Air Vice-Marshal W. E. Oulton, “Danger Area”, Top Secret Paper, No. GRA/TS.1008/1/Air, 19 November 1956; minutes of meeting on 27 November 1956 marked Top Secret – UK Eyes Only, XY/181/024, cited in Nic Maclellan, “Grappling with the Bomb: Opposition to Pacific Nuclear Testing in the 1950s”, in Phillip Deery and Julie Kimber (eds), *Proceedings of the 14th Biennial Labour History Conference*, Australian Society for the Study of Labour History, Melbourne, 2015, p. 11.

13 Arjun Makhijani, “A Readiness to Harm: The Health Effects of Nuclear Weapons Complexes”, *Arms Control Today*, 1 July 2005, available at: www.armscontrol.org/act/2005_07-08/Makhijani.

14 *Ibid.*

* Europe Integration and Foreign Affairs Federal Ministry, Republic of Austria, Report and Summary of Findings of the Conference, presented at the Vienna Conference on the Humanitarian Impacts of Nuclear Weapons, 9 Dec 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_Chair_s_Summary.pdf.

Table 1. Nuclear explosions in the Pacific region, 1946–96

Area	Location	Testing State	Atmospheric (including surface)	Underground or underwater	Estimated total yield of atmospheric tests (Mt)
Australia	Monte Bello Islands	UK	3		0.046
French Polynesia	Emu Field	UK	2		0.018
	Maralinga	UK	7		0.116
	Moruroa	France	42	137	6.388
	Fangataufa	France	4, including “Canopus” on 24 August 1968, at 2.6 Mt, France’s largest ever explosion	10	3.742
Japan*	Hiroshima	US	1		0.015
Micronesia	Nagasaki	US	1		0.021
	Bikini	US	23, including “Castle Bravo” on 1 March 1954, at 15 Mt, the United States’ largest ever explosion		76.8
	Enewetak	US	42		31.7

Johnston (Kalama) Atoll	US	12	20.8
Malden Island	UK	3	1.22
Kiritimati (Christmas Island)	UK, US	9 (UK), 24 (US)	6.65 (UK), 23.25 (US)
Various (including near California)	US	2	0.102
Amchitka, Alaska	US	3, including “Cannikin” on 6 November 1971, at 5 Mt, the United States’ largest ever underground explosion	6.08
Northern Pacific			
USA			

* The nuclear bombings of Hiroshima and Nagasaki are officially classified by the United States as nuclear tests and are included for comparison. Discrepancies in reported numbers of nuclear tests explosions often relate to the fact that a number of “tests” involved more than one nuclear device. In all, there have been 2,055 nuclear tests involving 2,474 devices detonated.

Principal source: F. Warner and R. J. C. Kirschmann, above note 7, pp. 19–29.

billion has been awarded in compensation for specified illnesses recognized as related to radiation exposure from nuclear testing and uranium processing for nuclear weapons.¹⁵ At the time of writing, however, no testing nation has extended such compensation beyond its own citizens.

Tests conducted in the Pacific region

British nuclear tests in Australia

Australia's willing hosting of British atmospheric nuclear test explosions resulted in extensive radioactive fallout and health harm to workers and downwind communities, followed by inadequate clean-up and continuing contamination.

Between 1952 and 1957, the United Kingdom undertook 12 nuclear test explosions in Australia – three at the Monte Bello Islands in Western Australia, two at Emu Field, and seven at Maralinga, South Australia, up to 98 kilotons (kt) in size.¹⁶ In addition, about 600 “minor trials” were conducted at Emu and Maralinga. These involved predominantly chemical rather than nuclear explosions, and tested nuclear weapons components, dispersal of radioactive material, and the effects of impacts, fire and other accidents on nuclear weapons.¹⁷ The Australian

prime minister, Robert Menzies, immediately agreed to a British request to host nuclear test explosions, without consulting even cabinet colleagues,¹⁸ announcing: “It [an atomic weapon test] will be conducted in conditions which will ensure that

It wasn't long after that a black smoke came through. A strange black smoke, it was shiny and oily. A few hours later we all got crook, every one of us. We were all vomiting; we had diarrhoea, skin rashes and sore eyes. I had really sore eyes. They were so sore I couldn't open them for two or three weeks. Some of the older people, they died. They were too weak to survive all the sickness. The closest clinic was 400 miles away.

– Yami Lester, Yankunytjatjara elder and nuclear test survivor, referring to the “Black Mist” radioactive fallout that blanketed Wallatina Station, South Australia, after the nearby Totem 1 nuclear test on 15 October 1953.*

15 US Department of Justice, Office of Public Affairs, “Justice Department Surpasses \$2 Billion in Awards under the Radiation Exposure Compensation Act”, *Justice News*, 2 March 2015, available at: www.justice.gov/opa/pr/justice-department-surpasses-2-billion-awards-under-radiation-exposure-compensation-act.

16 Royal Commission into British Nuclear Tests in Australia, *The Report of the Royal Commission into British Nuclear Tests in Australia*, Australian Government Publishing Service, Canberra, 1985 (Royal Commission Report).

17 *Ibid.*, Vol. 2, para. 10.0.2, p. 395.

18 *Ibid.*, paras 2.1.34, 12.1.15, and Conclusion 1.

* Cited in International Campaign to Abolish Nuclear Weapons (ICAN) Australia, *Black Mist*, ICAN Australia, Melbourne, January 2014, p. 6.

there will be no danger whatever from radioactivity to the health of the people or animals in the Commonwealth.”¹⁹ His minister of supply, Howard Beale claimed: “England has the bomb and the knowhow; we have the open spaces, much technical skill and great willingness to help the Motherland.”²⁰

The major tests produced varying complex fallout patterns which contaminated the whole Australian continent, including cities. The Royal Commission found that the Australian Weapons Test Safety Committee failed in many of its tasks, and “at times it was deceitful and allowed unsafe firing to occur”.²¹ Official fallout measurements were incomplete and were concealed from the public and in many cases the government.²² The more than 600 “minor trials” dispersed 24.4 kg of plutonium in an estimated 50,000 fragments in an 18 km major plume, with soil contamination up to 100 km; 101 kg of beryllium; and 8,083 kg of powdered uranium.²³

Those at highest radiation exposure risk were local Aboriginal people and pastoralists, who were not systematically evacuated or even informed; and over 16,000 workers directly exposed to the tests.²⁴ Warning signs in English were usually incomprehensible to the Aborigines. Some were covered by local fallout (the “Black Mist” phenomenon).²⁵

Mindful of the unacceptable harm that victims of nuclear weapons explosions and nuclear testing have experienced and recognising that the rights and needs of victims have not been adequately addressed ...

– Austrian Pledge, Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 December 2014.*

It was not until the 1985 Royal Commission that much of the truth about the nuclear tests emerged, particularly the “minor trials”, which were not minor in their consequences and indeed were responsible for the bulk of persistent contamination. No Australian was present at any of these firings, and the Royal Commission described “persistent deception and paranoid secrecy”, with “British authorities embarked on a course of determined concealment of information

19 Adrian Tame and F. P. J. Robotham, *Maralinga: British A-bomb Australian Legacy*, Fontana/Collins, Melbourne, 1982, p. 66.

20 Royal Commission Report, above note 16, p. 15, para. 2.1.25.

21 *Ibid.*, Conclusion 47.

22 *Ibid.*, Conclusions 2, 6, 9, 27–32, 47, 48 and others.

23 *Ibid.*, Vol. 2, pp. 398–401.

24 Richard Gun, Jacqueline Parsons, Philip Ryan, Philip Crouch and Janet Hiller, *Australian Participants in British Nuclear Tests in Australia*, Vol. 2: *Mortality and Cancer Incidence*, Department of Veterans Affairs, Canberra, 2006, p. xvii.

25 Royal Commission Report, above note 16, Conclusion 97, and Vol. 1, para. 6.4.92, p. 194 and accompanying account pp. 174–194. “Black Mist” refers to a dark cloud of radioactive fallout resulting from the “Totem 1” test on 15 October 1953 which enveloped and irradiated Aboriginal people living in the Wallatina community and neighbouring homesteads. The Royal Commission concluded that the phenomenon had been real, despite earlier denials by various British and Australian officials.

* Available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abroestung/HINW14/HINW14_Austrian_Pledge.pdf.

from the Australian Government”.²⁶ The Royal Commission report was scathing about the appalling treatment of indigenous Australians during the tests. Aboriginal people were within and lived in prohibited zones during and for up to six years after tests, responsible officials demonstrated “ignorance, incompetence and cynicism” and failed to consider “their special vulnerability to radioactive fallout”, and decades of denial of access to traditional lands “contributed to their emotional, social and material distress and deprivation”.²⁷

Permissible radiation dose limits for whole-body penetrating radiation for workers from 1950 were 5 millisievert (mSv) per week,²⁸ compared with current occupational limits averaging 20 mSv per year and 1mSv per year for the public. Yet measures to comply with even the low standards of the time were frequently deficient. Veterans describe lack of protective clothing and equipment, soldiers sent into ground zero the same day after an explosion, and unpressurized aircraft flying through fallout clouds.²⁹ The Royal Commission described “departures, some serious and some minor, from compliance with the prescribed radiation protection policy and standards”.³⁰ Despite no more than 4% of veterans having radiation film-badge data available, external exposures of more than 400 mSv (following the first Monte Bello test) were documented.³¹ A belated government-funded mortality and cancer study of test veterans was concluded in 2006. Despite a “healthy worker effect” (evident in reduced non-cancer mortality rates) and major methodological limitations of a retrospective study with incomplete data fifty years after the nuclear tests began, it found statistically significant 23% higher rates of cancer and 18% higher cancer mortality between 1982 (twenty-nine years after the first test) and 2001 in veterans exposed to nuclear tests compared with the general population.³²

A hasty British clean-up in 1967 involving ploughing and disc-harrowing of plutonium-contaminated areas, and shallow burial of material from 180 hectares of heavily contaminated land (which was then declared “radiologically safe”), led to a 1968 agreement between the British and Australian governments releasing Britain from liability for any future claims related to its nuclear tests.³³ However, a 1984

26 *Ibid.*, para. 10.2.64, p. 414.

27 *Ibid.*, pp. 319, 323, Conclusions 90, 91, 117, 124–125, 140, 186. For a useful, more concise account, see Peter N. Grabosky, “A Toxic Legacy: British Nuclear Weapons Testing in Australia”, in Peter N. Grabosky, *Wayward Governance: Illegality and Its Control in the Public Sector*, Australian Institute of Criminology, Canberra, 1989.

28 Royal Commission Report, above note 16, Vol. 1, pp. 39–85, especially Table 4.5.1, p. 78.

29 The Royal Commission Report provides extensive documentation of eyewitness accounts from test participants. A number of books also provide detailed eyewitness accounts. Two excellent examples are Frank Walker, *Maralinga*, Hachette Australia, Sydney, 2014; Roger Cross and Avon Hudson, *Beyond Belief. The British Bomb Tests: Australia's Veterans Speak Out*, Wakefield Press, Kent Town, 2005.

30 Royal Commission Report, above note 16, “Conclusions and Recommendations”, Conclusion 52, p. 12.

31 *Ibid.*, Recommendation 52 and pp. 125–126.

32 R. Gun, J. Parsons, P. Ryan, P. Crouch and J. Hiller, above note 24, pp. v–vi, and further detail in report body. The study is summarized in Richard Gun, Jaqueline Parsons, Philip Crouch, Philip Ryan, and Janet Hiller, “Mortality and Cancer Incidence of Australian Participants in the British Nuclear Tests in Australia”, *Occupational and Environmental Medicine*, Vol. 62, No. 12, 2008.

33 Royal Commission Report, above note 16, pp. 539–540.

study by the Australian Radiation Laboratory demonstrated far more extensive and severe contamination than had previously been revealed, proving invalid the information and hazard assessment on which the 1968 agreement had been based.³⁴ The Commission recommended that “[a]ction should be commenced immediately to effect the clean-up of Maralinga and Emu ... so that they are fit for unrestricted habitation by the traditional Aboriginal owners as soon as practicable”, and that “[a]ll costs of any future clean-ups at Maralinga, Emu and Monte Bello Islands should be borne by the United Kingdom Government”.³⁵

Maralinga was declared safe in 2000 after a second limited A\$108 million clean-up funded by both governments, despite expert concerns and failure to implement the planned process of immobilizing plutonium fragments through *in situ* vitrification.³⁶ A region of 450 km² remains unsuitable for permanent occupation with boundary markers that will last fifty years, while half the plutonium will still be there in 24,400 years.³⁷ Less than 2% of areas contaminated at the Taranaki “minor trials” site meet the clean-up clearance criteria, and 84% of the plutonium contamination remains on the surface,³⁸ yet no further clean-up is planned. In 2011, a report obtained under Freedom of Information laws documented that only a decade on, the massive Taranaki burial trench and other burial pits have been subject to subsidence and erosion, requiring further remediation.³⁹

Unresolved issues many decades later include indigenous dispossession, remaining contamination, inadequate clean-up of test sites, and necessary compensation for Aboriginal people, ex-servicemen and civilians for their hazardous exposure, illness and loss.⁴⁰ In 2006, fifty-four years after the tests began, the government announced provision of free care for cancers to all test participants (military, public servant and civilian), and in 2010 military veterans were extended the same benefits as veterans involved in operational service or service recognized as “hazardous”.⁴¹ However, there is still no fully non-adversarial and readily available compensation for all test participants. Claimants have faced difficulties getting evidence – Maralinga hospital records are not available, and dosage records are grossly incomplete and, for reasons not

34 *Ibid.*, pp. 539–540, 549–552.

35 *Ibid.*, Recommendations 3 and 6 respectively.

36 Alan Parkinson, “Maralinga: The Clean-Up of a Nuclear Test Site”, *Medicine & Global Survival*, Vol. 7, No. 2, 2002; and Alan Parkinson, “The Maralinga Rehabilitation Project: Final Report”, *Medicine, Conflict and Survival*, Vol. 20, No. 1, 2004.

37 A. Parkinson, “Maralinga: The Clean-Up of a Nuclear Test Site”, above note 36, p. 80.

38 Alan Parkinson, *Maralinga: Australia's Nuclear Waste Cover-up*, ABC Books, Sydney, 2007, pp. 184, 203.

39 Philip Dorling, “Ten Years after the All-Clear, Maralinga is Still Toxic”, *Sydney Morning Herald*, 12 November 2011.

40 Tilman A. Ruff, *Australian Participants in British Nuclear Tests in Australia*, Submission to the Senate Standing Committee on Foreign Affairs, Defence and Trade, 27 October 2006, available at: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Foreign_Affairs_Defence_and_Trade/Completed%20inquiries/2004-07/nuclear_tests_bills_06/submissions/sublist.

41 Department of Veterans' Affairs, Australian Government, *British Nuclear Tests*, November 2014, available at: www.dva.gov.au/benefits-and-payments/british-nuclear-tests.

explained, have been removed from the National Archives.⁴² For survivors, time is running out. In 2013, it was estimated that only 2,000 of the over 16,000 Australian test participants were still alive.⁴³

While investigation of radioactive contamination from nuclear tests is important, the conduct of much research and monitoring of fallout from nuclear tests has been seriously deficient in ethical conduct, respect for human rights, transparency and accountability. An Australian example is an extensive programme of sampling of human bones for strontium-90. From 1957 to 1978, hospital pathology services were paid to remove sometimes quite sizeable samples of bone from about 22,000 bodies at autopsy, particularly of infants and children. In the 1950s and 1960s, samples were sent to the United Kingdom or United States (under “Project Sunshine”) for testing. Permission was not sought from families, who were not aware of the programme or the fact that many remains were kept without their knowledge or consent for decades.⁴⁴ There are disturbing reports of families being denied access to their dead children’s bodies or not being able to bury them after bones had been removed, of foetuses having been discarded, and of children having been buried anonymously.⁴⁵ This study was one of approximately 4,000 human radiation experiments conducted under the auspices of the US Atomic Energy Commission over the period 1944–74. Some involved significant health risk to subjects; in some experiments, patients were subjected to sufficiently high doses to develop acute radiation sickness, which was sometimes fatal.⁴⁶

British nuclear tests in the central Pacific

With mounting public concern over radioactive fallout, the Australian government in 1956 rejected hydrogen bomb trials for “safety reasons”. As a consequence, Britain had to take its hydrogen bomb development to its then colonized area of the central Pacific. Undertaken in considerable haste because of an impending agreement to suspend atmospheric nuclear testing, the UK detonated its first three hydrogen bombs at Malden Island in 1957. Despite being airbursts, these massive explosions contaminated Malden, and subsequent tests were moved to Christmas Island (known locally as Kiritimati Island, now part of the Republic of Kiribati), the largest coral island in the world. In both places, hundreds of British soldiers and sailors, 551 crew on two New Zealand frigates, and nearly 300 Fijian soldiers and sailors worked in close proximity, as well as local Gilbertese

42 F. Walker, above note 29, p. 246.

43 *Ibid.*, p. 274.

44 Australian Health Ethics Committee, National Health and Medical Research Council, *Ethical and Practical Issues Concerning Ashed Bones From the Commonwealth of Australia’s Strontium 90 Program, 1957–1978*, Advice of the Australian Health Ethics Committee to the Commonwealth Minister for Health and Ageing, Senator the Honourable Kay Patterson, Canberra, March 2002, pp. 4–6.

45 F. Walker, above note 29, pp. 218–230.

46 Advisory Committee on Human Radiation Experiments, *Final Report*, US Government Printing Office, Washington, DC, October 1995, p. 779.

plantation workers and their families. The latter were evacuated to Fanning Island or kept on ships during the tests.⁴⁷

British military documents reveal that one of the purposes of the tests was to study the effects of nuclear explosions on people – for example, “The Army must discover the detailed effects of various types of explosion on equipment, stores and men, with and without various types of protection.”⁴⁸ As in Australia, radiation exposures for service personnel in the Christmas and Malden Island tests were not systematically monitored, and personal protection was minimal. Personnel were assembled in the open at varying distances “backs to the blast” during each nuclear explosion.⁴⁹ “Clean-up” operations included disposing of thousands of seabirds maimed, blinded or killed by the nuclear explosions, as well as dumping drums of nuclear waste into the ocean. The massive 2.8 Mt Grapple Y explosion, on 28 April 1958, detonated lower than anticipated and sucked up large quantities of water and debris, accentuating the radioactive fallout, which was also exacerbated by a wind change that blew the main fallout cloud over Christmas Island. Personnel report being soaked by radioactive rainout after various blasts, with reports of hair loss and skin burns soon afterwards suggestive of acute radiation effects (and therefore high doses).⁵⁰

“Sniffer” aircraft that flew through mushroom clouds minutes after the explosions to collect samples were associated with high exposures to the crews, with a mean of over 50 mSv per person per test.⁵¹ Well-conducted studies among the New Zealand test veterans (who on average participated in three times as many nuclear tests as their British counterparts) demonstrated an excess of haematological cancers including leukaemia.⁵² Sophisticated genetic studies in a group of veterans, compared with ex-servicemen controls extremely well matched except for their absence of nuclear test service, showed highly statistically significant (three-fold) higher rates of chromosomal abnormalities, such as translocations, dicentric chromosomes and complex chromosomal rearrangements, among the test veterans.⁵³ It is salutary that such evidence of long-term genetic damage was evident

47 Losena Tubanavua-Salabula, Josua M. Namoce and Nic Maclellan (eds), *Kirisimasi: Fijian Troops at Britain's Christmas Island Nuclear Tests*, Pacific Concerns Resource Centre, Suva, 1999, p. 15.

48 *Ibid.*, p. 16.

49 Anthony Robbins, Arjun Makhijani and Katherine Yih, *Radioactive Heaven and Earth: The Health and Environmental Effects of Nuclear Weapons Testing In, On and Above the Earth*, Report of the IPPNW International Commission to Investigate the Health and Environmental Effects of Nuclear Weapons Production and Institute for Energy and Environmental Research, The Apex Press, New York, and Zed Books, London, 1991, pp. 126–128; Denys Blakeway and Sue Lloyd-Roberts, *Fields of Thunder: Testing Britain's Bomb*, Unwin Paperbacks, London, 1985, pp. 153–175.

50 L. Tubanavua-Salabula, J. M. Namoce and N. Maclellan (eds), above note 47, pp. 17–18, 60–61. Eyewitness accounts by British troops are documented in Denys Blakeway and Sue Lloyd-Roberts, *Fields of Thunder: Testing Britain's Bomb*, Unwin Paperbacks, London, 1985, pp. 156–157, 170–172.

51 A. Robbins, A. Makhijani and K. Yih, above note 49, p. 128.

52 Neil Pearce, Ian Prior, David Methven, Christine Culling, Stephen Marshall, Jackie Auld, Gail de Boer and Peter Bethwaite, “Follow-Up of New Zealand Participants in British Atmospheric Nuclear Weapons Tests in the Pacific”, *British Medical Journal*, Vol. 300, May 1990.

53 May Abdel Wahab, Elizabeth M. Nickless, Radhia Najjar-M'Kacher, Claude Parmentier, John V. Podd and R. E. Al Rowland, “Elevated Chromosome Translocation Frequencies in New Zealand Nuclear Test Veterans”, *Cytogenetic and Genome Research*, Vol. 121, June 2008.

fifty years after the veterans' exposure to nuclear tests. The New Zealand government in 1998 provided full war pensions for disabilities relating to their service for Christmas Island nuclear test veterans.⁵⁴

Fiji's Prime Minister Bainimarama announced on 30 January 2015 that the Fiji government would grant compensation to the surviving Fijian military personnel who witnessed the UK Grapple nuclear tests in 1957–58 (it was Bainimarama's father who led the first Fijian naval contingent sent to Christmas Island):

To this day, Britain has refused to pay compensation to anyone despite successive surveys that have shown veterans suffering from a range of terrible ailments – leukemia, other blood disorders, skin complaints and other conditions. And worse, these effects appear to have passed to some of their children, who were born with congenital deformities and a range of diseases. ...

You may ask: why is Fiji taking responsibility for something that is the fault of Britain? My answer is this: Too much time has passed. The ranks of these survivors are rapidly thinning. Too many men – our fellow Fijians – have gone to their graves without justice. Those who remain deserve justice and Fiji as a nation is determined for them to finally get it. ... There is a saying that justice delayed is justice denied. ...

You are living testament to our determination to never again allow our pristine Pacific environment to be violated by outside powers in such a destructive and terrible manner.

... [N]ot only the British but other colonial powers such as the United States and France, used the Pacific to test weapons of mass destruction that some of them would never have tested in their own backyards. ... As one, the Pacific nations stand and say: Never again. ...

It is a form of madness that we in the Pacific – the ocean that takes its name from the word “peace” – find incomprehensible. ... [W]e will always be on the side of those nations pressing for the dismantling of the world's nuclear arsenals. And to finally draw a line under the era that these men here today witnessed for themselves.⁵⁵

While it is regrettable that such recognition and compensation has come so long – almost sixty years – after the tests and not from the United Kingdom, which conducted the nuclear test explosions, the prime minister's emphasis on justice and the need for humane support for those put in harm's way is admirable. Notable too is his linkage of Pacific peoples' experience of the impacts of nuclear testing with informing and motivating rejection of nuclear weapons and action to eliminate them.

54 L. Tubanavua-Salabula, J. M. Namocce and N. Maclellan (eds), above note 47, pp. 68–69.

55 Voreqe Bainimarama, “Hon PM Bainimarama Speech at the First Pay-out to Veterans of Operation Grapple, Christmas Island”, Fijian Government, 30 January 2015, available at: www.fiji.gov.fj/Media-Center/Speeches/HON-PM-BAINIMARAMA-SPEECH-AT-THE-FIRST-PAY-OUT-TO-.aspx .

French nuclear tests in Polynesia

After four atmospheric tests at Reganne, Algeria, in 1960–61, France continued its nuclear testing programme there even after independence in 1962, with thirteen underground tests at Eker between 1961 and 1966 while its Pacific Testing Centre was being built. France then detonated forty-six atmospheric and 147 underground nuclear explosions in Polynesia. The first was detonated on 2 July 1966. Because of the presence, insistence and impatience of President de Gaulle, despite unfavourable winds to the west, an explosion on 11 September 1966 carried fallout directly towards populated areas.⁵⁶ In Apia, Samoa, 3,700 km downwind, as a result of rainout, total beta radioactivity increased from the usual level of around 200 megabecquerel (MBq) per km² to 370,000 MBq per km² after this test.⁵⁷

France refused US urging to sign the Partial Test Ban Treaty of 1963, which banned nuclear test explosions anywhere but underground; it continued atmospheric tests until 1974.⁵⁸ After a moratorium on nuclear tests from 1992 to 1995, France conducted a final six underground nuclear tests in 1995–96 in order to be able to continue developing new nuclear weapons without explosive testing, prior to signing the CTBT when it opened for signature on 24 September 1996.⁵⁹

France's nuclear test programme has been associated with an extreme level of secrecy about all its aspects and initially categorical denial of any health or environmental impacts. Intelligence agencies undertook sabotage of protest boats and infiltrated organizations opposed to nuclear tests. The French State went to the violent lengths of destroying with two mines the Greenpeace flagship *Rainbow Warrior*, on 7 July 1985, while it was moored in Auckland Harbour *en route* to Moruroa; the operation, which killed photographer Fernando Pereira, was reportedly sanctioned by President Mitterrand.⁶⁰ Two captured perpetrators returned to France after cursory detention, receiving military promotions, and one a military medal.⁶¹ Despite greater transparency since the end of the testing programme, much secrecy, for example about the extent of radioactive contamination, continues to this day.

Most of the early atmospheric tests were performed on the surface or on barges in the lagoon, resulting in high levels of radioactive fallout. Fallout repeatedly contaminated the neighbouring islands of Tureia and Mangareva, where the population totalling 1,100 were repeatedly evacuated to shelters.⁶²

56 Bengt Danielsson, "Poisoned Pacific: The Legacy of French Nuclear Testing", *Bulletin of the Atomic Scientists*, Vol. 46, No. 2, 1990.

57 A. Robbins, A. Makhijani and K. Yih, above note 49, p. 143.

58 Only China conducted atmospheric tests later, until 1980. SIPRI, above note 2, pp. 349–351.

59 Nic Maclellan and Jean Chesneau, *After Moruroa: France in the South Pacific*, Ocean Press, Melbourne, 1998, p. 102.

60 Marlise Simons, "Report Says Mitterrand Approved Sinking of Greenpeace Ship", *International New York Times*, 10 July 2005, available at: www.nytimes.com/2005/07/10/world/europe/report-says-mitterrand-approved-sinking-of-greenpeace-ship.html.

61 N. Maclellan and J. Chesneau, above note 59, p. 215.

62 A detailed review of the French Pacific nuclear tests including eyewitness accounts can be found in Commission d'Enquete sur les Consequences de Essais Nucleaire (CESCEN), *Les polynesiens et les essais nucleaires*, Deliberation No. 2005-072, Assemblée de la Polynesie Francaise. A useful report

Although tests were generally conducted when fallout would be carried eastwards towards South America, before circling the earth in lower and middle latitudes, sometimes fallout was carried westwards towards populated areas, neighbouring Pacific island countries, New Zealand and Australia. For example, following a test on 19 July 1974, average total beta activity in air increased from less than 0.3 to 1,460 mBq per m³ in the Tahitian capital, Papeete.⁶³

Extensive physical damage to the testing atolls occurred, with ongoing risks of collapse and leakage. Early tests were conducted under the atoll rim, until extensive fracturing and fissures in the coral and underlying basalt, subsidence and subterranean landslides necessitated use of the central lagoon. A 150 kt explosion beneath the reef at Moruroa was detonated on 25 July 1979, despite the device becoming stuck 800 metres down a 1,000-metre shaft. This caused a submarine landslide dislocating an estimated 1.1 million m³ of coral and rock, resulting in a 3-metre wave which swept over the southern part of Moruroa and through the Tuamotu Archipelago.⁶⁴ Reports from 2011 and 2013 by the French Delegate for Nuclear Safety and Radiation Protection for Defense Activities (Délégué à la Sûreté Nucléaire et à la Radioprotection pour les Activités Intéressant la Défense, DSND)⁶⁵ and Atomic Energy Commission (Commissariat à l'Énergie Atomique et aux Énergies Alternatives, CEA)⁶⁶ respectively acknowledge previous collapses of the outer wall of the atoll – carbonates, mostly limestone and dolomite atop a basalt base. The reports note that even though the tests have ended, this type of event could happen again, particularly in three areas on the northeast flank of Moruroa, where six of twenty-eight underground tests released radioactivity into the ocean through fissures in the basalt. The CEA envisaged a possible scenario of a landslide of some 670 million m³ of rock, creating a 15- to 20-metre tsunami wave, swamping the east of the atoll and threatening neighbouring inhabited islands.⁶⁷

Extensive radioactive, chemical and other waste on land, in lagoons and in the ocean remains both at the former testing sites and at a network of facilities and infrastructure supporting the massive nuclear weapons enterprise, including the military harbours in Papeete and Mangareva, and the huge staging base for the nuclear test programme at Hao Atoll, which became the largest military base in the South Pacific.⁶⁸ In 2006, the DSND revealed that large amounts of radioactive

compiling eyewitness accounts in English is Pieter de Vries and Han Seur, *Moruroa and Us: Polynesians' Experiences during Thirty Years of Nuclear Testing in the French Pacific*, Centre de Documentation et de Recherche sur la Paix et les Conflits, Lyon, 1997.

63 A. Robbins, A. Makhijani and K. Yih, above note 49, p. 143; Angelique Chrisafis, "French Nuclear Tests 'Showered Vast Area of Polynesia with Radioactivity'", *The Guardian*, 4 July 2013, available at: www.theguardian.com/world/2013/jul/03/french-nuclear-tests-polynesia-declassified.

64 A. Robbins, A. Makhijani and K. Yih, above note 49, p. 145.

65 DSND, *Surveillance géomecanique de Mururoa*, 25 January 2011, pp. 1–6.

66 Département de Suivi des Centres D'Experimentations Nucleaires, Ministère de la Defense et des Anciens Combattants, *Surveillance des atolls de Mururoa et de Fangataufa*, Vol. 2: *Bilan de l'évolution géomecanique des atolls de Mururoa et Rangiroa*, DO 312 CEA/DIF/DASE/LDG, 13 September 2013, pp. 5–53.

67 *Ibid.*, p. 19.

68 CESCEN, above note 62, p. 55.

material were simply dumped in the ocean – 2,656 tons in two sites at Moruroa, and 532 tons at Hao.⁶⁹ All the waste on atolls and in lagoons will become more difficult to monitor, recover or otherwise remediate, and will increasingly be released into the marine environment as a result of inevitably accelerating sea-level rise related to global warming; whilst declining physical integrity and storms and hurricanes of increasing intensity will mean that more waste is physically disrupted and dispersed.

Despite extremely limited access and sampling opportunities, previous independent investigations have documented the presence of short-lived isotopes including iodine-131, tritium and caesium-134 in coral interstices and in lagoon sediment and plankton, indicating rapid leakage of fission products over a time frame as short as days, not centuries or millennia as previously claimed by French authorities. In addition, more than 20 kg of plutonium (an extremely potent carcinogen if inhaled) is estimated to be scattered across the Moruroa and Fangataufa lagoons.⁷⁰

In 2006, the French Army published estimates of radiation exposures for six locations for the six tests that it states led to the highest fallout, though release of all available radiological data related to the Polynesian tests has still not occurred.⁷¹ The highest estimated effective doses after a single test were up to 10 mSv for infants in the Gambier Islands, and an average of 5.2 mSv for infants in Tahiti, 1,200 km away. Thyroid doses for infants of up to 80 mSv in the Gambiers and up to 49 mSv in Tahiti were estimated, again following single tests, from a total of forty-five atmospheric nuclear test explosions. By way of perspective, these doses are within the range of anticipated thyroid radiation exposure for children under 18 years, along with pregnant and lactating women, warranting administration of stable iodine to protect against uptake of radioactive iodine (this threshold varies between 10 milligray (mGy)⁷² and 50 mGy⁷³). Independent researchers conclude that the limited data available likely miss areas of high exposure and probably underestimate the doses received.⁷⁴

During the decades of the testing programme, protection, health monitoring and care of those at greatest risk were grossly neglected. Health data were inadequate – an incomplete cancer registry was only established twenty years after the tests began, and still failed to register congenital malformations. In 2008–09 the French government introduced the Morin Law, which established a

69 DSND, *Les essais nucleaires Francais dans le Pacifique: Mission du delegue a la Surete Nucleaire et a la Radioprotection pour les activites et Installations Interessant la Defense (DSND)*, May 2006.

70 A. Robbins, A. Makhijani and K. Yih, above note 49, pp. 143–149.

71 DSND, above note 69, pp. 8–12.

72 World Health Organization (WHO), *Guidelines for Iodine Prophylaxis Following Nuclear Accidents: Update 1999*, Geneva, 1999, p. 4.

73 Center for Drug Evaluation and Research (CDER), Food and Drug Administration, *Guidance: Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies*, US Department of Health and Human Services, Rockville, MD, December 2001, p. 6.

74 Florent de Vathaire, Vladimir Drozdovitch, Pauline Brindel, Frederique Rachedi, Jean-Louis Boissin, Joseph Sebbag, Larrys Shan, Frederique Bost-Bezeaud, Patrick Petitdidier, John Paoaafaita, Joseph Teuri, Jacques Iltis, Andre Bouville, Elisabeth Cardis, Catherine Hill and Francoise Doyon, “Thyroid Cancer Following Nuclear Tests in French Polynesia”, *British Journal of Cancer*, Vol. 103, No. 7, 2010, p. 1118.

mechanism for compensation for health impacts associated with service or employment at the nuclear tests sites. However, this law has been widely criticized as too restrictive in the access it provides to compensation for former test workers.⁷⁵ No medical follow-up was undertaken of the up to 13,000 Polynesians who worked in the test programme,⁷⁶ but evidence not only of health risk but also of health harm is clearly emerging. Recent data demonstrate that the incidence of acute myeloid leukaemia in French Polynesia is the highest in the world.⁷⁷ A clear gradient of thyroid cancer incidence associated with the level of radiation to the thyroid from the atmospheric nuclear tests has been demonstrated.⁷⁸ The International Agency for Research on Cancer's most recent report on global cancer rates that includes data for French Polynesia (covering the period 1998–2002) reveals that women in French Polynesia have the highest rates of thyroid cancer and myeloid leukaemia in the world⁷⁹ – both these cancers are among those most strongly associated with radiation exposure.

An important environmental and health impact of the nuclear test programme in French Polynesia and also in the Marshall Islands is outbreaks of ciguatera fish poisoning.⁸⁰ Ciguatera is the most common type of toxin poisoning by marine foods worldwide, and is found across many tropical regions. It is a disease of the food chain, with microscopic dinoflagellate plankton producing toxins which concentrate up the food chain, producing sometimes severe and protracted illness. Fish most likely to be toxic are larger carnivorous reef fish accessible to local people and prized for eating. The toxins cannot be identified by any simple means and survive cooking. Ciguatera plankton preferentially proliferate on dead or damaged coral surfaces. Outbreaks of ciguatera have been associated with many types of damage to coral reefs, including blasting, waste dumping, construction activities and nuclear test explosions. There is clear evidence of high levels of ciguatera in French Polynesia during the testing programme, extremely high levels of toxicity at Moruroa and in the military harbour at Mangareva, and extensive outbreaks associated with coral reef damage from construction, shipping and waste dumping associated with the nuclear test programme. For example, during construction of the staging base at Hao Atoll, a large outbreak affected almost half the population in

75 Campbell Cooney, "French Polynesia Rejects Nuclear Compensation", *Radio Australia*, 15 February 2012, available at: www.radioaustralia.net.au/international/radio/onairhighlights/french-polynesia-rejects-nuclear-compensation.

76 CESCEN, above note 62, p. 135.

77 Bernard Rio, Laurence Heuberger, Gilles Soubiran, Robert Zittoun and Jean-Pierre Marie, "Incidence Rates of Leukemia in French Polynesia", *International Journal of Cancer*, Vol. 131, 2012.

78 Constance Xhaard, Yan Ren, Enora Clero, Stephane Maillard, Pauline Brindel, Frederique Rachedi, Jean-Louis Boissin, Joseph Sebbag, Larrys Shan, Frederique Bost-Bezeaud, Patrick Petitdidier, Vladimir Drozdovitch, Françoise Doyon, Carole Rubino and Florent de Vathaire, "Differentiated Thyroid Carcinoma Risk Factors in French Polynesia", *Asian Pacific Journal of Cancer Prevention*, Vol. 15, No. 6, 2014; F. de Vathaire *et al.*, above note 74, pp. 1117–1119.

79 Christine Bouchardy, Simone Benhamou, Florent de Vathaire, Robin Schaffar and Elisabetta Rapiti, "Incidence Rates of Thyroid Cancer and Myeloid Leukaemia in French Polynesia", *International Journal of Cancer*, Vol. 128, 2011.

80 Tilman A. Ruff, "Ciguatera in the Pacific: A Link with Military Activities", *The Lancet*, Vol. 1, 1989.

1968.⁸¹ Ciguatera has important nutritional, social and economic implications, interfering with local inshore, largely subsistence, traditional fishing and increasing dependence on imported foods, with their exacerbation of risk factors for chronic disease.⁸²

US nuclear tests in the Marshall Islands

Following World War II, the Marshall Islands became part of the strategic Trust Territory of the Pacific Islands. In

My island is contaminated. I have three tumours in me, and I'm frightened. I don't know whether I should have children or not, because I don't know if I will have a child that is like a jellyfish baby. All I know is that I must travel the world and share our story of the bombs, so that we can stop them – before they get to you.

– Darlene Keju, Marshallese activist and educator (1951–1996).*

1946, after the detonation of two atomic bombs in the Bikini lagoon, the United States was given authority by the United Nations (UN) to administer the islands as a Strategic Trusteeship. Such trusteeships were intended to “promote the political, economic, social and educational advancement of the inhabitants of the trust territories and their progressive development towards self-government or independence”,⁸³ and “to encourage respect for human rights and fundamental freedoms”.⁸⁴ The United States was obligated as the

administering authority “to protect the land, resources, and health of Micronesia’s inhabitants”.⁸⁵ It is to the shame of all nations that two UN resolutions explicitly authorizing testing of nuclear weapons in the Marshalls were adopted in 1954⁸⁶ and 1956,⁸⁷ against the wishes of the Marshallese people.⁸⁸ These are the only instances in which the UN explicitly authorized nuclear weapons testing.

When the US military governor of the Marshall Islands approached the Bikini Atoll community in February 1946, requesting that they leave their island,

81 *Ibid.*, pp. 202–203; Raymond Bagnis, “Naissance et développement d’une flambee de ciguatera dans un atoll des Tuamotu”, *Revue des Corps de Sante*, Vol. 10, No. 6, 1969.

82 Tilman Ruff, “Bomb Tests Attack the Food Chain”, *Bulletin of the Atomic Scientists*, Vol. 46, No. 2, 1990.

83 UN Charter, 14 August 1941 (entered into force 24 October 1945), Art. 76(b).

84 *Ibid.*, Art. 76(c).

85 Human Rights Council, Report of the Special Rapporteur on the Implications for Human Rights of the Environmentally Sound Management and Disposal of Hazardous Substances and Wastes, Calin Georgescu, Addendum, Mission to the Marshall islands (27–30 March 2012) and the United States of America (24–27 April 2012), UN Doc. A/HRC/21/48/Add.1, 3 September 2012, p. 4, para. 10.

86 UN Trusteeship Res. 1082, 15 July 1954.

87 UN Trusteeship Res. 1493, 29 March 1956.

88 Human Rights Council, above note 85, p. 5.

* Cited in Nic Maclellan, “The Long Shadow of Bravo”, *Inside Story*, 24 February 2014, p. 20, available at: <http://insidestory.org.au/the-long-shadow-of-bravo>.

it was so that the nuclear testing programme could redirect atomic energy “for the good of mankind and to end all wars”.⁸⁹ Instead, what the Marshallese got was an influx of 42,000 US soldiers, causing displacement and dispossession; a massive programme of sixty-seven atmospheric nuclear explosions; vaporization of whole islands; and radioactive fallout repeatedly contaminating all their lands and seas. They also became uninformed and unconsenting subjects in harmful and unethical surveillance and research. The total explosive yield of the bombs detonated in the Marshalls was ninety-three times that of all US atmospheric tests conducted in Nevada;⁹⁰ the equivalent of 1.6 Hiroshima bombs each day over the twelve years of the tests (1946–58). What the Marshallese were left with as a result was a humanitarian disaster of fallout, displacement and human rights violations.⁹¹

The second US “Baker” test at Bikini in 1946 was an underwater explosion that threw up millions of tons of contaminated water and created vast radioactive mists. The US Joint Chiefs of Staff 1947 evaluation of the atomic bomb as a military weapon provides a chilling assessment of the extensive and indiscriminate nature of the radioactive fallout:

Of the survivors in the contaminated areas, some would be doomed by radiation sickness in hours, some in days, some in years. But, these areas, irregular in size and shape, as wind and topography might form them, would have no visible boundaries. No survivor could be certain he was not among the doomed, and so added to every terror of the moment, thousands would be stricken with the fear of death and the uncertainty of the time of its arrival.⁹²

Frequent claims of safety and lack of adverse health effects of nuclear tests common to all testing nations were starkly contradicted by military plans to use fallout as a weapon of terror, as the Joint Chiefs of Staff concluded in the same assessment:

In the face of ... the bomb’s demonstrated power to deliver death to tens of thousands, of primary military concern will be the bomb’s potentiality to break the will of nations and of peoples by the stimulation of man’s primordial fears, those of the unknown, the invisible, the mysterious. ... [E]ffective exploitation of the bomb’s psychological implications will take precedence over the application of the destructive and lethal effects ...⁹³

The “Castle Bravo” test of 1 March 1954 at Bikini, 1,000 times as powerful as the Hiroshima bomb, was the largest US nuclear test ever conducted.⁹⁴ Although the

89 Ruth Levy Guyer, “Radioactivity and Rights: Clashes at Bikini Atoll”, *American Journal of Public Health*, Vol. 91, No. 9, 2001.

90 F. Warner and R. J. C. Kirchmann (eds), above note 7, pp. 19–22.

91 Human Rights Council, above note 85, p. 6.

92 US Joint Chiefs of Staff Evaluation Board, *The Evaluation of the Atomic Bomb as a Military Weapon, Final Report*, 30 June 1947, Part IV, Section 7, para. 4, cited in Jonathan M. Weisgall, *Operation Crossroads: The Atomic Tests at Bikini Atoll*, Naval Institute Press, 1994, pp. 291–292. See also Matthew L. Wald, “Early Nuclear Plan Weighed Radioactive Sprays”, *New York Times*, 19 November 1992, available at: www.nytimes.com/1992/11/19/us/early-nuclear-plan-weighted-radioactive-sprays.html.

93 US Joint Chiefs of Staff Evaluation Board, above note 92, Part IV, Section 8, para. 6

94 F. Warner and R. J. C. Kirchmann (eds), above note 7, pp. 19–22.

military had learned many hours before the blast that winds were blowing towards inhabited islands, they chose not to evacuate those in the likely path, nor to delay the explosion. Unlike for other nuclear tests over the previous eight years, there was no warning given to the people on Rongelap and other downwind islands, nor were they moved. Two islands and part of a third were vaporized in the explosion, and fallout rained down on the food crops, water catchments, houses, land and bodies of children, women and men going about their daily activities. Children played with the unknown “snow” and rubbed it in their hair and on their skin.⁹⁵ The residents of Rongelap, Ailinginae and Utrik Atolls were finally evacuated two and a half days later, after having received near-lethal doses of radiation, the highest following a single test in the history of nuclear test explosions worldwide.⁹⁶

The 1955 US government assessment of “Bravo” fallout that all twenty-two populated atolls of the Marshalls received hazardous fallout was kept classified. As comprehensively documented in the *Rongelap Report*,⁹⁷ medical follow-up and interventions undertaken by US government agencies (principally the Brookhaven National Laboratory, Atomic Energy Commission and then Department of Energy) were aimed not primarily at serving patient care, but at monitoring and documenting long-term movement of radioisotopes in the environment, foodstuffs, and humans, and the health effects for people deliberately returned to a contaminated environment that was known to be hazardous. Research documenting the late effects of radiation, the secret Project 4.1, involved 539 children, women and men who did not give informed consent. Some received radioisotope injections including chromium-51, radioactive iodine, iron, zinc, carbon-14 and tritiated water, and underwent experimental surgery and procedures that were not carried out for their benefit. Many regularly underwent treatment that was dehumanizing, painful and traumatic.⁹⁸

Thyroid doses in Rongelap were estimated at several tens of gray (Gy) for an adult and more than 100 Gy for a 1-year-old infant⁹⁹ – more than 2,000 times higher than the accidental thyroid exposure of 50 mGy for a child, which warrants urgent protective administration of stable iodine.¹⁰⁰ The majority of those highly exposed as children have developed one or more thyroid diseases, including cancer.

In 1954, the Marshallese lodged a petition with the UN Trusteeship Council just weeks after the Bravo test, requesting that “all experiments with lethal weapons in this area be immediately ceased.”¹⁰¹ The petition stated:

95 Barbara Rose Johnston and Holly M. Barker, *Consequential Damages of Nuclear War: The Rongelap Report*, Left Coast Press, Walnut Creek, CA, 2008, pp. 95–100.

96 Steven L. Simon, André Bouville and Charles E. Land, “Fallout from Nuclear Weapons Tests and Cancer Risks”, *American Scientist*, Vol. 94, January–February 2006.

97 B. R. Johnston and H. M. Barker, above note 95, Part 3, pp. 109–161.

98 *Ibid.*, pp. 103–107, 109–117; Human Rights Council, above note 85, pp. 12–13.

99 S. L. Simon, A. Bouville and C. E. Land, above note 96, p. 52.

100 CDER, above note 73, p. 6.

101 Petition from the Marshallese People Concerning the Pacific Islands, “Complaint Regarding Explosions of Lethal Weapons within Our Home Islands to United Nations Trusteeship Council, 20 April 1954”, UN Trusteeship Council Doc. T/PET.10/28, 6 May 1954.

The Marshallese people are not only fearful of the danger to their persons from these deadly weapons in case of another miscalculation [referring to the detonation of the “Bravo” test explosion, when the winds carried fallout towards inhabited islands], but they are also concerned for the increasing number of people removed from their land. ... [L]and means a great deal to the Marshallese. It means more than just a place where you can plant your food crops and build your houses or a place where you can bury your dead. It is the very life of the people. Take away their land and their spirits go also.¹⁰²

The people of Bikini were later moved to Rongerik, where they endured periods of near-starvation, then Kwajalein, then Kili, where there was no lagoon or fishing grounds to support their traditional way of life. They were later moved back to Bikini and then, owing to higher than permissible radiation, to the Kili and Ejit islands of Majuro Atoll.¹⁰³ The people of Rongelap were returned to their atoll in 1957, but voluntarily evacuated in 1985 because of evidence of continuing excessive radiation levels unacceptable in other US jurisdictions. Soil on Rongelap contains about 430 times the amount of plutonium-239 and other transuranics than the northern hemisphere average. In the words of Rongelap Councilwoman Rokko Langanbelik: “We left Rongelap because we didn’t want our children to be poisoned like we are. Even if we were sad, we left. We left because we care about our children.”¹⁰⁴ Important evidence of continuing residual radioactivity at contaminated atolls, and the concentration of key radioisotopes in major food sources such as iron-55 in reef fish and cesium-137 in coconut crabs, trees and fruit, was not made available to the affected Marshallese for decades.¹⁰⁵

For almost sixty years, we have been displaced from our homeland, like a coconut floating in the sea.

– Lemyo Abon, nuclear test survivor, Rongelap Atoll, Marshall Islands.*

In 1986 the governments of the Marshall Islands and the United States adopted a Compact of Free Association, a program of US aid in return for continued US military exploitation. As part of the negotiations, the two governments agreed to establish a Nuclear Claims Tribunal to settle claims for personal injury and property damage resulting from the nuclear tests. In exchange for dropping \$5 billion worth of civil claims before US courts, a \$150 million trust fund was established to fund payouts for health impacts and property damage assessed by the tribunal judges. The Marshall Islands had to give up all claims “past, present and future ... [that are] based on, arise out of or are in any way related to the Nuclear Testing Program, and which are against the

102 *Ibid.*

103 Human Rights Council, above note 85, pp. 4–5.

104 B. R. Johnston and H. M. Barker, above note 95, p.160.

105 *Ibid.*, pp. 116–125.

* Cited in N. Maclellan, below note 106, p. 1.

United States”.¹⁰⁶ However the Marshallese right to return to the US Congress to expand the pool of funds was agreed, should “circumstances change” or new information come to light.

For property damage, only \$4 million of awards totalling \$2.3 billion have been paid. While the situation is somewhat better for health impact compensation, \$23 million out of 2,000 awards totalling \$96 million is still owing, and awards for clean-up of residual contamination amount to \$531 million in excess of those allocated by the US government. No payments have been made since 2008; currently the Nuclear Claims Fund contains less than \$50,000, and new claims have been suspended. Since 2001, the Marshall Islands have requested that the US Congress fully fund the Nuclear Claims Tribunal, arguing that circumstances had changed substantially as a result of declassification of information in 1996 and new data revealing a far greater extent of contamination and health harm than previously acknowledged. Of course, health impacts will continue to appear both for those exposed to the bombs and those living in contaminated environments. The US National Cancer Institute estimated in 2004 that about half the extra cancers that would occur as a result of fallout in the Marshalls were still to come.¹⁰⁷ Noting that the Nuclear Claims Tribunal was grossly underfunded, the US President’s Cancer Panel has called for the US government to honour and make payments according to the judgment of the tribunal.¹⁰⁸

Even in this case, where persistent pursuit of justice by the Marshallese and their supporters has led to welcome and overdue recognition and some compensation has been allocated, it is still too little and too late. The United States, like every other testing nation, is seeking to avoid its responsibility for the catastrophic, long-persisting fallout of its nuclear explosions, and the need to make amends.

The effects of radiation have been exacerbated by near-irreversible environmental contamination, leading to the loss of livelihoods and lands. Moreover, many people continue to experience indefinite displacement.

– UN Special Rapporteur Calin Georgescu on the legacy of nuclear testing in the Marshall Islands.*

Some northern atolls have been declared off-limits for the next 24,000 years, and some severely affected islands and hotspots are too severely contaminated ever to be effectively cleaned up.¹⁰⁹ Nor has the risk of further contamination ended with the nuclear tests. The UN Special Rapporteur expressed particular concern about the radioactive dump site on Runit Island, in view of evidence of lack of structural integrity. The Special Rapporteur noted that his

106 Nic Maclellan, “The Long Shadow of Bravo”, *Inside Story*, 24 February 2014, available at: <http://insidestory.org.au/the-long-shadow-of-bravo>; Human Rights Council, above note 85, pp. 10–15.

107 Human Rights Council, above note 85, p. 7.

108 *Ibid.*, p. 12.

109 A. Robbins, A. Makhijani and K. Yih, above note 49, pp. 83, 85.

* Human Rights Council, above note 85, p. 6.

2012 visit was the first by a UN official in sixty-five years.¹¹⁰ The United States has generally ignored his landmark recommendations. Especially given the historical role of the UN in designating the Marshall Islands as a strategic trust territory, there are at least moral and humanitarian obligations for the international community, through the UN, to assist in the care, compensation and clean-up owed to the environment, health and well-being of the Marshallese people.

Foreign exploitation of the Marshall Islands for nuclear military purposes continues in the use of Kwajalein (with the world's largest lagoon) and Aur Atolls as part of the Ronald Reagan Ballistic Missile Defense Test Site.¹¹¹ Used for missile, missile defence and space research, Kwajalein serves as a launch site for missiles, and its lagoon serves as a splashdown site for long-range ballistic missiles intended for delivery of nuclear weapons, launched from Vandenberg Air Force Base in California. The US military occupies eleven of Kwajalein's islands, while 10,000 Marshallese, many living in poverty, are crowded into 32 hectares on Ebeye Island, one of the most crowded places in the Pacific.¹¹²

The bitter experience and lingering legacy of nuclear explosions, the conviction born of the deep shared understanding, in the words of Marshallese foreign minister Tony de Brum, that "these weapons are the enemy of all humankind",¹¹³ has inspired courageous legal action. In 2014 the Republic of the Marshall Islands (RMI) brought lawsuits against all nine nuclear-armed States before the International Court of Justice (ICJ), and additionally against the United States in the US Federal District Court in San Francisco, alleging that all are in breach of their Non-Proliferation Treaty and/or customary international law obligations to achieve nuclear disarmament.¹¹⁴ In February 2015 a US federal judge dismissed the US case, ruling that the case was speculative and that the Marshall Islands lacked standing to bring the suit. The RMI appealed this decision and at time of writing this appeal is still before the US court. The cases brought by the RMI in the ICJ seek a declaration by the Court that each of the nuclear-armed States, by failing to pursue and bring to a conclusion negotiations leading to nuclear disarmament, while maintaining, building up and/or modernizing their nuclear arsenals, is in breach of their international obligations,

110 Presentation by Special Rapporteur Calin Georgescu with Women's International League for Peace and Freedom and International Campaign to Abolish Nuclear Weapons, UN Human Rights Council Side Event, Geneva, 14 September 2012.

111 Ronald Reagan Ballistic Missile Defense Test Site official website, available at: www.smdc.army.mil/RTS.html.

112 Dan Zak, "On the Island of Ebeye, a Nuclear Past and a Ballistic Present", *Pulitzer Center on Crisis Reporting*, 18 December 2015, available at: <http://pulitzercenter.org/reporting/island-ebeye-nuclear-past-and-ballistic-present>.

113 Tony de Brum, speech delivered to the Marshall Islands Parliament, 23 February 2015, available at: www.wagingpeace.org/speech-delivered-to-the-marshall-islands-parliament/.

114 ICJ, *Obligations concerning Negotiations relating to Cessation of the Nuclear Arms Race and to Nuclear Disarmament (Marshall Islands v. the United States, Russia, the United Kingdom, France, China, India, Israel, Pakistan and North Korea)*, applications submitted 24 April 2014; United States Court of Appeals, *Republic of the Marshall Islands v. United States*, Case No. 14-01885 (NDCA), dismissed, USCA No. 15-15636, 9th Circuit (appeal filed 31 July 2015). More information on the cases and related documents available at: www.nuclearzero.org.

and seeks orders for them to comply within one year. Among the nuclear-armed States, only India, Pakistan and the United Kingdom accept compulsory jurisdiction of the ICJ. They have raised objections to the cases proceeding. Only India and the United Kingdom have chosen to appear at the initial Court hearings that will take place in March 2016 to determine on jurisdiction and admissibility and whether the cases should proceed to consideration on their merits.¹¹⁵

Lessons and implications of Pacific nuclear test explosions

A number of common features and lessons emerge from this review of the humanitarian impacts – some short-term, some long-term – of nuclear test explosions in the Pacific region. An intrinsic structural conflict of interest was inevitable and manifest in every testing programme, where the military organizations prosecuting the tests were also in charge of monitoring and protection of the environment and downwind populations. The overall priority was nuclear weapons development, whatever the cost. Putting agencies whose mission is nuclear weapons development in charge of caring for those harmed by their core business is truly like putting the fox in charge of the henhouse.

In the headlong rush to develop, test and deploy the world's most destructive weapons, safety, environmental and health considerations were often irresponsibly sidelined, even by the available knowledge and standards of the time. In general in relation to radiation health effects, the more we learn, the greater the health harm that is associated with a given dose of radiation. From 1950 to 1991, the maximum recommended whole-body radiation annual dose limits for radiation industry workers declined from approximately 250 to 20 mSv.¹¹⁶ States developing nuclear weapons in the name of national security harmed the health and security of the very citizens they claimed to be seeking to protect. Often the willingness to do harm was most evident in relation to minority, indigenous or colonized people. Disturbing elements of radioactive discrimination are in evidence, and may not lie solely in the past. For example, concerns have been raised that a Royal Commission into the nuclear industry established by the South Australian government in 2015 may have an objective of promoting the use of “sacrifice zones” – sites for further nuclear activities, including storage of radioactive waste – on indigenous lands contaminated by fallout from British nuclear tests.¹¹⁷

115 For updated information on developments and court documents, see Nuclear Zero, “Nuclear Zero Lawsuits”, available at: www.nuclearzero.org.

116 See Royal Commission Report, above note 16, p. 78, for a summary of the evolution of radiation protection standards during the period of atmospheric nuclear test explosions; and Anthony D. Wrixon, “New ICRP Recommendations”, *Journal of Radiological Protection*, Vol. 28, 2008, regarding the most recent recommendations of the ICRP.

117 These concerns are documented in detail in a number of submissions by Aboriginal organizations to the Nuclear Fuel Cycle Royal Commission, particularly Native Title Representative 10-9-2015, Yankunytjatjara Native Title Aboriginal Corporation 10-8-2015, and Maralinga Tjarutja, Yalata

Health aspects

Measurement of radiation was generally limited to external gamma radiation. The assumption that beta radiation was proportional to gamma radiation was found to be unwarranted in the early 1950s, yet beta radiation, induced radioactivity and internal exposures especially from alpha emitters such as plutonium isotopes were typically not measured adequately if at all.¹¹⁸ Many test personnel had little or no effective monitoring of their radiation exposure. In a number of settings, radiation doses received by test personnel and downwind communities have been significantly underestimated. Nevertheless, in virtually every setting where epidemiological studies of adequate methodology and power were undertaken, sometimes decades after the relevant events, evidence of health harm to test personnel and downwind communities is unequivocal. However, the sound epidemiological principle that absence of evidence of effects does not constitute evidence of absence of effect applies all too often to the many settings where inadequate data have been gathered. In some settings, despite overwhelming evidence, implausible conclusions have been drawn. For example, the authors of the large study of Australian nuclear test participants concluded that the significant increases in cancer incidence and mortality they observed “do not appear to have been caused by exposure to radiation”.¹¹⁹ Underestimation of radiation exposures and/or radiation effects is a scientifically far more plausible reason for the lack of observed link between cancers and radiation doses estimated, which in any case does not invalidate in any way the observed cancer excess.

The dereliction of responsibility to monitor the effects of profoundly hazardous activities, analyse and disseminate data, and respond appropriately in relation to nuclear testing finds a direct corollary in the wilful neglect by many governments and international institutions of the humanitarian impacts of nuclear war. It is extraordinary that it was not until sixty-eight years after the nuclear bombings of Hiroshima and Nagasaki that the first of three intergovernmental conferences dedicated to the humanitarian effects of nuclear weapons was held, in Oslo in 2013.¹²⁰ Appropriately, each of the three conferences included testimony of nuclear test survivors; the voices of nuclear test survivors were most prominent at the third such conference, held in Vienna in December 2014.¹²¹

The health effects of nuclear weapons development and testing are not only connected to radiation. They include a wide range of other physical and chemical hazards related to the vast industrial infrastructure underpinning the nuclear

Community Inc 14-08-2015. All are available at: <http://nuclearrc.sa.gov.au/submissions/?search=Submissions>.

118 A. Robbins, A. Makhijani and K. Yih, above note 49, pp. 10–15.

119 R. Gun, J. Parsons, P. Ryan, P. Crouch, and J. Hiller, above note 24, p. vi.

120 Documents and presentations from the Oslo Conference are available at: www.regjeringen.no/en/topics/foreign-affairs/humanitarian-efforts/humimpact_2013/id708603/.

121 Documents and presentations from the Vienna Conference are available at: www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons-and-nuclear-terrorism/vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/.

enterprise around the globe. The social impacts of disempowerment; victimization; abuse of basic human rights; disruption of traditional communities, ways of life and means of sustenance; displacement; justified concern about unpredictable long-term health impacts extending to future generations; and concern about transmitting genetic mutations to one's children can all have profound and long-term direct and indirect physical and mental health consequences. Especially among the indigenous and traditional communities disproportionately impacted, these effects are not only individual and family, but extend to kin, communities and peoples. The association of outbreaks of ciguatera fish poisoning with nuclear test and other military and war-related damage to Micronesian and Polynesian coral reefs is another example of a health consequence unrelated to radioactivity.

Radiation health effects

The health impacts of ionizing radiation are central to the health consequences of nuclear explosions. Ionizing radiation is so named because its various types share the quality of being of sufficient energy to alter the structure of atoms (see [Table 2¹²²](#)). It poses risks of acute illness (in high doses) and at any dose, long-term genetic mutations and increased risk of most cancers and a variety of chronic diseases, including cardiovascular and respiratory disease. Ionizing radiation has a high propensity to damage large, complex molecules like DNA, which are crucial to life, because its energy is delivered in large packets. A dose of radiation acutely lethal to a human being can contain no more energy than the heat in a sip of hot coffee.¹²³ The more we learn about the health effects of ionizing radiation, the greater the effects evident for a given radiation dose. Arguably the most authoritative and rigorous periodic assessments of radiation health risks are the Biological Effects of Ionizing Radiation (BEIR) reports produced by the US National Academy of Sciences. However, substantial new evidence has accumulated since the most recent report, BEIR VII, produced in 2006.¹²⁴ BEIR VII estimates that the overall increase in risk of solid cancer incidence across a population is about one in 10,000 (and about half that for

122 And see, for example, Centers for Disease Control and Prevention, "Ionising Radiation", available at: www.cdc.gov/nceh/radiation/ionizing_radiation.html; A. D. Wrixon, above note 116, pp. 161–168.

123 The average global background level of radiation we are all exposed to from inhalation of radon gas produced by the decay of uranium in the Earth's crust, cosmic sources, soil and rocks, and ingestion, is about 3 mSv per year. Acute exposures over 100 mSv produce effects on chromosomes measurable in laboratory testing. Acute symptoms are increasingly likely at acute doses above a few hundred mSv; without intensive medical care, doses around 4 Sv (4000 mSv) will be fatal for many of those exposed. All levels of radiation exposure are associated with increased risks of long-term genetic damage and increases in cancer, proportional to the dose. There is no dose of radiation below which there is no incremental health risk. A chest X-ray typically involves a dose of 0.02 mSv; a CT scan typically involves doses of 3–12 mSv or more. For non-medical exposures, the maximum permitted dose limit recommended by the ICRP and most national radiation protection agencies for any additional non-medical exposures for members of the public is 1 mSv per year; for nuclear industry workers the recommend maximum occupational dose limit is an average of 20 mSv per year.

124 US National Academy of Sciences, Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation, *Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII, Phase 2*, Washington, DC, 2006.

Table 2. Common types of ionizing radiation

Ionizing radiation type		Radiation weighting factor (biological effect, compared with photons)*	Stopped by
Electromagnetic radiation (photons)	Gamma rays (similar to X-rays)	1	Penetrating (providing the basis for the use of X-rays for imaging), stopped by dense materials (e.g. lead or concrete), not by clothing
Subatomic particles	Alpha (helium nucleus) and other heavy fission fragments like nuclei	20	Outer layer of skin, a sheet of paper (harm derives from internal exposure, e.g. when inhaled or ingested)
	Beta (electron)	1	A layer of clothing; some can penetrate to basal layer of human skin
	Neutron	5–20 depending on neutron energy	Penetrating; concrete or earth most effective protection

* A weighting factor of 1 means that for a given amount of radiation energy, the particular type of radiation causes the same amount of biological damage as X- or gamma rays; a factor of 2 means that type of radiation is twice as biologically damaging as gamma rays of the same energy, and so on.

cancer deaths) for each 1 mSv of additional radiation exposure. The increased risk for leukaemia is about 10% of this.¹²⁵

The long-term follow-up studies of Hiroshima and Nagasaki *hibakusha* (nuclear bomb survivors) that have provided the bulk of historic data on which radiation health risks have been estimated – and based on which the recommended dose limits for nuclear industry workers and the public have been set – have been shown to have a range of methodological flaws which lead to underestimation of radiation risk.¹²⁶ Powerful new epidemiological studies have provided estimates both more accurate and demonstrating greater risk than previously estimated. For example, a greater than doubling of leukaemia risk has been identified for children living within 5 km of a normally operating nuclear power plant.¹²⁷ A large study of cancer risk after computerized tomography (CT) scans in young people, involving more than ten times the number of people exposed and four times the total radiation dose than the Japanese survivor data for low doses of radiation (less than 100 mSv), has demonstrated a 24% increase in cancer in the decade following one CT scan delivering an average effective dose of only 4.5 mSv, and 16% greater for each additional scan.¹²⁸ Cancers occurred as early as two years after exposure. While new cancers will continue to occur through the life of exposed individuals, the risk for leukaemia related to CT radiation was similar to that among *hibakusha* over several decades, and the risk of solid cancer over the first decade alone in the more powerful CT study was 3.5 to nine times higher than in the *hibakusha* studies to date. New studies of large numbers of nuclear industry workers demonstrate greater than previously estimated risks for leukaemia¹²⁹ and cancer.¹³⁰

These large and powerful studies show a risk even at very low dose rates (a mean of 1.1 mGy per year) and doses well within recommended occupational limits. They do not support a reduction of risk for the same total dose if the dose

125 *Ibid.*, Executive Summary.

126 For example, see David Richardson, Steve Wing and Stephen R. Cole, “Missing Doses in the Lifespan Study of Japanese Atomic Bomb Survivors”, *American Journal of Epidemiology*, Vol. 177, No. 6, 2013; John Mathews, Anna Forsythe, Zoe Brady, Martin Butler, Stacy Goergen, Graham Byrnes, Graham Giles, Anthony Wallace, Philip Anderson, Tenniel Guiver, Paul McGale, Timothy Cain, James Dowty, Adrian Bickerstaffe and Sarah Darby, “Cancer Risk in 680,000 People Exposed to Computed Tomography Scans in Childhood or Adolescence: Data Linkage Study of 11 Million Australians”, *British Medical Journal*, Vol. 346, May 2013.

127 Peter Kaatsch, Claudia Spix, Renate Schulze-Rath, Sven Schmiedel and Maria Blettner, “Leukaemia in Young Children Living in the Vicinity of German Nuclear Power Plants”, *International Journal of Cancer*, Vol. 1220, 2008.

128 J. Mathews *et al.*, above note 126.

129 Klervi Leuraud, David Richardson, Elisabeth Cardis, Robert Daniels, Michael Gillies, Jacqueline O’Hagan, Ghassan Hamra, Richard Haylock, Dominique Laurier, Monika Moissonnier, Mary Schubauer-Berrigan, Isabelle Thierry-Chef and Ausrele Kesminiene, “Ionising Radiation and Risk of Death from Leukemia and Lymphoma in Radiation-Monitored Workers (INWORKS): An International Cohort Study”, *Lancet Haematology*, Vol. 1, 2015.

130 David Richardson, Elisabeth Cardis, Robert Daniels, Michael Gillies, Jacqueline O’Hagan, Ghassan Hamra, Richard Haylock, Dominique Laurier, Klervi Leuraud, Monika Moissonnier, Mary Schubauer-Berrigan, Isabelle Thierry-Chef and Ausrele Kesminiene, “Risk from Occupational Exposure to Ionizing Radiation: Retrospective Cohort Study of Workers in France, the United Kingdom, and the United States (INWORKS)”, *British Medical Journal*, Vol. 351, 2015.

is delivered over a longer time (low radiation dose rates compared with high dose rates), as assumed by BEIR VII and a number of radiation protection bodies such as the ICRP.¹³¹

Vulnerability to radiation risks differs substantially between different people. Females and especially children are most susceptible to the effects of ionizing radiation. In the BEIR VII assessment, following uniform whole-body exposure to the same level of radiation, women are 52% more likely to develop cancer than men and 38% more likely to die of cancer than males. The difference is greatest at younger ages of exposure – for the same exposures occurring between 0 and 5 years of age, girls are 86% more likely to develop cancer than boys.¹³²

Children are substantially more sensitive to radiation damage than adults – exposures in infancy (below 1 year of age) for boys are 3.7 times more likely to lead to cancer than the same exposure for a 30-year-old man; for infant girls compared with 30-year-old women, that risk is 4.5 times greater.¹³³

The combined effects of exposure during early childhood and greater female susceptibility are dramatic. For intake of fluid containing the radioactive isotope strontium-90, infant girls exposed to the same level of contamination are assessed to have a 20.6-fold higher risk of breast cancer than women aged 30 years. For the same level of contamination of ingested fluid with iodine-131, the risk for infant girls compared with 30-year-old women is 32.8 times higher. This means that for the same level of radioactive contamination, the cumulative breast or thyroid cancer risk by ingestion over the first five years of life for girls is greater than that accumulated by women over their entire adult lives.¹³⁴

These differential vulnerabilities are obscured by averaging of risks across populations. The greater vulnerability of children to radiation extends to many other environmental hazards, such as toxic chemicals, also an issue at a number of nuclear test sites. The World Health Organization (WHO) has estimated that despite children under 5 years accounting for about 10% of the world's population, children bear over 40% of the global burden of disease attributed to environmental risk factors.¹³⁵ Protection of the most vulnerable – including against the adverse effects of radiation – is a fundamental humanitarian and governance imperative.

For indigenous people such as Marshall Islanders, Maohi islanders in French Polynesia and indigenous Australians, it has been shown that traditional lifestyles, in close physical contact with a natural environment contaminated by nuclear testing, sustained by gathering and hunting of traditional local foods and living in housing made of local materials, are associated with increased radiation

131 A. D. Wrixon, above note 116, pp. 161–168.

132 Arjun Makhijani, Brice Smith and Michael C. Thorne, *Science for the Vulnerable: Setting Radiation and Multiple Exposure Environmental Health Standards to Protect Those Most at Risk*, Institute for Energy and Environmental Research, Takoma Park, MD, 19 October 2006, pp. 35–40.

133 National Academy of Sciences, above note 124, pp. 470–499.

134 A. Makhijani, B. Smith and M. C. Thorne, above note 132, p. 40.

135 WHO, *Healthy Environments for Children: Initiating an Alliance for Action*, WHO/SDE/PHE/02.06, Geneva, 2002, p. 3, available at: http://whqlibdoc.who.int/hq/2002/WHO_SDE_PHE_02.06.pdf.

exposures. For example, for a 10-year-old indigenous Australian child living a traditional lifestyle near a test site, living on the ground with high dust exposure and eating local kangaroo, estimated effective annual doses range up to 470 mSv,¹³⁶ compared with less than 1 mGy whole-body external radiation doses estimated for local population centres that were monitored during some of the tests.¹³⁷ This heightened vulnerability to radiation exposure as a result of traditional indigenous lifestyles and food sources adds further layers of jeopardy, dispossession and pressures on cultural well-being to the discrimination of indigenous people being disproportionately put in the frontline of harm's way by nuclear testing.

It will be very interesting to go back and get good environmental data, how many per square mile, what isotopes are involved and a sample of food changes in many humans through their urines, so as to get a measure of the human uptake when people live in a contaminated environment. Now, data of this type has never been available. While it is true that these people do not live, I would say, the way Westerners do, civilized people, it is nevertheless also true that these people are more like us than mice.

– Dr Merrill Eisenbud, US Atomic Energy Commission, regarding the people of the northern Marshall Islands.*

The radioisotopes produced by nuclear explosions which are most important in relation to human health are summarized in [Table 3](#). The long persistence of a number of important radioisotopes, the impossibility of recovering or containing much of those already dispersed by nuclear tests, and the potential for future leakage and dispersal from test sites, including underground ones, means that their adverse health effects will continue for future generations across hundreds of thousands of years.

Global health impacts

Even though the largest population radiation doses associated with above-ground nuclear test explosions are borne by people living within hundreds of kilometres downwind, the largest collective radiation dose is borne not by members of downwind communities exposed to the highest individual doses, but globally by

136 United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), *Sources and Effects of Ionizing Radiation: UNSCEAR 2008 Report to the General Assembly with Scientific Annexes*, Vol. 1, UN, New York, 2010, pp. 352–353.

137 Steven Simon and Andre Bouville, “Radiation Doses to Local Populations Near Nuclear Weapons Test Sites Worldwide”, *Health Physics*, Vol. 85, No. 5, 2002.

* US Atomic Energy Commission. Transcript of the 54th Meeting of the Advisory Committee on Biology and Medicine, 13–14 January 1956, pp. 232–233.

Table 3. Radioactive isotopes from nuclear test explosions most significant in human health impact

Radioisotope	Main type(s) of radioactivity emitted	Half-life (days; years)	Health significance and predominant means of exposure
Iodine-131	Beta, gamma	8 d	Ingestion, concentrated up food chain (especially milk); concentrated in thyroid gland; causes thyroid disease including cancer – children most vulnerable
Cesium-137	Beta, gamma	30 y	External and ingestion, body handles like potassium, the main positively charged ion inside cells; bio-concentrated; associated with many cancers; dominant cause of radiation exposure to world's people from atmospheric nuclear test explosions to date
Strontium-90	Beta	28 y	Ingestion, handled by the body like calcium, concentrates in bones and teeth; bioconcentrated; retained; causes leukaemia, bone cancer
Plutonium-239	Alpha	24,400 y	Inhalation, retained; internal hazard; causes lung cancer, especially when inhaled
Carbon-14	Beta	5,730 y	Ingestion, an activation product created by atmospheric nuclear tests from transmutation of atmospheric nitrogen by neutron bombardment; responsible for 85% of radiation dose to world population from atmospheric nuclear weapons explosions over thousands of years to come
Zirconium-95	Beta	64 d	External
Ruthenium-106	Beta	11.8 d	External
Tritium (hydrogen-3)	Beta	12.3 y	Ingestion

Source: based on A. Robbins, A. Makhijani and K. Yih, above note 49, pp. 3–9; UNSCEAR, *Sources and Effects of Ionizing Radiation: UNSCEAR 1993 Report to the General Assembly with Scientific Annexes*, Annex B, UN, New York, 1993, pp. 128–129.

the whole human population – much smaller exposures but to vast numbers of people. In 1991, a commission established by International Physicians for the Prevention of Nuclear War (IPPNW) and the Institute for Environmental and Energy Research published a study which used the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) reports of 1982 and 1988 estimating global population radiation exposures from atmospheric nuclear tests (5.44 million person-sievert (Sv) to the year 2000 and 30.44 million person-Sv in total) and applied the then current radiation risk estimates of the BEIR V report of the US National Academy of Sciences to estimate global cancer deaths attributable to atmospheric nuclear weapons test fallout.¹³⁸ The study found that 430,000 additional cancer deaths worldwide attributable to these exposures could be expected in the human population by the year 2000, with 90% confidence limits of 320,000 to 650,000. Together, caesium-137, zirconium-95, carbon-14 and strontium-90 delivered 76% of this total dose. However in the longer term, carbon-14, an activation product from above-ground nuclear tests that emits beta radiation and has a half-life of 5,730 years, delivers 85% of the total dose to the world's population over thousands of years to come.¹³⁹

The total excess cancer deaths over time were estimated to eventually reach 2.4 million.¹⁴⁰ The more recent UNSCEAR 1993¹⁴¹ and SCOPE 59 (2000)¹⁴² reports previously cited use a very similar estimate for collective effective dose for the world population (30 million person-Sv); and the BEIR VII overall population fatal cancer risk estimate is similar to that in BEIR V. SCOPE 59 estimates 1.5 million excess cancer deaths over the next 10,000 years (less than two half-lives of carbon-14) attributable to past atmospheric nuclear testing.¹⁴³ This translates to around 2 million deaths in total over time.

In light of the more accurate low-dose radiation risk estimates provided by recent studies described in the previous section, it is likely that these estimates substantially underestimate the true long-term toll of nuclear test explosions. The

When the nation exposes servicemen and women to hazardous substances, there is an obligation to keep appropriate records of both the exposures and the long-term medical outcome.

– Advisory Committee on Human Radiation Experiments, 1995.*

138 A. Robbins, A. Makhijani and K. Yih, above note 49, pp. 34–40.

139 *Ibid.*, pp. 22–47.

140 *Ibid.*, pp. 163–164.

141 UNSCEAR, *Sources and Effects of Ionizing Radiation: UNSCEAR 1993 Report to the General Assembly with Scientific Annexes*, Annex B, UN, New York, 1993, p. 20, available at: www.unscear.org/docs/reports/1993/1993a_pages%201-30.pdf.

142 F. Warner and R. J. C. Kirchmann, above note 7, pp. 220–221.

143 *Ibid.*

* Advisory Committee on Human Radiation Experiments, Final Report, *Atomic Veterans: Human Experimentation in Connection with Atomic Bomb Tests*, US Government Printing Office, Washington, DC, October 1995, p. 486.

true number of excess cancer deaths will likely be higher again, as these estimates take no account of past or future leakage of radioisotopes into the biosphere from underground nuclear test sites. Additionally, as overall around half of cancers (other than non-melanoma skin cancers) are fatal, for all these estimates a comparable additional number of non-fatal cancer cases can be expected.

While hundreds of thousands and millions are large numbers of cancer cases and deaths, they will not generally be discernible because cancer is very common, these cases will occur over an extended period of time and be widely dispersed, and radiation-induced cancers cannot usually be differentiated by any specific biological signature. The people who suffer these cancers will not generally be identifiable. This means that public and government awareness of and attention to these risks is attenuated, and accountability more readily avoided, compared with hazards whose victims are prompt and who can be identified and named. However, the inability to identify individual victims of these excess cases of cancer which will be induced by test fallout and will cause distress and health harm, whether or not they ultimately prove fatal, is nevertheless real, warranting accountability of responsible institutions and individuals as well as feasible preventive and remedial public health action.

Environmental aspects

In addition to the intense, widespread and persistent hazards intrinsic to nuclear explosions, in every test programme there is evidence of accidents, unplanned events, wind shifts, unforeseen dangers and reckless decisions which aggravated the dangers, such as the 11 September 1966 nuclear test in Polynesia at the French president's convenience, despite the winds carrying the fallout directly towards the nearest population centres.

Comprehensive evidence of the nature and extent of environmental contamination and health effects of nuclear weapons testing was often not collected, incomplete, neglected or systematically covered up. This was compounded by high levels of secrecy which still surround many nuclear testing programmes in the Pacific region and beyond, particularly for France, China, India, North Korea and Pakistan. The geographic distribution of fallout was often inadequately monitored, with failure to identify heavily irradiated areas ("hotspots") where radioactivity could be hundreds to many thousands of times higher than average levels.¹⁴⁴

In every place where they have been conducted, whether above or below ground or in the marine environment, nuclear test programmes have left a legacy of radioactive and other waste which will persist for extremely long periods of time. Underground nuclear tests, apart from unplanned direct venting of radioactivity, can also leak radioactive material from late-time seeps of gases through pores in overlying rock, as well as through intentional controlled tunnel purgings and operational releases.¹⁴⁵ All underground tests resulted in release of

144 A. Robbins, A. Makhijani and K. Yih, above note 49, pp. 15–17, 60–63.

145 *Ibid.*, pp. 20–21.

(radioactive) tritium into the atmosphere.¹⁴⁶ In essence, each underground nuclear test site is an unstudied, unlicensed repository of large quantities of highly radioactive waste injected into the underground environment, which through the same process undergoes extensive disruption and fracturing, compromising the ability of the environment to contain the radioactivity. Over seventy years into the nuclear age, no country has yet established a functioning licensed repository for high-level radioactive waste. Yet uncontrolled high-level radioactive waste repositories exist at every site of underground nuclear testing.

A source of potential confusion regarding the environmental effects of nuclear explosions relates to the compelling recent evidence of substantial and long-lasting global climate disruption – cooling, darkening and drying – that would disrupt agriculture and food supplies globally, by the smoke from burning cities ignited by the use of even less than one half of 1% of the global nuclear arsenal.¹⁴⁷ Even though much greater numbers and yield of nuclear weapons have been used in atmospheric nuclear tests than in such a scenario, nuclear test explosions have not disrupted climate globally because they have not been targeted at cities and have not produced simultaneous widespread urban and industrial fires.

All nuclear test sites require long-term monitoring and warrant feasible clean-up. Durable test site clean-up and remediation efforts have been feeble and few. Climate disruption will add stresses and risks to nuclear test sites. More frequent and intense extreme events, including wildfires, storms, floods, landslides, hurricanes/typhoons and extreme winds, are to be expected worldwide. Inevitably, progressing sea-level rise will inundate many former test sites and waste repositories, particularly in atolls such as in the Marshall Islands and French Polynesia, compounded at Moruroa by ongoing subsidence. This will make monitoring, preventing disintegration and environmental releases of waste material, and any remediation efforts much more difficult. In addition, glacial and ice-sheet melting might increase the frequency of earthquakes and associated tsunamis.¹⁴⁸ This may further exacerbate dispersal of radioactive and other toxic waste from former test sites. Particularly in the atoll locations in the Pacific, all these factors add considerable urgency to the need to control and remediate former test sites.

146 Carol Tadros, Catherine Hughes, Jagoda Crawford, Suzanne Hollins and Robert Chisari, “Tritium in Australian Precipitation: A 50 Year Record”, *Journal of Hydrology*, Vol. 513, 2014, p. 268.

147 Michael J. Mills, Owen B. Toon, Julia Lee-Taylor and Alan Robock, “Multidecadal Global Cooling and Unprecedented Ozone Loss Following a Regional Nuclear Conflict”, *Earth’s Future*, Vol. 2, 2014; Ira Helfand, *Nuclear Famine: Two Billion People at Risk?*, IPPNW and Physicians for Social Responsibility, November 2013,

148 Fred Pearce, “Could a Changing Climate Set Off Volcanoes and Earthquakes?”, *Yale Environment* 360, 7 May 2012, available at: http://e360.yale.edu/feature/could_a_changing_climate_set_off_volcanoes_and_quakes/2525/.

Addressing the needs of nuclear test survivors

For test personnel both military and civilian, and downwind communities, adequate recognition of the risk and harm they have been exposed to and the consequences they continue to suffer has frequently been missing, inadequate or inexcusably delayed. Justice delayed is justice denied. For example, in Australia more than half of test veterans had died by the time a cancer study demonstrating their heightened risk was completed in 2006 and more equitable and accessible arrangements for cancer care for test veterans were instituted. Even if delayed, all affected citizens deserve recognition, an official apology, ongoing care for their health needs and fair compensation for having being placed in harm's way.¹⁴⁹

Fundamentally, the States that undertook nuclear test programmes are responsible for addressing the problems and the legacy that they created. While some have introduced programmes for their own citizens, few have extended care or compensation to the citizens of other countries, including those where nuclear tests were imposed. Where they have, such as the United States in relation to the Marshall Islands, it has been insufficient. Further, no such programmes address the situation and needs of subsequent generations whose lands have been polluted, social and cultural heritage disrupted and genetic legacy harmed, and many of whom continue to live in contaminated environments. Even perhaps the best compensation programme for test survivors, under the Radiation Exposure Compensation Act in the United States, will expire in 2022, and claims received after that date will be barred.¹⁵⁰

Conclusion

The entry into force of the CTBT,¹⁵¹ which would permanently prohibit all nuclear explosions in all environments, has been languishing since the Treaty was finally concluded in 1996, lacking ratification by all the required forty-four States possessing nuclear power and/or research reactors. While no State apart from North Korea has undertaken nuclear test explosions since 1998 and some nuclear test sites have been closed (e.g. those of France, and in Kazakhstan), only three of the current nine nuclear-armed States have ratified the Treaty.¹⁵² A definitive end to nuclear explosions would of course be a substantial global health and environmental good. However, while in decades past a test ban would have been an important measure against new States acquiring nuclear weapons (horizontal proliferation) and the development of new nuclear weapons by States that already possess them (vertical proliferation), its effectiveness as a non-proliferation

149 Royal Commission Report, above note 16, "Conclusions and Recommendations", Recommendation 1, p. 31.

150 US Department of Justice, above note 15, p. 2.

151 Comprehensive Nuclear-Test-Ban Treaty, UN GA Res. 48/70, 10 September 1996 (not in force).

152 CTBTO Preparatory Commission, *Status of Signature and Ratification*, available at: www.ctbto.org/the-treaty/status-of-signature-and-ratification/.

measure and constraint on the development and proliferation of increasingly sophisticated nuclear weapons would now be substantially limited.¹⁵³

While new weapons designs, particularly for advanced, miniaturized weapons, have historically generally been explosively tested, the physics and design of many types of nuclear weapons are readily available in the public domain, and Chinese nuclear weapon designs have been available through the nuclear black market established by the builder of Pakistan's nuclear bomb, Abdul Qadeer Khan.¹⁵⁴ The established nuclear-armed States have been able to continue to develop sophisticated new nuclear weapons in the past two decades without explosive testing because by the mid-1990s they had perfected a variety of advanced computer simulation techniques and laboratory testing, particularly sub-critical and hydrodynamic testing, to a point where new weapons could be developed and deployed without explosive testing. For example, France's last flurry of nuclear explosions at Moruroa in 1995 and 1996, before its Pacific test sites were closed, were for the purpose of perfecting non-explosive testing.¹⁵⁵ Israel has developed a sophisticated nuclear arsenal while having conducted at most a single explosive test.¹⁵⁶ Simple nuclear bomb designs, such as gun-barrel-type fission bombs using highly enriched uranium, like the Hiroshima bomb, are so simple and reliable that they did not in 1945 and do not now require any prior testing. As described in a companion paper in this issue of the *Review*,¹⁵⁷ all the nuclear-armed States are proceeding apace with extensive nuclear modernization programmes, essentially unimpeded by not conducting nuclear test explosions. North Korea is the only nuclear-armed State still undertaking explosive testing in order to develop its nuclear arsenal.

Thus while the CTBT had long been considered by many to be high priority and a litmus test of States' commitment to nuclear disarmament, its entry into force appears a distant prospect. While a durable end to nuclear test explosions is clearly a necessary part of the treaty regime that will be needed to achieve and sustain a world freed from nuclear weapons, it is not a large or decisive part. The UN Open-Ended Working Group that will report back to the 2016 General Assembly, charged with "substantively address[ing] concrete effective legal measures, legal provisions and norms that would need to be concluded to attain and maintain a world without nuclear weapons",¹⁵⁸ could most usefully consider a ban on nuclear testing in the context of a comprehensive legal instrument or package of measures to prohibit nuclear weapons and provide for their elimination – the greatest humanitarian imperative and precondition for global health, security and sustainability. Such an instrument should prohibit nuclear weapons development, production, testing,

153 R. Johnson, above note 3, pp. 179–180, 193–519, 222, 231.

154 Joseph Cirincione, Jon B. Wolfsthal and Miriam Rajkumar, *Deadly Arsenals: Nuclear, Biological and Chemical Threats*, 2nd ed., Carnegie Endowment for International Peace, Washington, DC, 2005, p. 247.

155 Philip Shenon, "France, Despite Wide Protests, Explodes a Nuclear Device", *International New York Times*, 6 September 1995.

156 Leonard Weiss, "Flash from the Past: Why an Apparent Israeli Nuclear Test in 1979 Matters Today", *Bulletin of the Atomic Scientists*, 9 September 2015.

157 See the article by Hans M. Kristensen and Matthew McKinzie, in this issue of the *Review*.

158 UNGA Res. A/RES/70/33, 11 December 2015, available at: www.unog.ch/oewg-ndn.

stockpiling, transfer, deployment, threat of use and use, as well as assistance for these activities.

Humanitarian priorities in regard to nuclear test explosions include the need to prevent further nuclear tests; to minimize further radioactive leakage through long-term monitoring of contaminated sites, emplacement of feasible barriers to leakage of contaminants into the biosphere, and clean-up of contaminated debris; and to provide recognition, care and compensation for affected workers and communities. However it is essential to recognize the unique nature, scale and persistence of nuclear impacts; the impossibility of comprehensive clean-up of radioactive materials dispersed into the atmosphere as fallout, or blasted into the sea or underground; and the impossibility of reversing the genetic and other health damage caused by exposure to radioactivity.

It is important in this context to emphasize that no effective humanitarian response is possible for even a single nuclear weapon detonated in a population centre, let alone nuclear war, as has been the unequivocal conclusion of the World Health Organization¹⁵⁹ and the International Red Cross and Red Crescent Movement for many years,¹⁶⁰ and is re-emphasized in this issue of the *Review*.¹⁶¹

The two most recent treaties banning a class of intrinsically indiscriminate, inhumane weapons, the 2008 Convention on Cluster Munitions¹⁶² and the preceding Anti-Personnel Mine Ban Convention,¹⁶³ contain groundbreaking provisions for victim assistance. The CTBT includes no such provisions. There is currently no international legal instrument that provides for victims and survivors of nuclear explosions to seek assistance towards the realization of their rights,¹⁶⁴ nor any specific international obligations for efforts to decontaminate or otherwise remediate areas affected by nuclear explosions. Both these aspects could usefully be addressed in the development of new legal measures towards the prohibition and elimination of nuclear weapons. At the second World Nuclear Victims Forum held in Hiroshima in November 2015, Draft Elements of a Charter of World Nuclear Victims' Rights were developed which might provide a valuable reference for promoting and protecting the rights and health of the survivors of nuclear explosions.¹⁶⁵

159 WHO, *Effects of Nuclear War on Health and Health Services*, 2nd ed., Geneva, 1987, p. 5.

160 Speech given by Peter Maurer, President of the International Committee of the Red Cross, Vienna Conference on the Humanitarian Consequences of Nuclear Weapons, 8 December 2014, available at: www.bmeia.gv.at/index.php?eID=tx_nawsecuredl&u=0&g=0&t=1455190832&hash=flf7811a97b8c01733e346530ac7fcc44b61db32&file=fileadmin/user_upload/Zentrale/Aussenpolitik/Abbruestung/HINW14/HINW14_Peter_Maurer_speech.pdf.

161 See Gregor Malich, Robin Coupland, Steve Donnelly and Johnny Nehme, "Chemical, Biological, Radiological or Nuclear (CBRN) Events: The Humanitarian Response Framework of the International Committee of the Red Cross", in this issue of the *Review*.

162 Convention on Cluster Munitions, 2688 UNTS 39, 3 December 2008 (entered into force 1 August 2010).

163 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, 18 September 1997 (entered into force 1 March 1999), available at: www.icrc.org/ihl/INTRO/580.

164 Article 36, "Victim Assistance" in a Treaty Banning Nuclear Weapons, January 2015, available at: www.article36.org/wp-content/uploads/2015/01/victims-nuclear-weapons.pdf.

165 Draft Elements of a Charter of World Nuclear Victims' Rights, World Nuclear Victims Forum, Hiroshima, 21–23 November 2015, available at: www.fwrs.info/topics/2015/341.

Every human being alive carries in his or her body radioisotopes from nuclear test explosions, the largest collective source of radiation exposure by human hands. The victims and survivors of nuclear weapons production and testing around the world number in the millions. Nuclear test explosions have not only directly caused profound and persistent health and environmental harm which will extend across many generations, but have also been integral to building the destructive capacity of the enormous nuclear arsenals that now constitute an unprecedented, urgent, existential danger to all humanity. The humanitarian impacts of nuclear tests are severe enough, but they provide only a small glimpse of the largely irreparable devastation that would be wrought on the biosphere and all species by nuclear war. The evidence of these impacts, presented here for the Pacific region, and the lived human experience and compelling testimony provided by test survivors can play an important role in informing and motivating humanitarian-based efforts to stigmatize, prohibit and eliminate nuclear weapons. The suffering caused by nuclear explosions worldwide demands justice for the survivors, and that nuclear weapons claim no more victims.

OPINION NOTE

Focusing the debate on the humanitarian consequences of nuclear weapons: An Indian perspective

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Abstract

The participation of nuclear India in the humanitarian impact of nuclear weapons conferences has generated curiosity in the global community. The world is bewildered to know that India simultaneously possesses nuclear weapons and participates in the humanitarian impact initiative. Even observers of the humanitarian impact movement often wonder what contribution India makes to the movement. Some historical insight into India's nuclear policy solves the puzzle. The humanitarian impact aspect of the nuclear debate has been an ingredient in India's policy because of India's strategic culture. The components of the Humanitarian Pledge are echoed in India's nuclear policy, and India maintains that a world without nuclear weapons will be more secure.

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Introduction

The bombings of Hiroshima and Nagasaki demonstrated the devastating consequences that the use of nuclear weapons can have on human beings. The troubled conscience of the international community made it consider the humanitarian consequences of nuclear weapons quite regularly. Yet there was no renunciation of the much-condemned weapon by the United States, the country that used it, and the world saw an increase in the number of countries and military alliances possessing it. Even the end of the Cold War did not end the relevance of nuclear weapons for their possessors, as nuclear weapons countries continued to justify them on security grounds. The former Soviet Union did not give up its nuclear weapons, instead leaving them to Russia as its successor State. All the nuclear weapons-possessing countries justified their nuclear arsenals as necessary for deterrence. Nuclear disarmament was often mentioned as a future necessity, but rarely seriously pursued. The military doctrines of the possessor States justified the continued existence of the weapon.

The Nuclear Non-Proliferation Treaty (NPT), which has a provision for the elimination of nuclear weapons in its Article VI, has not delivered a world without nuclear weapons. The treaty has acquired a “near universal” status because all but five countries¹ are members. The latent frustration of the international community gave rise to a new voice for a very old cause, with a new vigour. This new force has the overwhelming support of non-nuclear weapons States and even some nuclear weapons States, as well as international organizations, non-governmental organizations (NGOs) and so on. It has organized three conferences on “The Humanitarian Impact of Nuclear Weapons”.² Although the recent mobilization in the three conferences has put the humanitarian impact of nuclear weapons back in the limelight, the momentum has been very gradual. The 2010 NPT Review Conference played a highly supportive role in giving a new fillip to the humanitarian movement against nuclear weapons. The final document released after the 2010 Review Conference noted: “The Conference expresses its deep concern at the continued risk for humanity represented by the possibility that these weapons could be used and the catastrophic humanitarian consequences that would result from the use of nuclear weapons.”³ Even the subsequent Preparatory Committee meetings for the 2015 NPT Review Conference kept underlining the

1 India, Israel, Pakistan and South Sudan never signed the treaty, and North Korea withdrew its membership after joining it.

2 The first conference was organized in Norway in March 2013, the second in Mexico in February 2014 and the third in Austria in December 2014. See Alexander Kmentt, “The Development of the International Initiative on the Humanitarian Impact of Nuclear Weapons and its Effect on the Nuclear Weapons Debate”, in this issue of the *Review*.

3 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Vol. 1, NPT/CONF.2010/50, 2010, available at: [www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2010/50\(VOL.I\)](http://www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2010/50(VOL.I)) (all internet references were accessed in December 2015).

humanitarian impact concern.⁴ Similarly, a resolution of the Council of Delegates of the International Red Cross and Red Crescent Movement, passed on 26 November 2011, expressed concern about “the destructive power of nuclear weapons, the unspeakable human suffering they cause, the difficulty of controlling their effects in space and time, the threat they pose to the environment and to future generations and the risks of escalation they create”.⁵

After the three conferences – in which 158 countries participated – and a number of activities such as study reports and follow-up meetings undertaken in different academic institutions, think tanks and advocacy groups to promote the cause, it is important to analyze the momentum from an Indian perspective. Quite significantly, India, a nuclear weapons country which is outside the NPT, participated in all three conferences. The United States and the United Kingdom joined the movement later.

It is important to know the reason behind India’s participation in the three conferences and its support for the broad humanitarian concern arising out of nuclear weapons. The question that is raised by those who are puzzled that a nuclear weapons State would support the humanitarian impact initiative is: Do the concerns and approaches of India and the humanitarian impact initiative converge? Furthermore, has India’s participation in the conferences signified a shift in its nuclear policy? Is India contributing constructively to the cause?

This paper first highlights some key moments in the humanitarian approach that can be seen in the history of India’s nuclear policy. It then links India’s contemporary nuclear policy with the humanitarian impact movement and assesses the relationship India has with that movement, and gives an overview of the steps that would need to be taken to achieve total disarmament worldwide. Ultimately, this paper finds that even as a non-NPT nuclear weapons country, India shares the concerns expressed by those promoting the humanitarian impact of nuclear weapons and has been championing universal nuclear disarmament prior to and while possessing nuclear weapons because of its strategic culture. Without formally shifting its policy, India is pushing the international community to take genuine measures to achieve total nuclear disarmament, which is the only solution.

The humanitarian approach in light of the history of India’s nuclear policy

For a predominant section of the international community, nuclear disarmament has been a cherished goal since first realizing the destructive potential of nuclear

4 For example, Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, “Addressing the Humanitarian Consequences of Nuclear Weapons as the Foundation of the Treaty on the Non-Proliferation of Nuclear Weapons in Oslo, Nayarit, Mexico and Vienna”, Working Paper, NPT/CONF.2015/PC.III/WP.30, 24 April 2014, available at www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2015/PC.III/WP.30.

5 Council of Delegates of the International Red Cross and Red Crescent Movement, Resolution 1, 26 November 2011, available at: www.icrc.org/eng/resources/documents/resolution/council-delegates-resolution-1-2011.htm.

weapons. Yet in recent years the mobilization against nuclear weapons has not been based on humanitarian consequences or impact. Generally speaking, the debate has been either legalistically oriented, towards the fulfilment of the obligations of, or compliance with, the NPT, or militaristically oriented, towards the strategic relevance or irrelevance of the nuclear weapons debate. For a long time, the legalistic and militaristic paradigms have dominated the global nuclear debate.

Though the 2010 NPT Review Conference did mention the humanitarian concern in its final document, the Review Conferences have basically become a battleground for compliance and fulfilment of international obligations. On the one hand, some countries, like Iran, complain that their civil nuclear energy programmes are targeted on the grounds of suspicion of development of nuclear weapons, and on the other, some nuclear weapons States, like the United States, maintain that it is not obligatory under the NPT to pursue total nuclear disarmament.

A few countries have reduced their redundant nuclear arsenals and are trying to shift the discourse on nuclear disarmament. These countries push the idea that by decreasing the arsenal of an individual nuclear weapons country to triple digits or less, the problem of global nuclearization may be solved. The goal of reaching total elimination of nuclear weapons, or “Global Zero”, is championed by a group of international leaders and experts,⁶ but thus far does not seem to be making much impact on the existence of nuclear weapons.

The humanitarian impact conferences have mobilized the international community on the consequences and impact of nuclear weapons. These conferences highlighted the devastating consequences of nuclear weapons for human beings and the environment. The emphasis on “human suffering and humanitarian harm”⁷ was the principal basis for building global public opinion against nuclear weapons. Importantly, the December 2014 Humanitarian Pledge of the Vienna Conference noted the mindset of the participants:

Understanding that the immediate, mid- and long-term consequences of a nuclear weapon explosion are significantly graver than it was understood in the past and will not be constrained by national borders but have regional or even global effects, potentially threatening the survival of humanity,

Recognizing the complexity of and interrelationship between these consequences on health, environment, infrastructure, food security, climate, development, social cohesion and the global economy that are systemic and potentially irreversible,

Aware that the risk of a nuclear weapon explosion is significantly greater than previously assumed ...⁸

6 Global Zero, “Who We Are”, available at: www.globalzero.org/our-movement/who-we-are.

7 Pledge presented at the Vienna Conference on the Humanitarian Impact of Nuclear Weapons by Austrian Deputy Foreign Minister Michael Linhart, 8–9 December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14_Austrian_Pledge.pdf.

8 Humanitarian Pledge, 9 December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/HINW14vienna_Pledge_Document.pdf.

India considers nuclear weapons a weapon of mass destruction (WMD), not a typical weapon of warfare. India never considered nuclear weapons to be merely an advanced form of conventional weapon, having a similar impact as other types of bombs dropped from aircraft. In the Indian governmental and even non-governmental perspectives, nuclear weapons are a special type of weapon. As a result, they require special treatment.

The bombings of Hiroshima and Nagasaki are time and again cited in Indian policy statements and documents to support this understanding. The greatest leader of India's struggle for independence, Mahatma Gandhi, once stated that the nuclear bomb "deadened the finest feeling that has sustained mankind for ages".⁹ He also refused to give any credit to the Allied victory effected by nuclear weapons. He called it "an empty victory to the allied arms" because it destroyed "the soul of Japan".¹⁰

India's first prime minister, Jawaharlal Nehru, in his famous 1954 speech¹¹ in which he had proposed a "stand-still agreement" – the predecessor of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) – talked about the disastrous and horrible consequences of hydrogen bomb testing. At that time, the world was new to the impact of hydrogen bomb tests. Prime Minister Nehru shared the global concern regarding the new weapon, and in his speech, he encouraged the world to think beyond mere concern, panic, fear and dread. He put an emphasis on constructive thought, and on the support of government of India towards such endeavours. He stated:

A new weapon of unprecedented power both in volume and intensity, with an unascertained, and probably unascertainable range of destructive potential in respect of time and space, that is, both as regards duration and the extent of consequences, is being tested, unleashing its massive power, for use as a weapon of war. We know that its use threatens the existence of man and civilization as we know it. We are told that there is no effective protection against the hydrogen bomb and that millions of people may be exterminated by a single explosion and many more injured, and perhaps still many more condemned to slow death, or to live under the shadow of the fear of disease and death. ... Mankind has to awaken itself to the reality and face the situation with determination and assert itself to avert calamity.¹²

In later years, too, Indian leaders and officials continued to highlight the disastrous consequences of nuclear science, which otherwise could be used for the benefit of mankind, being used to create weapons. The first president of independent India, Rajendra Prasad, in his inaugural speech at the anti-nuclear arms convention in New Delhi on 16 June 1962, expressed concern for "the destruction of civilization

9 Mahatma Gandhi, "Atom Bomb and Ahimsa", *Harijan*, 7 July 1946, available at: <http://meaindia.nic.in/cdgeneva/?pdf0604?000>.

10 *Ibid.*

11 Jawaharlal Nehru, "Stand-Still Agreement", Statement, Lok Sabha, 2 April 1954, available at: <http://meaindia.nic.in/cdgeneva/?pdf0601?000>.

12 *Ibid.*

and the annihilation of mankind”¹³ because of the creation of nuclear weapons and the ensuing nuclear arms race. He stated: “Nuclear weapons, far from ensuring the triumph of one way of life or the other, only promise the extinction of all life.”¹⁴ He advocated not only for nuclear disarmament but also for a change in the ideology that generates fear and the need for such weapons.¹⁵

Later, India produced the Rajiv Gandhi Action Plan for nuclear disarmament. This June 1988 plan highlighted to the world the humanitarian consequences of nuclear weapons, and forewarned that a nuclear war could cause more than 100 million or even a billion deaths. According to Rajiv Gandhi, the use of nuclear weapons could result in the death of 4 billion people, or the end of life on Earth as we know it.¹⁶ On 21 January 1988, in his speech at the opening session of the Six-Nation Five-Continent Peace Initiative in Stockholm, Rajiv Gandhi, then prime minister, stated: “What we need to end is the option of unleashing global devastation or holding the survival of humanity to ransom. We must protect humanity as much from the known dangers of extinction as from those that are still unknown.”¹⁷

For decades, the NPT provided the normative structure for dealing with nuclear weapons. According to the “grand bargain” behind the NPT, the Treaty should strike a balance between nuclear energy, non-proliferation and nuclear disarmament. The NPT framework fails to maintain that balance as it focuses principally on nuclear energy development for peaceful purposes and non-proliferation of nuclear weapons; as discussed, disarmament – the foundation of the “grand bargain” – does not get much attention from nuclear weapons States.

In fact, the current campaign revolving around humanitarian consequences has spread so successfully because the NPT framework is struggling and gradually losing legitimacy. The NPT Review Conferences are failing to persuade the Treaty’s dominant States Parties, like the United States and France, to fully implement nuclear disarmament. However, the current humanitarian impact campaign is not intended to weaken the NPT and its framework, but rather aims to consolidate whatever gains the NPT has made. The pledges of the conferences are in line with the goal of non-proliferation, and clearly mention that proliferation by new countries may increase the danger of the devastating consequences of nuclear weapons becoming a reality. For example, the Austrian Conference noted that States were “[a]ware that the risk of a nuclear weapon explosion is significantly greater than previously assumed and is indeed increasing with increased proliferation [and] the lowering of the technical threshold for nuclear weapon capability”.¹⁸

13 Rajendra Prasad, “The Case for Unilateral Disarmament”, inaugural speech at the Anti-Nuclear Arms Convention, New Delhi, 16 June 1962, available at: <http://meaindia.nic.in/cdgeneva/?pdf0597000>.

14 *Ibid.*

15 *Ibid.*

16 Rajiv Gandhi, “A World Free of Nuclear Weapons: An Action Plan”, address to the Third Special Session on Disarmament at the UN General Assembly, 9 June 1988, p. 3, available at: <http://meaindia.nic.in/cdgeneva/?pdf0611000>.

17 Rajiv Gandhi, “Disarmament”, speech at the opening session of the Six-Nation Five-Continent Peace Initiative, 21 January 1988, available at: <http://meaindia.nic.in/cdgeneva/?pdf0588000>.

18 Humanitarian Pledge, above note 8.

As the current global nuclear identity is greatly shaped by the NPT divide between nuclear weapons States and non-nuclear weapons states, India's nuclear identity is independent of and at the same time related to the NPT. The NPT has divided the world into two categories: nuclear weapons States and non-nuclear weapons States. Under the NPT, any country that became a nuclear weapons State before 1 January 1967 is a nuclear weapons State, and all others are non-nuclear weapons States. NPT States Parties believe in this hierarchical arrangement. The NPT has ended up in legitimizing the possession of nuclear weapons by five nuclear weapons countries. India is not a member of the NPT. As of May 1998, it declared itself a nuclear weapons country, acquiring this distinct identity as a non-NPT nuclear weapons State. Had it joined the NPT, it would have to accept the dividing line or date of determining a country's nuclear identity, and would therefore have joined the NPT as a non-nuclear weapons State.

Despite becoming a nuclear weapons state, India realizes the destructiveness of nuclear weapons for humanity. It treats nuclear weapons as a fundamental global concern and as a challenge to the very survival of human society. India has not abandoned its time-tested approach to eliminating nuclear weapons to address their humanitarian impact. India's commitment to humanitarian impact, it seems, is part and parcel of its strategic culture. One Indian official summarized the Indian position by stating:

[W]hile India is a nuclear weapon state, it is the only such state to declare unequivocally that, in its perception, its security will be enhanced and not diminished in a world free of nuclear weapons. This is important because it lends credibility to our consistent advocacy of nuclear disarmament and our willingness to engage, without delay, in multilateral negotiations on a Nuclear Weapons Convention prohibiting the development, production, stockpiling and the use of nuclear weapons and on their time-bound destruction, leading to the global, non-discriminatory and verifiable elimination of nuclear weapons.¹⁹

Linkage: The humanitarian impact movement and India's contemporary nuclear policy

The three humanitarian impact conferences, along with the build-up and follow-up for each, have definitely stimulated global public opinion against nuclear weapons. The destruction of human civilization²⁰ and the environment²¹ is accepted as a

19 Remarks by Special Envoy of Prime Minister Shri Shyam Saran at the Global Zero Summit, 3 February 2010, available at: <http://mea.gov.in/Speeches-Statements.htm?dtl/448/Remarks+by+Special+Envoy+of+Prime+Minister+Shri+Shyam+Saran+at+the+Global+Zero+Summit>.

20 Charter of the United Nations, 1 UNTS XVI, 24 October 1945, Preamble, available at: www.un.org/en/sections/un-charter/preamble/index.html.

21 Convention Concerning the Protection of the World Cultural and Natural Heritage, 1037 UNTS 151, 16 November 1972 (entered into force 17 December 1975), available at: http://portal.unesco.org/ev.php-URL_ID=13055&URL_DO=DO_TOPIC&URL_SECTION=201.html.

taboo and is morally unacceptable.²² As India stated at the Vienna Conference: “There is a need to strengthen the international norm of nearly seventy years of non-use of nuclear weapons.”²³

Generally speaking, international humanitarian law prohibits the use but not the possession of nuclear weapons. India is an old supporter of the position found in the 1996 Advisory Opinion of the International Court of Justice (ICJ) that appears to be gathering support in the conferences.²⁴ Admittedly, even the ICJ Advisory Opinion “could not conclude definitively whether the threat or use of nuclear weapons would be lawful or unlawful in an extreme circumstance of self-defence, in which the very survival of a State would be at stake”.²⁵ In fact, though some nuclear weapons States ignore the 1996 ICJ Advisory Opinion and even sometimes violate IHL, no State has yet broken the nuclear taboo. There has been no use of nuclear weapons in war since their tragic use in Hiroshima and Nagasaki. India and Pakistan – two nuclear weapons countries – fought a conventional war in 1999 without resorting to nuclear weapons. The show of restraint in the Kargil War demonstrated the fact that a fight between two nuclear weapons countries may not necessarily result in the use of nuclear weapons in the conflict.

Nuclear weapons countries should act to strengthen the nuclear taboo and related norms by prohibiting not only the use of nuclear weapons but also the threat of use of nuclear weapons against an adversary. Nuclear doctrine is quite important in implementing the nuclear weapons taboo. The prohibition of use and threat of use of nuclear weapons in the nuclear doctrines of a country may make the country feel that there is a little interest in possessing nuclear weapons. Pending nuclear disarmament, nuclear weapons countries are expected to have non-aggressive nuclear doctrines. Indeed, the Indian government has adopted this approach. An Indian official made a statement at one of the humanitarian impact conferences:

We believe that increasing restraints on use of nuclear weapons would reduce the probability of their use – whether deliberate, unintentional or accidental and this process could contribute to the progressive de-legitimization of nuclear weapons, an essential step for their eventual elimination, as has been the experience for chemical and biological weapons.²⁶

India has used all available platforms and the international bodies to promote the goal of universal and non-discriminatory nuclear disarmament in a time-bound manner. India has often proposed resolutions at the United Nations (UN) General Assembly for a Convention on the Prohibition of the Use of Nuclear

22 United Nations Millennium Declaration, UNGA Res. 55/2, 8 September 2000, available at: www.un.org/millennium/declaration/ares552e.htm.

23 Suhel Ajaz Khan, India’s Statement at the Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 December 2014, available at: <http://meaindia.nic.in/cdgeneva/?3815?000>.

24 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, *ICJ Reports* 1996.

25 *Ibid.*, para. 105, sec. 2E.

26 S. A. Khan, above note 23.

Weapons.²⁷ These resolutions talk about pushing for a “multilateral, universal and binding agreement prohibiting the use or threat of use of nuclear weapons”,²⁸ and urge the Conference on Disarmament to begin negotiations to conclude a convention for that purpose.

The General Assembly has been passing resolutions for a review of nuclear doctrines for many years. India is one of the sponsors of the resolution on “Reducing Nuclear Danger”. This resolution explicitly states that “until nuclear weapons cease to exist, it is imperative on the part of the nuclear-weapon States to adopt measures that assure non-nuclear-weapon States against the use or threat of use of nuclear weapons”.²⁹ The resolution has asked the Secretary-General to implement seven recommendations made by the General Assembly Advisory Board on Disarmament Matters for substantially reducing nuclear risks.³⁰

India has been emphasizing the need to prevent unauthorized and accidental use of nuclear weapons in different meetings and policy statements.³¹ To that end, India uses multilateral bodies like the UN and bilateral Memoranda of Understanding with countries like Pakistan³² to promote measures to reduce nuclear danger through de-alerting and supporting the use of technology to prevent unintentional use. As one policy document issued by the government of India notes: “Nuclear Security is the prevention and detection of, and response to unauthorised removal, sabotage, unauthorised access, illegal transfer or other malicious acts involving nuclear or radiological material or their associated facilities.”³³

To underscore that its nuclear identity does not signal a militaristic intent, the Indian government and the strategic community have belaboured the point that nuclear weapons are under civilian command and control, though for operational necessity, Strategic Forces Command could be the key organ in any potential use of nuclear weapons.³⁴

27 See Disarmament Resolutions and Decisions Database, available at: <https://gafc-vote.un.org/>.

28 *Ibid.*

29 “Reducing Nuclear Danger”, UNGA Res. 70/37, 7 December 2015, available at: <https://gafc-vote.un.org/>.

30 “Reducing Nuclear Danger: Note by the Secretary-General”, UN Doc. A/56/400, 25 September 2001.

31 See, e.g., Adam Ward, Address by Foreign Secretary at the 3rd MEA-IISS Seminar on Perspectives on Foreign Policy for a 21st Century India, 22 February 2010, available at: www.mea.gov.in/Speeches-Statements.htm?dtl/445/Address+by+Foreign+Secretary+at+the+3rd+MEAIISS+Seminar+on+Perspectives+on+Foreign+Policy+for+a+21st+Century+India.

32 Lok Sabha, “Accidental/Unauthorised Use of Nuclear Weapons”, Unstarred Question No. 2223, 7 December 2005, available at: www.mea.gov.in/lok-sabha.htm?dtl/11327/Q+2223+Accidental+Unauthorised+Use+Of+Nuclear+Weapons.

33 Ministry of External Affairs, *Nuclear Security in India*, 18 March 2014, available at: www.mea.gov.in/Images/pdf/Brochure.pdf.

34 According to a press release from the government of India:

3. The Nuclear Command Authority comprises a Political Council and an Executive Council. The Political Council is chaired by the Prime Minister. It is the sole body which can authorize the use of nuclear weapons.
4. The Executive Council is chaired by the National Security Advisor. It provides inputs for decision making by the Nuclear Command Authority and executes the directives given to it by the Political Council.
5. The CCS [Cabinet Committee on Security] reviewed the existing command and control structures, the state of readiness, the targeting strategy for a retaliatory attack, and operating procedures for

An additional aspect of India's current nuclear policy is the "no first use" (NFU) doctrine. NFU is an official doctrine in India and China; other countries have yet not officially adopted NFU, though in recent years several disarmament and arms control campaigns have emphasized the significance of NFU for crisis management and prevention of nuclear war. Despite this, India is facing internal pressure to revise its NFU policy in light of the national security threat posed by the Pakistani nuclear arsenal.³⁵ A significant portion of the Indian strategic and political communities want India to review its NFU policy and revise its nuclear doctrine.³⁶ The emergence of this position is a disappointment for the portion of the international community that is mobilizing global public opinion to focus on the humanitarian consequences of nuclear weapons use. Although voices for the revision of NFU and nuclear doctrine are growing in India, the underlying tone and tenor of the conversation is that this is out of a desire to deter others from using their nuclear weapons, rather than to fight a nuclear war in the region.

Another of India's nuclear policies is that the use of nuclear weapons against non-nuclear weapons States is prohibited. The principle of no use of nuclear weapons against non-nuclear weapons countries has been predominantly accepted by nuclear weapons countries. India has been following this policy from the very beginning,³⁷ and the United States has also adopted it. In its 2010 *Nuclear Posture Review Report*, the US government very emphatically stated that it is

now prepared to strengthen its long-standing "negative security assurance" by declaring that the United States will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the NPT and in compliance with their nuclear non-proliferation obligations.³⁸

Overall assessment of the Indian relationship with the humanitarian impact movement

The Indian strategic community and the Indian government have developed a highly interactive relationship with the international community and

various stages of alert and launch. The Committee expressed satisfaction with the overall preparedness. The CCS approved the appointment of a Commander-in-Chief, Strategic Forces Command, to manage and administer all Strategic Forces.

6. The CCS also reviewed and approved the arrangements for alternate chains of command for retaliatory nuclear strikes in all eventualities.

Press Information Bureau, "Cabinet Committee on Security Reviews in Progress in Operationalising India's Nuclear Doctrine", Prime Minister's Office press release, 4 January 2003, available at: <http://pib.nic.in/archieve/lreng/lyr2003/rjan2003/04012003/r040120033.html>.

35 Express News Service, "Revise 'No-First-Use' N-Policy: Jaswant", *Indian Express*, 16 March 2011, available at: <http://archive.indianexpress.com/news/revise-nofirstuse-npolicy-jaswant/763040/>.

36 Bharatiya Janata Party, *Manifesto 2014*, available at: <http://www.bjp.org/manifesto2014>.

37 Lok Sabha, "A Statement by Prime Minister Atal Bihari Vajpayee on Nuclear Tests in Pokhran", 27 May 1998, available at: http://164.100.47.192/Loksabha/Debates/Result_Archive.aspx?dbsl=1200249.

38 US Department of Defense, *Nuclear Posture Review Report*, April 2010, available at: www.defense.gov/Portals/1/features/defenseReviews/NPR2010_Nuclear_Posture_Review_Report.pdf.

international laws and practices. Certainly, the involvement of the Indian State and civil society in the conferences is more than skin-deep. The statements made by the Indian officials at the three conferences were in fact repetitions of messages passed earlier and elsewhere. The debate inside Indian civil society reinforces that the humanitarian impact of nuclear weapons is being taken seriously and, as mentioned above, is embedded in the strategic culture of the country.

Universal nuclear disarmament is the ultimate and in fact the only solution to overcome the potential consequences of nuclear weapons for humanity. Absent the total elimination of nuclear weapons, the element of risk that nuclear weapons will be used continues to exist. A large number of countries and civil society groups have echoed this idea on different platforms. In Vienna in December 2014, a Joint Statement of 155 countries asserted that “the only way to guarantee that nuclear weapons will never be used again is through their total elimination”.³⁹ The 2014 Humanitarian Pledge reads:

We call on all states parties to the NPT to renew their commitment to the urgent and full implementation of existing obligations under Article VI, and to this end, to identify and pursue effective measures to fill the legal gap for the prohibition and elimination of nuclear weapons and we pledge to cooperate with all stakeholders to achieve this goal.⁴⁰

India has issued a statement in support of the Non-Aligned Movement’s (NAM) proposal for a comprehensive nuclear weapons convention to be negotiated at the Conference on Disarmament.⁴¹ During the proposal, after expressing concern regarding the impact of nuclear weapons use, the NAM governments generally discussed the building blocks for nuclear disarmament. For example, the NAM statement had one paragraph on the impact of nuclear weapons, and the rest of the statement addressed nuclear disarmament and steps toward total disarmament.⁴² In recent years, as discussed, nuclear disarmament has been somewhat equated with nuclear reduction. There is a difference between arms control and disarmament. Elimination of a category or a certain size of nuclear arsenal is arms control; in contrast, disarmament refers to the elimination of the entire category of nuclear weapons. Discarding of surplus or redundant weapons should not be equated with nuclear disarmament. The humanitarian impact campaign recognizes this important difference. In the humanitarian impact conferences, all States were asked to take measures toward nuclear disarmament. An NGO coalition present at the conferences was of the view that “the immediate effects of even a single nuclear weapon detonation are shocking and

39 Dell Higgie, “UNGA 69: First Committee Joint Statement on the Humanitarian Consequences of Nuclear Weapons”, 20 October 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/Joint_Statement_20Oct_NewZealand.pdf.

40 Humanitarian Pledge, above note 8.

41 D. B. Venkatesh Varma, Statement, Geneva Thematic Debate on Nuclear Weapons at the First Committee of the 70th Session of the United Nations General Assembly, New York, 20 October 2015, available at: <http://meaindia.nic.in/cdgeneva/?pdf4420?000>.

42 *Ibid.*

overwhelming. Its destructive force will cause nightmarish scenes of death and despair”, emphasizing the need for total disarmament.⁴³

India has been advocating conclusion of a nuclear weapons convention for a long period of time. Finally, what emerged out of the three humanitarian impact conferences was the recommendation that the international community must adopt a proper legal framework. There could be a nuclear weapons convention along the lines of the Chemical Weapons Convention, with a comprehensive verification structure. India believes that the goal of a world free of nuclear weapons does not contradict its security imperatives. India and an overwhelming section of its civil society support the campaign for “Global Zero”.

As for the new momentum built in the three conferences on the humanitarian impact of nuclear weapons, the Indian government has stated:

The three meetings in Oslo, Nayarit and Vienna on the humanitarian impact of nuclear weapons, generated considerable interest [in] reinvigorating international efforts on addressing the most serious threat to the survival of mankind posed by the use of nuclear weapons. India participated in these meetings in the hope that these would help generate momentum for increased restraints on use of such weapons and thus correct an imbalance in the international legal discourse that has focussed almost exclusively on restraints on possession. It has been our consistent position that the process should be inclusive and do no harm to the disarmament machinery and in terms of substance promote genuine progress towards the goal of nuclear disarmament. Current indications are that on both counts the results are far less than expected and it is a matter of regret that some of the proposals tabled this year in this Committee have deepened differences instead of bridging them.⁴⁴

Step-by-step process

With the exception of a few nuclear weapons countries⁴⁵ that seem over-dependent on nuclear weapons for their security or politics, most of the nuclear weapons countries support nuclear disarmament in principle. Even those nuclear weapons countries that want to keep their nuclear arsenals are often found supporting nuclear disarmament. For example, in 2009 President Obama famously made a

43 Ray Acheson, “ICAN Closing Statement to the Second Conference on the Humanitarian Impact of Nuclear Weapons”, 14 February 2014, available at: www.icanw.org/campaign-news/ican-closing-statement-to-the-second-conference-on-the-humanitarian-impact-of-nuclear-weapons/.

44 D. B. V. Varma, above note 41.

45 For example, France, which has always maintained the need for nuclear deterrence. See Josselin de Rohan, “France and Nuclear Disarmament”, speech, All-Party Group on Global Security and Non-Proliferation, 10 February 2011, available at: www.europeanleadershipnetwork.org/france-and-nuclear-disarmament-speech-by-president-josselin-de-rohan_145.html.

statement for nuclear disarmament.⁴⁶ Similarly, France also supports nuclear disarmament.⁴⁷ The conferences on the humanitarian impact of nuclear weapons discussed the “common ground, identifying concrete and practical building blocks”, toward nuclear disarmament.⁴⁸ That the ultimate goal of total disarmament needs an interim preparatory period is commonly understood. However, despite receiving support in principle, the international community has been struggling to make real steps towards global nuclear disarmament.

India has supported the step-by-step approach to nuclear disarmament, and the Indian government has proposed different steps towards that end. In 2006, India officially issued a Working Paper in which it delineated specific steps towards nuclear disarmament. Although it was issued as a Working Paper,⁴⁹ this document was merely a reiteration of what the Indian government has been stating over a period of time and is still presenting in different fora, platforms and organizations. The paper, which India submitted at the Conference on Disarmament, identified several steps as building blocks for nuclear disarmament:

- Reaffirmation of the unequivocal commitment of all nuclear weapon States to the goal of complete elimination of nuclear weapons;
- Reduction of the salience of nuclear weapons in the security doctrines;
- Taking into account the global reach and menace of nuclear weapons, adoption of measures by nuclear-weapon States to reduce nuclear danger, including the risks of accidental nuclear war, de-alerting of nuclear-weapons to prevent unintentional and accidental use of nuclear weapons;
- Negotiation of a global agreement among nuclear weapon States on “no-first-use” of nuclear-weapons;
- Negotiation of a universal and legally-binding agreement on non-use of nuclear weapons against non-nuclear weapon States;
- Negotiation of a Convention on the complete prohibition of the use or threat of use of nuclear weapons;
- Negotiation of a Nuclear Weapons Convention prohibiting the development, production, stockpiling and use of nuclear weapons and on their destruction, leading to the global, non-discriminatory and verifiable elimination of nuclear weapons with a specified timeframe.⁵⁰

46 White House, Office of the Press Secretary, Remarks by President Barack Obama in Prague (As Delivered), 5 April 2009, available at: www.whitehouse.gov/the-press-office/remarks-president-barack-obama-prague-delivered.

47 France Diplomatie, “Nuclear Disarmament”, available at: www.diplomatie.gouv.fr/en/french-foreign-policy/disarmament-and-non-proliferation/france-and-disarmament/article/nuclear-disarmament.

48 Susanne Rumohr Haekkerup, “Denmark: National Statement”, 3rd International Conference on the Humanitarian Consequences of Nuclear Weapons, Vienna, 8–9 December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/Statements/HINW14_Statement_Denmark.pdf.

49 India, “Nuclear Disarmament”, Working Paper, Conference on Disarmament, CD/1816, 20 February 2007, available at: <http://meaindia.nic.in/cdgeneva/?pdf0610?000>.

50 *Ibid.*

Indian officials have continued to reiterate these steps in recent years, throughout the humanitarian conferences. For example, in May 2013, one of the officials advocated in her submission for the de-alerting of nuclear weapons, global agreements among nuclear weapons countries on no first use of nuclear weapons, a universal and legally binding agreement on non-use of nuclear weapons against non-nuclear weapons countries, a convention on the complete prohibition of the use or threat of use of nuclear weapons, reducing salience of nuclear weapons in the military doctrines of nuclear weapons countries, and so on.⁵¹ One of the Indian officials welcomed President Obama's Prague speech, "including his commitment that the US would reduce the role of nuclear weapons in its national security strategy".⁵² Non-proliferation is generally considered a step towards nuclear disarmament. From time to time, different non-proliferation measures such as the Fissile Material Cut-Off Treaty⁵³ and the CTBT⁵⁴ are also projected as steps towards nuclear disarmament. Four nuclear weapons countries have already declared a moratorium on fissile materials production, although China and new nuclear weapons countries such as India and Pakistan are seemingly producing fissile materials for military purposes. The international community has no information on Israeli nuclear arsenals, nor has any been communicated by the Israeli government on its fissile materials.

India has expressed its willingness to negotiate for a Fissile Material Cut-Off Treaty. However, it wants this treaty to be formally linked with nuclear disarmament. In the past, India had blocked the CTBT because it had not included nuclear disarmament as an end result of the test ban agreement. India maintains that non-proliferation should be a means for nuclear disarmament and should not become an end in itself,⁵⁵ as focusing solely on non-proliferation will create an unstable nuclear order and will not end the urge of other countries to go nuclear.

As discussed above, in recent years, global nuclear disarmament has become conflated with arms reduction. A few countries, and surprisingly some credible studies, have been asserting that a freeze on a certain number of nuclear weapons will stabilize the global nuclear order.⁵⁶ Unsurprisingly, nuclear weapons

51 Sujata Mehta, "Taking Forward Multilateral Nuclear Disarmament Negotiations", Statement, Open Ended Working Group, Geneva, 15 May 2013, available at: <http://meaindia.nic.in/cdgeneva/?pdf1352?000>.

52 Shri Shyam Saran, Remarks, Global Zero Summit, 3 February 2010, available at: <http://mea.gov.in/Speeches-Statements.htm?dtl/448/Remarks+by+Special+Envoy+of+Prime+Minister+Shri+Shyam+Saran+at+the+Global+Zero+Summit>.

53 See United Nations Office at Geneva, "Conference on Disarmament Discusses Humanitarian Impact on Nuclear Weapons, Model Convention on Nuclear Weapons and the Fissile Materials Cut-Off Treaty", 28 January 2015, available at: [www.unog.ch/80256EDD006B9C2E/\(httpNewsByYear_en\)/9537F14884EA5920C1257DDB0061BBE2?OpenDocument](http://www.unog.ch/80256EDD006B9C2E/(httpNewsByYear_en)/9537F14884EA5920C1257DDB0061BBE2?OpenDocument).

54 Comprehensive Test-Ban-Treaty Organization, "The Treaty: The Comprehensive Nuclear-Test-Ban Treaty", available at: www.ctbto.org/the-treaty/.

55 Minister of State in the Ministry of External Affairs, Parliament of India, House of the People, "Regarding Non-Proliferation Treaty (NPT) Review Conference", available at: http://164.100.47.192/Loksabha/Debates/Result_Archive.aspx?dbsl=1300258.

56 See, e.g., Ramesh Thakur and Gareth Evans (eds), *Nuclear Weapons: The State of Play*, Centre for Nuclear Non-proliferation and Disarmament, Canberra, 2013.

countries are in favour of this thinking (as opposed to total disarmament), and some non-nuclear weapons countries, especially nuclear umbrella countries, also appear satisfied with this kind of arrangement. Along these lines, the New Strategic Arms Reduction Treaty (New START) is projected as a measure that will gradually lead to disarmament, though even this measure is struggling.⁵⁷ Fortunately, the three conferences on the humanitarian impact of nuclear weapons overwhelmingly rejected equating arms control to nuclear disarmament, and the public opinion mobilized by the humanitarian impact initiative is also in favour of nuclear disarmament.

Many think a convention on the prohibition of the use or threat of use of nuclear weapons may be more effective than even the 1925 Geneva Protocol on the use of Chemical and Biological Weapons. The International Campaign to Abolish Nuclear Weapons (ICAN), the coalition of NGOs participating in the conferences on the humanitarian impact of nuclear weapons, has stated:

History shows that legal prohibitions generally precede and facilitate the processes of stockpile elimination, not the other way around. And history and experience also show that weapons that have been outlawed become delegitimised. They lose their political status, and so do not keep having money and resources invested in their production, modernisation, proliferation and perpetuation.⁵⁸

Conclusion

India has been a partner in the initiative on the humanitarian impact of nuclear weapons, has organized to call attention to the grave consequences of nuclear weapons use, and has evoked profound moral and ethical issues regarding the existence of these WMDs. The humanitarian conferences witnessed the participation of national governments, international organizations, the international humanitarian community, the international scientific community, NGOs and many others. Needless to say, the conferences further strengthened the nuclear disarmament movement and the norm against the use of nuclear weapons.

Although India participated in the conferences and supported all the broad principles of the conferences, it later appeared disappointed with the attitudes of some of the leading countries when it came to implementation of pledges taken at the conferences. Some of the countries involved in the humanitarian initiative voted against the resolution on a Convention on the Prohibition of the Use of Nuclear Weapons. The resolution has been tabled since 1982. However, the

57 US Department of State, "New START", available at: <http://www.state.gov/t/avc/newstart/index.htm>.

58 Rebecca Johnson, "ICAN Intervention in Final Session of the Conference on the Humanitarian Impact of Nuclear Weapons", Oslo, 4–5 March 2013, available at: www.icanw.org/wp-content/uploads/2013/03/ICAN-final-statement5.3.13.pdf.

Indian government appears pleased about the support of the international community on the “Reducing Nuclear Danger” resolution.

The impact of the campaign was evidenced when two of the five NPT-defined nuclear weapons States participated in the most recent conference in Vienna. Although India and Pakistan have attended all three humanitarian impact conferences, the attendance of the United States and the United Kingdom is a positive step. The cascading effects of norm-building may be witnessed. Other countries also need to commit to strengthening of and adherence to the nuclear taboo to further strengthen the humanitarian norm against the use of nuclear weapons. The international community should insist that, not limited to the conferences, international bodies draft a convention against the use of nuclear weapons, and that all nuclear weapons countries sign this convention.

One writer on the subject finds nuclear disarmament to be “an essential goal of a sustainable international order”.⁵⁹ Indeed, the international community should show more conviction in moving toward this goal. The cautionary note of the Indian government in the First Committee of the UN General Assembly needs to be taken seriously in order to strengthen the campaign for nuclear disarmament. The mobilization generated by the humanitarian impact initiative requires further strengthening in order to make significant progress toward the goal of nuclear disarmament. On a number of occasions in the past, the international community has mobilized public opinion against nuclear weapons, but momentum toward disarmament has ultimately fizzled. This should not be allowed to happen again this time. India and other stakeholders in this campaign must have a sustained dialogue to work together in the relevant international bodies toward nuclear disarmament.

If the current movement succeeds and an international instrument on nuclear disarmament is concluded, it will help in “reviewing the international security regime and developing a credible and more humane security framework that does not depend on nuclear weapons”.⁶⁰ Global nuclear governance may focus on the necessary steps towards nuclear disarmament and on a timetable for nuclear weapons States to accomplish these steps. The international community can build a clear-cut regime and an institution like the Organisation for the Prohibition of Chemical Weapons to implement the mandate and verify compliance. It may sound a distant dream today, but by sustaining the current campaign, the goal of total nuclear disarmament could be realized in the near future.

59 James E. Doyle, “Why Eliminate Nuclear Weapons?”, *Survival*, Vol. 55, No. 1, 2013, p. 26.

60 Yasuyoshi Komizo, “Remarks on Behalf of Mayors for Peace”, Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 9 December 2014, available at: www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abruestung/HINW14/Statements/HINW14_Statement_Mayors_for_Peace.pdf.

Non-State actors’ pursuit of CBRN weapons: From motivation to potential humanitarian consequences

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Abstract

This paper discusses non-State actors’ motivation and capacity to develop and use chemical, biological, radiological or nuclear (CBRN) improvised weapons in attacks, as well as the possible consequences of such use. Six types of groups have been identified as potential CBRN weapons users that may increasingly be able to acquire relevant CBRN weapons-related knowledge, skills and possibly materials. As technical barriers still form a gap between the theoretical possibility and the operational reality, any potential future CBRN attacks would most likely be crude, low-level attacks, including chemical or radiological materials. CBRN attacks carried out by non-State actors in the future are likely to be more disruptive than destructive.

Keywords: CBRN, non-State actors, weaponization, humanitarian consequences.

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Recent developments in Syria¹ and its neighbouring countries have revitalized awareness of the threat of attacks involving chemical, biological, radiological or nuclear (CBRN) weapons or weapons of mass destruction (WMD).² Within this threat, which has historically included conventional use (that is, use in State versus State conflicts), there is a steadily growing concern about the potential use of these weapons by non-State actors. There are increasing indications that certain types of non-State groups have planned or are planning to carry out attacks using CBRN weapons. In relation to Syria, for example, claims of rebels using chemicals, including sarin, in furtherance of their goals have been made.³ Islamic State (IS) specifically has been accused of using low-grade chemical weapons on several occasions, including chlorine and mustard gas against Kurdish fighters on a number of occasions in 2015.⁴ The possibility that such groups may continue to use such weapons, both within and outside battle zones, was emphasized once

- 1 In August 2013, the nerve agent sarin was used on a relatively large scale in the outskirts of Damascus – resulting in numerous casualties predominantly among civilians, including children – and there is compelling evidence that chlorine was used “systematically and repeatedly” as a weapon in villages in northern Syria from April to August 2014. United Nations (UN) Mission to Investigate Allegations of the Use of Chemical Weapons in the Syrian Arab Republic, Report on Allegations of the Use of Chemical Weapons in the Ghouta Area of Damascus on 21 August 2013, UN Doc. A/67/997-S/2013/553, 16 September 2013, p. 8; Organisation for the Prohibition of Chemical Weapons (OPCW), “OPCW Fact Finding Mission: OPCW, ‘Compelling Confirmation’ that Chlorine Gas Used as Weapon in Syria”, press release, 10 September 2014, available at: www.opcw.org/news/article/opcw-fact-finding-mission-compelling-confirmation-that-chlorine-gas-used-as-weapon-in-syria/ (all internet references were accessed in November 2015); OPCW, Third Report of the OPCW Fact-Finding Mission in Syria, S/1230/2014, 18 December 2014.
- 2 The terms “CBRN weapons” and “WMD” are often used interchangeably. The latter term is particularly used in official texts (e.g. by the UN since 1947), defined as “atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above”. UN Convention on Conventional Armaments (CCA), UN Doc. S/C.3/32/Rev.1, August 1948, as quoted in UN, Office of Public Information, *The United Nations and Disarmament, 1945–1965*, UN Publication 67.I.8, 1967, p. 28. The term “WMD” is sometimes considered to be misleading, as CBRN weapons are not necessarily massively destructive while non-CBRN weapons can be massively destructive. In this paper, therefore, the term “CBRN weapon” is used rather than “WMD”. For an elaboration on the history of the WMD definition and further developments of the terminology, see, e.g., Seth Carus, “Defining ‘Weapons of Mass Destruction’”, Occasional Paper No. 8, Center for the Study of Weapons of Mass Destruction, Washington, DC, January 2012.
- 3 Damian McElroy, “UN Accuses Syrian Rebels of Chemical Weapons Use”, *The Telegraph*, 6 May 2013, available at: www.telegraph.co.uk/news/worldnews/middleeast/syria/10039672/UN-accuses-Syrian-rebels-of-chemical-weapons-use.html.
- 4 Associated Press in Iraq, “Islamic State Used Chemical Weapons against Peshmerga, Kurds Say”, *The Guardian*, 14 March 2015, available at: www.theguardian.com/world/2015/mar/14/islamic-state-isis-used-chemical-weapons-peshmerga-kurds; *BBC News*, “Islamic State ‘Used Mustard Gas’ against Peshmerga”, *BBC News*, 7 October 2015, available at: www.bbc.com/news/world-middle-east-34471237; Ollie Gillman, “ISIS are Making and Using Chemical Weapons in Syria and Iraq Says US Official as Horrific Pictures of Kurdish Soldiers’ Injuries Caused by Mustard Gas Emerge”, *Daily Mail*, 11 September 2015, available at: www.dailymail.co.uk/news/article-3230295/ISIS-making-using-chemical-weapons-Syria-Iraq-says-official-horrific-pictures-Kurdish-soldiers-injuries-caused-mustard-gas-emerge.html.

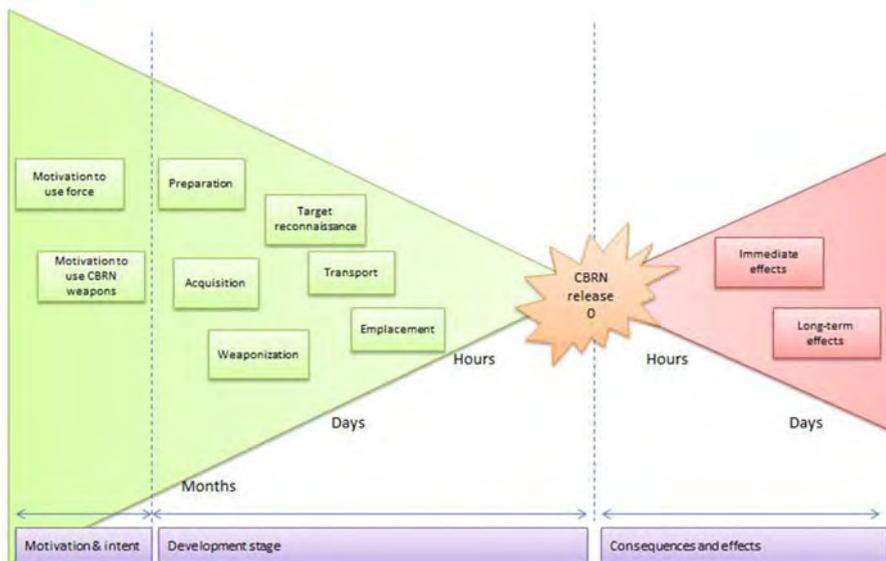


Figure 1. Overview the various elements of the threat and the stages of the process, from the formation of motivation and intent to the actual completion and triggering of a CBRN weapon, as well as the impact of a CBRN attack.

again by French Prime Minister Valls in the aftermath of the 13 November 2015 Paris terrorist attack.⁵ These developments all feed the debate about security of CBRN weapons and the possibility of them falling into the “wrong hands”, as well as availability of raw materials, knowledge on handling and weaponizing such materials and tools of dissemination. Chemical weapons seem to be relatively easily obtainable, biological and radiological weapons fall somewhere in the middle, and nuclear weapons are likely beyond the reach of non-State actors.

In recent decades, no significant increase in actual incidents of CBRN attacks by non-State actors has occurred.⁶ In fact there are only a handful of prominent cases, including the 1995 sarin attack on the Tokyo subway in which a dozen people died and hundreds were injured when the deadly gas was released in five different trains during morning rush hour,⁷ and the 2001 anthrax letters in

5 See, e.g., Adam Withnal, “Paris Attacks: Isis ‘Chemical Weapons’ Warning Issued by French PM Manuel Valls”, *The Independent*, 20 November 2015, available at: www.independent.co.uk/news/world/europe/paris-attacks-french-pm-manuel-valls-issues-isis-chemical-weapons-warning-a6740156.html; Philippe Wojazer, “French PM Valls Says Chemical Warfare Risk Not Ruled Out”, *Reuters*, 19 November 2015, available at: www.reuters.com/article/2015/11/19/us-france-shooting-chemicalweapons-idUSKCN0T80W220151119.

6 The Monterey WMD Terrorism Database provides an overview of worldwide incidents involving the acquisition, possession, threat and use of weapons of mass destruction by sub-State actors, based on open sources. Available at: <http://wmddb.miis.edu/>.

7 See, e.g., Robyn Pang, “Consequence Management in the 1995 Sarin Attacks on the Japanese Subway System”, Discussion Paper, Belfer Center for Science and International Affairs, February 2002, available at: http://belfercenter.ksg.harvard.edu/files/consequence_management_in_the_1995_sarin_attacks_on_the_japanese_subway_system.pdf.

the US, when, soon after the 9/11 attacks, letters containing anthrax spores were sent to a number of news agencies and two US senators, causing the deaths of five people and infecting seventeen others.⁸ Some argue that the perception of the probability/possibility of CBRN attacks by non-State actors may be different from the real probability as a result of sensationalism or fear. This article explores and discusses the actual threat posed. In order to do so, it describes the process from developing the intent to use force, including CBRN materials, to the actual completion and triggering of a CBRN weapon and the release of CBRN materials, which requires careful preparations and actions.

Figure 1 shows the several steps of the development, use and consequences of a CBRN weapon in chronological order. It is also a depiction of how this article is set up. First, motivation and intent to employ CBRN weapons are described. The article discusses several types of non-State groups that may have an intention to use force in the pursuance of their goals. If the use of CBRN materials matches the outcomes sought through the perpetration of an attack, these actors may be motivated to use them rather than “conventional” weapons. This leads to the development stage. Second, conditions for developing CBRN capabilities and weaponization of such capabilities, as well as the probability of actors being able to complete different development tasks and actually execute a CBRN attack, are described. Finally, the potential humanitarian consequences of such attacks, both immediate and long-term, are discussed.

Similar to CBRN attacks, CBRN accidents may also cause enormous destruction and create thousands of victims, as was demonstrated by the 1984 Bhopal pesticide plant gas leak accident in India.⁹ The accident happened at a Union Carbide pesticide plant three miles (4.8 kilometres) from the central Indian city of Bhopal. Toxic methyl isocyanate gas had escaped when a valve in the plant’s underground storage tank broke under pressure. Chaos and panic broke out in the city and surrounding areas as tens of thousands of people attempted to escape. More than 20,000 people required hospital treatment for symptoms including swollen eyes, frothing at the mouth and breathing difficulties. It may be understood from the underlying topic, however, that such accidental disasters do not fall within the scope of this article.

Although attacks on CBRN facilities which ultimately lead to the release of CBRN materials, such as an attack on a nuclear facility or chemical transport or plant, do fall within the scope of this paper, this type of attack will not be elaborated upon here. One can think of the sabotage of a reactor, which could lead to a meltdown, or on-site damage or destruction of a facility leading to the

8 See, e.g., FBI, “Amerithrax or Anthrax Investigation”, *Famous Cases & Criminals*, available at: www.fbi.gov/about-us/history/famous-cases/anthrax-amerithrax.

9 For information about the Bhopal incident, see Jackson B. Browning, *Union Carbide: Disaster at Bhopal*, report, 1993, available at: www.environmentportal.in/files/report-1.pdf; “1984: Hundreds Die in Bhopal Chemical Accident”, *BBC On this Day: 3 December*, available at: http://news.bbc.co.uk/onthisday/hi/dates/stories/december/3/newsid_2698000/2698709.stm.

release of harmful materials. Usually, this would likely require insider cooperation. As for resources, arguably, a commando-style or drone attack may be able to cause the release of materials and would probably need no more than moderate financial resources: "Such attacks are not only within the realm of possibility, but are also within the reach of most non-State groups."¹⁰ For example, in June 2012, an unidentified armed group of men attacked a uranium plant in the southeast of the Central African Republic.¹¹ Additionally, in June and July 2015, in France, explosions occurred at a chemical and petrochemical plant, respectively, as a result of attacks on those facilities.¹²

Cyber-attacks on CBRN facilities may have serious consequences as well. For example, the possibility of breaching even a highly secured nuclear facility was demonstrated by the Stuxnet virus, and the potential consequences of hacking into a plant's control station via computers and digital devices has been made evident by the so-called "Aurora Project".¹³ Experimenters were ultimately able to direct a mock-up chemical plant to self-destruct. This demonstrated not only that a plant's information systems can be penetrated and controlled by cyber-commands, but also that cyber-commands alone can destroy industrial equipment. Arguably, this could cause the release of CBRN materials. In this article, however, the main focus is on the use of CBRN materials in a weapon – that is, a specific improvised delivery device.

Ideology and motivation to perpetrate CBRN attacks

This section addresses the question of which non-State actors would pursue CBRN attacks and why. The term "non-State actor" refers to groups other than States that may use CBRN materials in an attack. Although the possibility of so-called "lone

10 Jeffrey M. Bale and Gary Ackerman, *Recommendations on the Development of Methodologies and Attributes for Assessing Terrorist Threats of WMD Terrorism*, Center for Nonproliferation Studies, Monterey Institute of International Studies, 2005, p. 39.

11 RFI, "Gunmen Attack French Uranium Plant in Central African Republic – Army", *RFI English*, 25 June 2012, available at: www.english.rfi.fr/africa/20120625-gunmen-attack-french-uranium-plant-central-african-republic.

12 In June 2015, an employee of a chemical plant in south-eastern France decapitated his boss, took photographs of himself with the head and an IS flag, and caused an explosion by driving his van into a warehouse containing chemicals. "France Put on High Alert after Attack on Chemical Plant", *Al Jazeera*, 26 June 2015, available at: www.aljazeera.com/news/2015/06/attack-reported-factory-southeastern-france-150626091038049.html. In July 2015, two explosions at a petrochemical plant took place that were believed to be a malicious act due to the distance between the two tanks. Rebecca Trager, "Failed Terror Attack Raises Alarms about Chemical Plant Security", *Chemistry World*, 2 July 2015, available at: www.rsc.org/chemistryworld/2015/07/failed-terrorist-attack-chemical-plant-security; Henry Samuel, "Two Blasts in French Chemical Plant Caused by 'Malicious Act'", *The Telegraph*, 14 July 2015, available at: www.telegraph.co.uk/news/worldnews/europe/france/11739009/Two-blasts-in-French-chemical-plant-caused-by-malicious-act.html.

13 Kim Zetter, "An Unprecedented Look at Stuxnet, the World's First Digital Weapon", *Wired*, 11 March 2014, available at: www.wired.com/2014/11/countdown-to-zero-day-stuxnet/; Mike M. Ahlers, "Inside a Government Computer Attack Exercise", *CNN News*, 17 October 2011, available at: <http://edition.cnn.com/2011/10/17/tech/innovation/cyberattack-exercise-idaho/>.

wolves” conducting CBRN attacks cannot be ruled out,¹⁴ the fact that a number of sophisticated steps need to be taken before CBRN weapons can be developed or acquired, for which specific knowledge, expertise and skills are needed, makes it unlikely that this could be accomplished by a single person. Rather, one needs a network of individuals with dedicated tasks. Such a network may be comprised of leaders, financiers, suppliers, transporters, bomb builders, those who plant the weapons, triggermen and those who exploit the attack. Research has shown that networks are used not only to recruit, train and prepare for an attack, but also to compensate for elements that a single person may lack, such as resources, elite access or ideological support.¹⁵

Possible CBRN-oriented non-State actors

There is a paucity of studies that analyze why groups would want to acquire and use CBRN weapons.¹⁶ Nevertheless, it is possible to make a number of relevant observations. For example, ideology plays a decisive role in a group’s objectives and *modus operandi*. The use of CBRN weapons may or may not fit a non-State actor’s ideological agenda, or encompass overall and specific operational objectives. Based in part on previous CBRN incidents, a number of ideological groups have been identified as groups that may use violence in the pursuit of their goals, including possibly CBRN weapons. These include nationalist, separatist or irredentist groups; radical religious fundamentalist groups; apocalyptic or millenarian “new religious movement” groups; single-issue groups; right-wing groups; and social revolutionary or secular left-wing groups. The sections below provide a brief overview of the main features of such groups.

A few general remarks can also be made regarding all six types of groups that have been identified as potentially motivated to use CBRN means in furtherance of their goals. For example, social alienation of a particular group plays an important role as it creates, maintains or strengthens the notion of “us” versus “them”.¹⁷ A charismatic leader may make use of this notion to motivate his followers not only to adhere to his ideology, but also to undertake actions that

14 In fact, there are strong suspicions that the anthrax letters case of 2001 was due to the actions of a single person with access to a US biological defence laboratory. “FBI Concludes Investigation into 2001 Anthrax Mailings”, *CNN News*, 19 February 2010, available at: <http://edition.cnn.com/2010/CRIME/02/19/fbi.anthrax.report/>.

15 Bartosz H. Stanislawski, “Transnational Organized Crime, Terrorism, and WMD”, in Andrew Blum, Victor Asal and Jonathan Wilkenfeld (eds), “Nonstate Actors, Terrorism and Weapons of Mass Destruction”, in *International Studies Review*, Vol. 7, No. 7, 2005, p. 159; Christian Leuprecht and Kenneth Hall, “Why Terror Networks are Dissimilar: How Structure Relates to Function”, in Anthony J. Masys, *Networks and Network Analysis for Defence and Security*, Lecture Notes in Social Networks, SpringerLink, 2004, p. 86.

16 Due to the lack of (statistical) studies, empirical analysis of CBRN attacks is virtually impossible and it is difficult to comprehend the potential extent of attacks by non-State groups using CBRN weapons. Reshmi Kazi, “The Correlation Between Non-State Actors and Weapons of Mass Destruction”, *Connections: The Quarterly Journal*, Vol. 10, No. 4, 2011, p. 2.

17 Amuary Vergely, “CBRN Weapons and Non-State Actors”, *The Risky Shift*, 13 May 2013, available at: <http://theriskyshift.com/author/amaury-vergely/>.

they would not normally perform. His decisions may suppress members' moral constraints, as the leader holds the truth, but also, because the leader will be responsible for the actions, individuals fade away into the group as a whole.

Nationalist, separatist or irredentist groups

Traditional nationalist or separatist groups are organizations whose purpose is focused on achieving some type of political objectives for a given group.¹⁸ For example, they may want to establish an independent State for the ethnic, linguistic, cultural or national community with which they are affiliated, or, if they already have their own independent State, to unite all of the members of their community.¹⁹ Indiscriminate acts against an adversary, in particular in areas where the group's supporters are not present, can be rationalized by such a group.

The prospect of CBRN weapon use in such areas is conceivable, but nationalist/separatist groups will generally steer clear of CBRN weapons because of concerns about alienating their constituencies.²⁰ For example, Chechen separatists demonstrated that they had the capacity to produce a so-called "dirty bomb" by placing a shielded cancer treatment device containing a caesium-137 source, strapped to an explosive, in Moscow's Ismailovsky Park in 1995.²¹ The separatists then alerted the press that they had left the device in the park, and on the very spot the rebels indicated, authorities indeed found the partially buried device.²²

Radical religious groups

Radical religious groups are comprised of religious extremists who embrace political objectives and/or forcibly insert religion into the political sphere.²³ Such groups are often hierarchical in nature, and their leaders may provide interpretations of religious texts that justify violence and which are adopted by their "true believer" followers.²⁴

There is no ambivalence within such groups concerning the use of religiously commanded violence. These groups rely heavily on acts of terror that

18 Charles D. Ferguson and William C. Potter, *The Four Faces of Nuclear Terrorism*, Routledge, New York, 2005, p. 19.

19 J. M. Bale and G. Ackerman, above note 10, p. 7.

20 Charles D. Ferguson, "WMD Terrorism", in Nathan E. Busch and Daniel H. Joyner (eds), *Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy*, Studies in Security and International Affairs, University of Georgia Press, Athens, GA, 2009, p. 40.

21 Andy Oppenheimer, "A Sickening Episode: Nuclear Looting in Iraq and the Global Threat From Radiological Weapons", *Disarmament Diplomacy*, No. 73, October–November 2002; Sonia Ben Ouagrham-Gormley, "An Unrealized Nexus? WMD-related Trafficking, Terrorism, and Organized Crime in the Former Soviet Union", *Arms Control Today*, 1 July 2007, available at: www.armscontrol.org/act/2007_07-08/CoverStory.

22 A. Oppenheimer, above note 21; S. Ben Ouagrham-Gormley, above note 21.

23 C. D. Ferguson, above note 20, p. 39.

24 Jerrold M. Post, "The Psychology of WMD Terrorism", in A. Blum, V. Asal and J. Wilkenfeld (eds), above note 15, p. 149.

target the purported “enemies of God” and other evildoers.²⁵ As such, what constraints there are against using CBRN as a means to achieve their goals may be overcome. For example, Al Qaeda and IS draw part of their strength from a radical interpretation of Islam that seeks to create a caliphate which would unite the Muslim world under strict religious law. Interest in CBRN weapons was proclaimed by Osama bin Laden, who stated that acquiring CBRN weapons is a religious duty. He referred to the Hiroshima bombing to emphasize his search to acquire and use nuclear weapons “not only because it is God’s will, but because he wants to do to American foreign policy what the United States did to Japanese imperial surrender policy”.²⁶ Similarly, there are indications that IS has promulgated among its members a religious edict that sanctions the use of CBRN against civilians.²⁷

Apocalyptic millenarian groups or “new religious movements”

Apocalyptic millenarian groups or “new religious movements” show certain similarities with radical religious fundamentalist groups. In contrast to the latter, however, apocalyptic groups do not necessarily pursue change; rather, they aspire to bring about Armageddon, or world destruction. Leaders of such groups may reason that the use of CBRN weapons can trigger the apocalypse, thus, in their view, cleansing the world of evil.²⁸

For example, the Aum Shinrikyo cult has conducted CBRN attacks. The most notorious example is the 1995 sarin attack on the Tokyo subway system, but this group has also used anthrax and botulinum toxin in attacks (the former ultimately failed to cause any damage due to the use of incorrect strains), experimented with Q fever and attempted to acquire the Ebola virus.²⁹ Additionally, it reportedly attempted to purchase nuclear weapons components to pursue its nuclear ambitions, but never succeeded in developing a nuclear weapon.³⁰

25 J. M. Bale and G. Ackerman, above note 10, p. 8.

26 Steve Coll, “Nuclear Nightmares: What Bin Laden Sees in Hiroshima”, *Washington Post*, 6 February 2005, available at: www.washingtonpost.com/wp-dyn/articles/A365-2005Feb5.html.

27 See, e.g., Damien McElroy, “Islamic State Seeks to Use Bubonic Plague as a Weapon of War”, *The Telegraph*, 29 August 2014, available at: www.telegraph.co.uk/news/worldnews/middleeast/iraq/11064133/Islamic-State-seeks-to-use-bubonic-plague-as-a-weapon-of-war.html.

28 C. D. Ferguson and W. C. Potter, above note 20, p. 39.

29 See, e.g., Amy E. Smithson, “Rethinking the Lessons of Tokyo”, in Amy E. Smithson and Leslie-Anne Levy (eds), *Ataxia: The Chemical and Biological Terrorism Threat and the US Response*, Henry L. Stimson Center, Washington, DC, 1999, available at: www.stimson.org/images/uploads/research-pdfs/atxchapter3.pdf; Richard Danzig, Marc Sageman, Terrance Leighton, Lloyd Hough, Hidemi Yuki, Rui Kotani and Zachary M. Hosford, *Aum Shinrikyo: Insights Into How Terrorists Develop Biological and Chemical Weapons*, 2nd ed., Center for a New American Security, December 2012, available at: www.cnas.org/files/documents/publications/CNAS_AumShinrikyo_Danzig_1.pdf.

30 For more information, see Robert Jay Lifton, *Destroying the World to Save It: Aum Shinrikyo, Apocalyptic Violence, and the New Global Terrorism*. Macmillan, New York, 2000.

Single-issue groups

Single-issue groups focus on very specific or relatively narrowly defined causes of various sorts – e.g. anti-abortion groups, eco-groups and animal rights activists – and are committed to acting as a catalyst to change policies or behaviour.³¹ It is unlikely that these groups will use CBRN weapons to achieve their goals, as indiscriminate weapons may target too wide a spectrum of victims outside their targets, which may adversely affect public acceptance of their agendas. Rather, they have targeted goals that do not include mass casualties. An odd sub-category is “green anarchists”, who apply similar perspectives as social anarchists but also critique the way humans interact with the non-human world (animals, nature, etc.).³² According to these groups, not only social hierarchy but all hierarchy should be abolished. In its most extreme form, this could happen by rebirth of the earth through the annihilation of the human race. As such, this particular group also shows strong similarities to apocalyptic groups.³³ The possibility of single-issue actors such as these using CBRN agents thus cannot be ruled out.

Right-wing groups

Right-wing groups seek to restore national greatness (radical nationalists), suppress “dissident” opponents, expel or subordinate ethnic and cultural minorities (racists) or overthrow the existing democratic and “plutocratic” capitalist systems in order to establish a revolutionary “new order” (neo-fascists).³⁴ Right-wing non-State actors generally dehumanize their enemies and seek to delegitimize the government to justify their attacks. Individuals in this category are a significant threat for low-level chemical or biological attacks, but probably do not represent a threat for mass-casualty chemical or biological attacks due to resource limitations.³⁵

Despite these limitations, right-wing extremists have managed to acquire CBRN material that they have planned to use. For example, in the United States, evidence has been found that right-wing extremists acquired CBRN material between 9/11 and August 2012, which they planned to use against the general public or government employees.³⁶

31 C. D. Ferguson and W. C. Potter, above note 18, p. 20.

32 “Green Anarchism: Towards the Abolition of Hierarchy”, *Freedom*, 29 August 2014, available at: <http://freedomnews.org.uk/green-anarchism-towards-the-abolition-of-hierarchy/>; Nick Harding, “Eco Anarchists: A New Breed of Terrorist?”, *Independent*, 18 May 2010, available at: www.independent.co.uk/environment/eco-anarchists-a-new-breed-of-terrorist-1975559.html.

33 Robin M. Frost, “Terrorist Psychology, Motivation and Strategy”, *The Adelphi Papers*, Vol. 45, No. 378, 2005, p. 46.

34 J. M. Bale and G. Ackerman, above note 10, p. 8.

35 J. M. Post, above note 24, p. 150.

36 Peter Bergen and Jennifer Rowland, “Right-Wing Extremist Terrorism as Deadly a Threat as Al Qaeda?”, *CNN News*, 8 August 2012, available at: <http://edition.cnn.com/2012/08/07/opinion/bergen-terrorism-wisconsin/>.

Social revolutionary or secular left-wing groups

Social revolutionary or secular left-wing groups seek to overthrow the capitalist economic and social orders and establish either a “dictatorship of the proletariat” (for example, Marxist-Leninists) or, more rarely, a decentralized, non-hierarchical socio-political system (for example, anarchists).³⁷ These groups are constrained from indiscriminate acts that cause significant casualties among their own supporters or cause negative reactions in domestic and international audiences, but they can rationalize discriminate acts against government or symbolic capitalist targets.³⁸ No publicly available, explicit examples of actual attacks perpetrated by this kind of non-State group have been identified.

Motivation for using CBRN weapons

Ideology and motivation are closely linked. Both play a decisive role in the selection of targets, tactical methods and weapons. Terrorist attacks, for example, are often primarily a form of psychological warfare in which a localized incident is intended to spread fear and anxiety among a wider audience or specific society.³⁹ This psychological aspect is vital to the success of a group.⁴⁰ Many of the groups described in the previous sections have been able to conduct attacks that spread fear with conventional weapons. This raises the question of why they would seek to conduct CBRN attacks, which are much more complicated. The objectives behind CBRN attacks vary greatly, in terms of impact sought as well as goals or motivations. The threat alone of using CBRN weapons gives a non-State group many advantages, because the thought of being the victim of a CBRN attack spreads greater and even disproportionate fear among potential target groups. The fact that psychological symptoms are more likely to occur when facing CBRN agents than when facing conventional weapons is possibly the most important motivational incentive that might make the acquisition and/or use of CBRN weapons attractive to non-State actors.⁴¹

Similar to, for instance, the psychological impact of chemical warfare in the First World War, the concept of a CBRN attack today is anxiety-provoking not only because of the intangible nature of most of the harmful agents being used, but also because of the doubt as to whether or not one has been exposed. During the Tokyo subway attack, for example, the majority of the people who reported to medical

37 J. M. Bale and G. Ackerman, above note 10, p. 8.

38 J. M. Post, above note 24, p. 149.

39 With regard to fear relating to terrorist attacks with a focus on CBRN materials, see, e.g., Brooke Rogers, Richard Amlot, G. James Rubin, Simon Wessely and Kirstian Krieger, “Mediating the Social and Psychological Impacts of Terrorist Attacks: The Role of Risk Perception and Risk Communication”, *International Review of Psychiatry*, Vol. 19, No. 3, 2007, pp. 279–288.

40 J. M. Bale and G. Ackerman, above note 10, p. 21.

41 *Ibid.*, pp. 11–12. Arguably, given the frequency of bombings resulting in mass casualties, it could be argued that only conventional attacks which result in hundreds or thousands of deaths and injured (9/11-style attacks) are likely to have a similar psychological impact as successful acts of CBRN terrorism, even those that are small in scale.

facilities showed no symptoms of nerve agent exposure and were classified as “worried well”.⁴² Increased public fear can be anticipated from the possibility of suffering slowly and for a long period of time or the fact that the effects of CBRN weapons may be delayed. In the case of biological agents, a considerable amount of time may pass before symptoms occur and are recognized. In the meantime, there may be nothing the public can do to prevent themselves from becoming victims. In contrast to a naturally occurring flu epidemic, many people will come to the hospital at the slightest sign of influenza-like symptoms following the report of an attack, flooding hospitals and possibly crippling medical services. For example, in the period around the 2001 anthrax letters in the United States, an estimated 200,000 people made inquiry calls about anthrax to health departments across the nation.⁴³

The fear factor may thus convince non-State actors to pursue CBRN weapons. On the other hand, similar fears about possible contamination, infection and disease caused by CBRN agents that beset the general populace may be shared by non-State actors themselves. This may deter non-State actors from pursuing use of CBRN weapons. They are aware that, in particular during the development and weaponization phases, handling CBRN materials poses risks. Fear of retaliation may also deter a group. For example, it would be risky for established groups like Hezbollah, Hamas, and Al-Jihad al-Islami to engage in CBRN attacks, in particular against Israel or the United States, since the territories they control could be occupied or destroyed in response.⁴⁴ Likewise, for some particular groups, such as Al Qaeda or IS, this would be counterproductive to obtaining their goal of a Muslim caliphate, although recent attacks by these groups have been reported.⁴⁵ However, this restraint does not apply to transnational groups that are spread all over the globe and do not depend for their survival on their continued presence in or control over specific territories. Additionally, if a non-State group genuinely believes that it can successfully conceal its involvement in a CBRN attack, it may not fear retaliation.

Non-State actors may also consider the negative impact on their support systems of using CBRN weapons. Generally, non-State groups depend on financial or other support from external sources, and it can be questioned whether these sources will be willing to support CBRN warfare. Certain types of actions may be considered “beyond the pale” principally for moral reasons. The use of CBRN materials, in particular if it has the potential to inflict mass

42 For more information on the “worried well” phenomenon, see Fred P. Stone, “The Worried Well Response to CBRN Events: Analysis and Solutions”, The Counterproliferation Papers, Future Warfare Series No. 40, USAF Counterproliferation Centre, June 2007, pp. 6–7, available at: <https://fas.org/irp/threat/cbw/worried.pdf>.

43 Fran Pilch, *The Worried Well: Strategies for Installation Commanders*, USAF Institute for National Security Studies, USAF Academy, Colorado Springs, CO, 2004, p. 12.

44 J. M. Bale and G. Ackerman, above note 10, p. 31.

45 Lizzie Dearden “Isis ‘Manufacturing and Using Chemical Weapons’ in Iraq and Syria, US Official Claims”, *The Independent*, 11 September 2015, available at: www.independent.co.uk/news/world/middle-east/isis-manufacturing-and-using-chemical-weapons-in-iraq-and-syria-us-official-claims-10496094.html.

casualties, likely falls into this category for most non-State groups and their supporters. Carrying out such actions may be difficult to justify and, therefore, rather than impress or inspire, actors are likely to alienate support systems and potential international sponsors and discourage individuals from being recruited. Ultimately, this could lead to a group's demise. Only the most fanatical or desperate extremists will fail to recognize the broader negative impact that their violent actions are likely to have on their cause.⁴⁶

Incidentally, the actual perpetrators of an attack may not necessarily be motivated to undertake certain actions, and may not have the freedom to make their own decisions. For instance, in certain cultures husbands or fathers have the authority to make decisions on behalf of women, and could thus force women to perform suicide bombings. Islamic restrictions against searching women provide possibilities to hide explosive-laden suicide vests underneath their burqas undetected. Similarly, there are reports of children being used as bombers; Boko Haram, the Taliban and IS, among others, have recruited and trained children to become suicide bombers.⁴⁷ As for the topic of suicide actions, the question arises as to why, as of yet, hardly any suicide CBRN attacks have taken place, although the chlorine bombings in Iraq from 2006 to 2007,⁴⁸ described in more detail later, may belong to this category. Biological weapons, for example, could be effectively combined with suicide tactics to create mass casualties, such as using a contaminated person to propagate a contagious pathogen in a public area. Additionally, after each CBRN incident, there are fears that others may copy such attacks, but no attack has been duplicated as of yet. This so-called "copycat" phenomenon does not seem to apply to CBRN attacks, although one source explicitly refers to certain cases in Japan that showed similar features to Aum Shinrikyo's attacks.⁴⁹

In short, there are several reasons why non-State actors may pursue the use of CBRN weapons as a preferred route of action, particularly because inspiring fear is vital to the success of terrorist groups and CBRN attacks are more likely than conventional weapons to achieve this among both the target group and wider audiences. In practice, however, it seems that non-State actors who choose to resort to tactics designed to create terror are quite reluctant to use CBRN materials for a number of reasons. As discussed above, they may be fearful of handling these materials; as the use of CBRN weaponry is very controversial, they may risk losing the support of their networks and/or followers; or the retaliation

46 J. M. Bale and G. Ackerman, above note 10, p. 35.

47 Lara Logan, "Child Suicide Bombers", *CBS News*, 12 May 2015, available at: www.cbsnews.com/news/child-suicide-bombers-lara-logan-60-minutes/; "Nigerian City of Maiduguri 'Attacked by Five Child Bombers'", *BBC News*, 2 October 2015, available at: www.bbc.com/news/world-africa-34423311; Marisol Seibold, "Child Suicide Bombers: 'They Told Us the Bombs Would Not Kill Us ...'", *Jihad Watch*, 14 January 2012, available at: www.jihadwatch.org/2012/01/child-suicide-bombers-they-told-us-the-bombs-would-not-kill-us-only-the-americans-would-die-and-you.

48 Jim Garamone, "Terrorists Using Chlorine Car Bombs to Intimidate Iraqis", *American Forces Press Service*, 6 June 2007, available at: <http://archive.defense.gov/news/newsarticle.aspx?id=46311>.

49 Tim Ballard, Jason Pate, Gary Ackerman, Diana McCauley and Sean Lawson, "Chronology of Aum Shinrikyo's CBW Activities", *CNS Reports*, 2001.

may be very severe. Additionally, even if they are motivated to do so, they may lack the necessary knowledge, technological skills and safety measures to use CBRN weapons. Certain developments indicate, however, that several of these restraining factors may be gradually breaking down. For example, globalization makes information increasingly available, including information on how to handle and process CBRN materials. The following sections will discuss such issues in order to assess the probability of CBRN attacks perpetrated by non-State actors.

Probability of CBRN attacks perpetrated by non-State actors

The probability of threat realization is often determined by the motivation of the perpetrator and its capabilities. Obviously, the motives behind why a group would choose to develop and use a particular agent not only depend on the ideology, objectives and characteristics of the group, but are also context-dependent. Desperate needs lead to desperate deeds. With respect to capabilities, analysis of existing literature foresees significantly fewer hurdles to CBRN acquisition for both State and non-State actors in the future, with increasing availability of knowledge, techniques and dual-use materials as a result of knowledge diffusion and economic globalization, as well as fewer hurdles to CBRN development, which is the prerogative of State actors.⁵⁰ Conditions that facilitate CBRN capability development, weaponization and execution of an attack may thus grow over time.

Conditions for developing CBRN capabilities

To carry out CBRN attacks, a non-State actor needs to possess or acquire certain capabilities. A large number of activities need to be conducted, supported by personnel and resources. For example, one needs to acquire the knowledge on what materials to use and how to handle them, the financial means to obtain these materials, the support of one or more suppliers, and the knowledge and capabilities to actually manufacture the materials in such a way that they are suitable to use as a weapon. In particular, if a non-State actor intends to create a CBRN weapon from scratch, specific expertise and skills are needed that are not likely to be found in one single person. Even if a non-State actor manages to acquire a completed weapon or components thereof, specific skills are needed to create the desired effects for proper dispersion etc.⁵¹ Thus, small networks of

50 See, e.g., The Hague Centre for Strategic Studies, *Future Issue: The Future of CBRN*, Vol. 12, No. 3, 2010, pp. 7–8.

51 For example, IS took control of the Al Muthanna facility, a former chemical weapons complex of Saddam Hussein's, in July 2014. Most of the remaining chemicals are no longer intact, and experts therefore believe that transforming them into military-grade weapons and delivery systems may be beyond the facility's current capability. "Isis Seizes Former Chemical Weapons Plant in Iraq", *The Guardian*, 9 July 2014, available at: www.theguardian.com/world/2014/jul/09/isis-seizes-chemical-weapons-plant-muthanna-iraq.

persons are likely to be established, which will likely include a number of individuals with dedicated tasks.

To assemble such a network of skilled individuals, recruitment activities have to be performed. The potential solicitation of the services of personnel formerly employed by State-level weapons programmes is an issue of concern, as the current global climate does not present many State-level employment opportunities. Former weapons scientists may, therefore, be susceptible to recruitment by non-State employers. Within this category, the greatest threat may stem from disgruntled former weapons experts who have the ability either to aerosolize biological agents properly or to activate radiological or nuclear devices.⁵² Of particular concern are scientists from the weapons programmes of the former Soviet Union, South Africa and Iraq.⁵³ The United States, for example, has spent millions of dollars in an attempt to keep key Russian former weapons experts above the poverty line.⁵⁴

An issue taken into account in the recruitment process is that every introduction of a new member is a risk for a non-State group; recruitment is therefore based on trust and secrecy. Secrecy in general helps reduce the risk of detection.⁵⁵ Recruits will often be sought in trusted social networks and in particular among long-standing business or personal contacts. Considering the number and complexity of tasks to be completed before a CBRN weapon can be deployed, however, small, secretive cells will likely have a support base of people from a larger identity group, whose members accept their goals even if they reject their tactics. Non-State actors thus likely take careful political and security measures to subsist and to ensure that they suppress potential opposition from, or defection by, their supporters.⁵⁶

In order to maintain a network and to be able to entice potential recruits to join that network, finances must be generated. Non-State actors derive income from a variety of sources, often combining both lawful and unlawful funding.⁵⁷ Finance generation can include donations and fundraising or charitable initiatives, derived from States, organizations, communities or individuals. The actors involved do not always know the illegitimate end of the activities. Revenue can also be generated from criminal activities, for example extortion or fraud, or from working together with criminal groups that do not necessarily have an intention to commit terrorist acts. If criminals trade with terrorists,

52 J. M. Bale and G. Ackerman, above note 10, p. 69.

53 *Ibid.*, p. 51.

54 Amy E. Smithson, *Toxic Archipelago: Preventing Proliferation from the Former Soviet Chemical and Biological Weapons Complexes*, Report No. 32, Henry L. Stimson Center, Washington, DC, December 1999.

55 Ted Robert Gurr, "Which Minorities Might Use Weapons of Mass Destruction?", in A. Blum, V. Asal and J. Wilkenfeld, above note 15, p. 144.

56 *Ibid.*, pp. 144–145.

57 See, e.g., Financial Action Task Force, *Terrorist Financing*, OECD, Paris, 29 February 2008, available at: www.fatf-gafi.org/media/fatf/documents/reports/FATF%20Terrorist%20Financing%20Typologies%20Report.pdf.

both may be able to receive whatever they might need: materials, weapons and information.

Additionally, some sort of infrastructure to facilitate the development of source funding must be built and maintained, as funds must be channelled to all network participants – that is, everyone who provides services or materials. Scrutiny of funds presents considerable challenges to domestic as well as international financial institutions because non-State groups navigate loopholes in the international financial system. Financial institutions attempt to control international financing through sanctions or other coercive measures as directed by international instruments on suppression of all forms of financing for non-State actors, but often with limited success.⁵⁸ Furthermore, outside the traditional banking systems, there are also alternative methods for making financial arrangements – for example, via Hawala banking.⁵⁹ This is a means to provide financial services to the unbanked in countries with limited financial access. In significant numbers of jurisdictions, and sometimes even within the same jurisdiction, law enforcement views this as one of the leading channels for terrorist financing and money laundering.⁶⁰

“Criminal enclaves” or “black spots” are environments in which criminal and other non-State actors can interact. Such environments can be found in weak States with little or no governmental control or societies with subcultures that feature precedents and justifications for violent conflict.⁶¹ As such, this is similar to the concept of failed States. Black spots may also be found in smaller areas and can exist as part of border regions. For example, the tri-border area in South America serves as a hub for arms smuggling, money laundering, illicit trafficking and fundraising for extremist organizations, allegedly including Hezbollah.⁶² In addition to black spots being able to facilitate interaction between non-State groups and criminals, they also provide potential for collaboration between non-State groups. The oldest alliance patterns adopted by States within the international system – those based on the notion that “the enemy of my enemy is my friend” – also influence the behaviour of non-State actors.⁶³ One can observe this in the conflict areas in and around Iraq and Syria, where armed groups ally and split in pursuance of their goals and their desire to defeat common enemies.

Black spots also provide relatively protected places where CBRN weapons can be developed and where people with malicious intent and skills may already reside. Due to the complexity of producing CBRN weapons and the fact that preparing, transporting and employing CBRN weapons involves safety risks,

58 Javaid Rehman, *International Human Rights Law*, 2nd ed., Pearson, Harlow, 2010, p. 901.

59 Financial Action Task Force, *The Role of Hawala and Other Similar Service Providers in Money Laundering*, October 2013, available at: www.fatf-gafi.org/publications/methodsandtrends/documents/role-hawalas-in-ml-tf.html.

60 *Ibid.*

61 A. Blum, V. Asal, J. Wilkenfeld, above note 15, pp. 135–136.

62 Cyrus Miryektá, “Hezbollah in the Tri-Border Area of South America”, *Small Wars Journal*, 10 September 2010.

63 Gary Ackerman, “WMD Terrorism Research: Whereto from Here?”, in A. Blum, V. Asal and J. Wilkenfeld, above note 15, pp. 142–143.

non-State actors may want to install safety precautions such as physical means of preventing CBRN materials from being released unwillingly or of protecting themselves against exposure to such materials, in particular if they consider mass production. Such measures may attract attention in public locations. Non-State actors must thus make sure that they perform their preparations covertly to avoid detection and intervention, particularly considering that States are under an obligation to deny safe haven to those who support terrorism and to bring to justice those who engage in criminal activities.⁶⁴

The lack of governmental control may make black spots ideal locations for the production of CBRN weapons. Aum Shinrikyo, for example, managed to operate a state-of-the-art, secret laboratory at the base of Mount Fuji,⁶⁵ and Al Qaeda reportedly maintained several biological and chemical weapons-related facilities in Afghanistan prior to the US invasion in 2001.⁶⁶ Allegedly, IS has also set up a special branch to develop chemical weapons for the group, using scientists from Iraq and Syria as well as other countries in the region.⁶⁷ However, “black spots” are not essential for developing a CBRN weapon as long as one flies under the radar. For example, in 2005, the British courts convicted an Algerian for “commit[ting] public nuisance by the use of poisons and/or explosives to cause disruption, fear or injury”,⁶⁸ after police found equipment needed to produce ricin and recipes for ricin, cyanide and several other poisons in his flat in north London.⁶⁹

As soon as personnel and facilities have been procured, preparations for the actual development phase may commence. Technical and knowledge-sharing innovations increasingly facilitate effective use of available information and technology, even by laymen. With a multiplicity of resources by which individuals, including non-State actors, can educate themselves on aspects of CBRN weapons, including college textbooks, academic journals and industry publications, such individuals may place themselves higher along the learning curve than lay actors from previous decades.⁷⁰ In addition to the increased diffusion of knowledge, technological advances are widely available.⁷¹ For example, the same equipment and technical knowledge used for legitimate

64 UNSC Res. 1373, 28 September 2001, para. 2.

65 Christopher Szechenyi, “Inside the Village of Aum Shinrikyo”, *Moscow Times*, 22 April 1995, available at: www.themoscowtimes.com/news/article/inside-the-village-of-aum-shinrikyo/340092.html.

66 Francis Marlo, “WMD Terrorism and US Intelligence Collection”, *Terrorism and Political Violence*, Vol. 11, No. 3, 1999.

67 “‘ISIS Branch’ Seeking to Produce Chemical Weapons – Iraq and US Intel”, *RT*, 19 November 2015, available at: www.rt.com/news/322726-ISIS-chemical-weapons-intel/.

68 Chris Summers, “Questions Over Ricin Conspiracy”, *BBC News*, 13 April 2005, available at: http://news.bbc.co.uk/2/hi/uk_news/4433499.stm.

69 Edwin Bakker, “CBRN Terrorisme”, in Erwin R. Muller, Uri Rosenthal and Rob de Wijk (eds.), *Terrorisme: Studies over terrorisme en terrorismebestrijding*, Kluwer, Deventer, 2008, p. 135; “The Ricin Case Timeline”, *BBC News*, 13 April 2005, available at: <http://news.bbc.co.uk/1/hi/uk/4433459.stm>.

70 J. M. Bale and G. Ackerman, above note 10, p. 50.

71 Victor H. Asal, Gary A. Ackerman and R. Karl Rethemeyer, “Connections Can Be Toxic: Terrorist Organizational Factors and the Pursuit of CBRN Terrorism”, *Studies in Conflict and Terrorism*, Vol. 35, No. 3, 2012, p. 6.

research to save lives can also be used to manufacture deadly diseases.⁷² For this reason it is ever more complicated to identify illegitimate laboratories – for example, those producing non-medical narcotics – that may at some point engage in producing CBRN agents.

Additionally, unscrupulous suppliers, including both State and non-State actors, have consistently flouted international restrictions on controlled dual-use items.⁷³ It is extremely difficult to shut down such supply lines considering that the necessary amount of dual-use equipment and materials is often far below the threshold for surveillance by any national or international non-proliferation entity and the actors involved sometimes cooperate with one another to undermine or avoid export controls. For example, even after a warning from the Ministry of Foreign Affairs that Iraq had used chemical weapons against Iran, a Dutch entrepreneur continued to supply large amounts of raw materials that, in addition to several legitimate applications, can be used as precursors for chemical weapons. Although the entrepreneur denied being aware of the use of his materials, the Dutch courts ruled that he was complicit in a violation of humanitarian law by those in power in Iraq, by supplying substantial amounts of raw materials for mustard gas, and he was sentenced to seventeen years' imprisonment.⁷⁴ In 2013 it was confirmed that European companies had exported a number of different dual-use chemicals to Syria, again demonstrating that there are inherent difficulties in controlling the international transfer of chemicals.⁷⁵ These difficulties apply not only to trade in chemicals, but also to the other fields of CBRN.⁷⁶

Weaponization

If a non-State actor has been able to find sufficient financial support, assembled a network of dedicated and skilled individuals, and acquired the necessary knowledge, equipment and raw materials, it may attempt to build a CBRN weapon.

Chemical weapons

A number of steps are required to turn a chemical into a weapon. Most precursor chemicals are available in the chemical industry. The more basic the initial precursor chemicals that the non-State actor obtains, the more reaction steps will likely be required to produce the desired chemical agent and the longer and more

72 US Department of State, *Clinton in Geneva at Biological and Toxin Weapons Convention*, December 2011, available at: <http://iipdigital.usembassy.gov/st/english/texttrans/2011/12/20111207104803su0.7202352.html?distid=ucs#axzz32iEEcrh1>.

73 J. M. Bale and G. Ackerman, above note 10, p. 43.

74 Gerechtshof's-Gravenhage, *Strafzaak Van Anraat*, Case No. 2200050906-2, 9 May 2007, para. 8, available in Dutch at: <http://deemlink.rechtspraak.nl/uitspraak?id=ECLI:NL:GHSGR:2007:BA4676>.

75 Ian Anthony, "Exports of Dual-Use Chemicals to Syria: An Assessment of European Union Export Controls", Non-Proliferation Paper No. 35, January 2014.

76 For example, for information on illegal trade in nuclear components, see David Albright, Paul Brannan and Andrea Scheel Stricker, "Detecting and Disrupting Illicit Nuclear Trade after A. Q. Khan", *Washington Quarterly*, April 2010, pp. 85–106.

complex the production process. Chemical weapon delivery systems may also vary in their technical sophistication and effectiveness. For example, it is extremely challenging to develop a warhead that will effectively disperse a chemical agent without destroying or degrading it. On the other hand, using garden sprayers poses fewer technical challenges, although it remains difficult to create an optimal aerosol for effective dispersal. The sarin used in the Tokyo subway attack in 1995 was carried in plastic bags and dispersed by puncturing the bags with the sharpened tip of an umbrella.⁷⁷

The dual-use nature of many precursor chemicals and equipment puts at least simple toxic chemical agents within the reach of most, if not all, non-State actors. Although caution is warranted when handling chemical materials, a chemist with minimum gear such as a face mask and gloves might be able to manufacture chemical agents without great personal risk.⁷⁸

The type of training needed to develop a chemical weapon depends on the materials at hand, the type of chemical agent and the sophistication of the desired weapon. For nerve agent production, advanced training, most likely at the graduate or doctoral level, would maximize the chances for safe and successful manufacture.⁷⁹ High-school-level training may be sufficient to make, for example, chlorine gas or hydrogen cyanide, but, as was witnessed during the First World War, these gases need to be produced and dispersed in large quantities to create a harmful attack. Mass production creates challenges such as ordering large amounts of raw materials and finding proper storage facilities, which will be difficult to conceal. Nevertheless, a smart, technical person with college-level education or less could be able to handle at least small production runs from direct precursors within a short period of time.⁸⁰ Some crude chemical weapons could even be made using household chemicals.

For this reason, future chemical attacks by non-State groups are more likely to be primitive than very sophisticated. For example, non-State groups could find chlorine attractive because it is readily available in large pressure tanks near urban environments.⁸¹ This was the tactic behind the chlorine bombings in Iraq, which began as early as October 2006, when insurgents in the Al Anbar province used chlorine gas in conjunction with conventional vehicle-borne explosive devices.⁸² Similarly, chemicals could be used as part of an improvised explosive device, which IS might be inclined to do, for example, using the materials it gained when it took control of the Al Muthanna facility.⁸³

77 R. Pangi, above note 7.

78 Marc-Michael Blum, Andre Richardt and Kai Kehe, "Preparedness", in Andre Richardt, Birgit Hülseweh, Bernd Niemeyer and Frank Sabath (eds), *CBRN Protection: Managing the Threat of Chemical, Biological, Radioactive and Nuclear Weapons*, Wiley-VCH Verlag, Weinheim, 2013, p. 442.

79 C. D. Ferguson, above note 20, p. 28.

80 Richard A. Falkenrath, Robert D. Newman and Bradley A. Thayer, *America's Achilles Heel: Nuclear, Biological, and Chemical Terrorism and Covert Attack*, Belfer Center for Science and International Affairs, Cambridge, MA, 1998, pp. 102, 106, cited in J. M. Bale and G. Ackerman, above note 10, p. 52.

81 C. D. Ferguson, above note 20, p. 27.

82 J. Garamone, above note 48.

83 D. McElroy, above note 27.

Biological weapons

Many of the attack methods or delivery mechanisms for chemical agents are similar for biological agents – that is, both can be disseminated by using commercial sprayers, industrial or military sprayers, crop dusters, munitions or missiles.⁸⁴ With biological agents, the possibility of contaminating food and water supplies and distribution through packages and letters have also been explored and used on several occasions by non-State actors. For example, a representative of the Bhagwan Shree Rajneesh sect stated that members had poisoned salad bars in The Dalles, Oregon, with *Salmonella typhimurium* bacteria as a test run for a plan to influence local elections in the sect's favour. Using a strain of salmonella ordered from a licensed commercial laboratory company, the sect infected about 12% of the community; the attack affected over 1,000 people, of which 751 cases of salmonellosis were confirmed.⁸⁵ The cult wanted to influence a local vote in Oregon by limiting the voter turnout and, as such, aimed to incapacitate people rather than kill them.⁸⁶

Non-State groups could attempt to order building blocks of a deadly pathogen from biotech companies online, as these companies can be negligent in their security screening of requests.⁸⁷ Pathogens may also be harvested from the environment or directly from infected animals. However, non-State groups may confront significant hurdles to culturing the organism without losing any of its virulence or infectivity factors, and storing it safely and reliably until the following stage of weapon development.⁸⁸ Therefore, they may consider stealing material from disease cases in hospitals or veterinary clinics, or university or commercial laboratories. Another, less likely possibility is that materials may be retrieved from State-level biological defence programmes. The 2001 anthrax letters case in the United States shows that this is a possibility which cannot be ruled out.⁸⁹

Many of the materials and equipment that can be used for biological weapons development are dual-use in nature and, therefore, may be rather easily available on the commercial or black market. The equipment needed for developing a biological weapon will depend on the scale of production and the organism being produced. Standard laboratory equipment can be sufficient for some agents and small-scale production, whereas more specialized equipment may be required to quickly create large amounts of agents or apply sophisticated processes such as genetic engineering.⁹⁰ Additionally, sophisticated methods for delivering biological agents, for example with weapons, are specialized and

84 C. D. Ferguson, above note 20, p. 29.

85 Jeffrey R. Ryan and Jan F. Glarum, *Biosecurity and Bioterrorism: Containing and Preventing Biological Threats*, Elsevier, Burlington, MA, 2008, pp. 140–142.

86 A. Vergely, above note 17.

87 See, e.g., the work of Raymond A. Zilinskas, *Biological Warfare: Modern Offense and Defense*, Lynne Rienner, Boulder, CO, 1998.

88 J. M. Bale and G. Ackerman, above note 10, p. 55.

89 See B. H. Stanislawski, above note 15; C. Leuprecht and K. Hall, above note 15.

90 J. M. Bale and G. Ackerman, above note 10, p. 54.

usually classified, but a State sponsor or former biological weapons specialist could give technical help.⁹¹ Although the importance of acquiring such practical hands-on experience through learning by example should not be overlooked, even without such assistance, technical barriers seem to be eroding as knowledge and expertise grow with the increase in biotechnology development and globalization.⁹²

That said, weaponization of pathogens is technically challenging. Most pathogens are very delicate, which creates complications before, during and after weaponization, when materials are dispersed. Furthermore, a certain particle size is required to eventually bring the pathogens into the lungs. Nevertheless, some argue that a competent microbiologist (to produce a deadly pathogen) and an experimental physicist or mechanical engineer (to work on aerosol delivery) could together create a working biological weapon.⁹³ Others argue that it is increasingly likely that a crude but effective biological weapon could be made by using a small sample of any number of widely available pathogens, inexpensive equipment such as a field-expedient laboratory, and college-level knowledge of chemistry and biology.⁹⁴ Furthermore, there may come a time, relatively soon, when existing micro-organisms can be modified to increase infectivity and virulence, enhance stability in storage or in aerosol form, increase resistance to standard antibiotics and create bioengineered toxins.⁹⁵

In particular, apocalyptic groups may be inclined to use biological weapons; an example is Aum Shinrikyo, which unsuccessfully used anthrax and botulinum toxin in attacks.⁹⁶ The Rajneesh cult showed that incapacitating people to achieve a short-term goal is also a possibility considered and executed by non-State groups.⁹⁷ Additionally, green anarchists may believe they can generate the rebirth of the earth through applying a deadly disease that only annihilates the human race.⁹⁸ Within the category of radical religious groups, differences of opinion on the use of biological weapons exist. For example, Al Qaeda considered biological weapons to be beyond the pale, but IS clearly has no such qualms as it does show an interest in acquiring biological capabilities.⁹⁹

Radiological weapons

Radioactive materials include spent nuclear fuel from reactors, nuclear waste and radioactive sources used in applications such as medicine, food irradiation,

91 C. D. Ferguson, above note 20, pp. 31–32.

92 In the context of weaponization, tacit knowledge potentially plays an important role as a “barrier to optimising and creating effective bioweapons”. The important sociotechnical aspects of biotechnology, including the role of tacit knowledge, are described in James Revill and Catherine Jefferson, “Tacit Knowledge and the Biological Weapons Regime”, *Science and Public Policy*, Vol. 41, No. 5, 2014, p. 2, available at: <http://sro.sussex.ac.uk/46723>.

93 C. D. Ferguson, above note 20, p. 52.

94 US Department of State, above note 72.

95 C. D. Ferguson, above note 20, p. 32.

96 R. Danzig *et al.*, above note 29, pp. 14–26.

97 J. R. Ryan and J. F. Glarum, above note 85, pp. 140–142.

98 R. M. Frost, above note 33, p. 54.

99 D. McElroy, above note 27.

research, industrial gauging and oil prospecting.¹⁰⁰ Spent nuclear fuel is often very highly radioactive, which can serve as a barrier for acquisition by non-State actors. There are disputes over the ease with which non-State actors can convert radioactive materials into a form that could be disseminated over a wide area. Some argue that radiological materials are commercially available in readily dispersible forms and that it would not be very difficult for a technically skilled individual or group to transform radioactive materials into such forms. Others assert that, since the creation of radiological weapons involves working with highly radioactive isotopes, shielding and containment is necessary, which greatly complicates working with these substances.¹⁰¹ Indeed, depending on the source, anyone unshielded can absorb a lethal radiation dose within minutes without special handling gear.

Radiological sources are used widely throughout the world and a fraction of those sources represent inherently high security risks, in particular if they are portable, such as radiotherapeutic sources used in hospitals. Radioactive sources used in a variety of applications may cause considerable problems, as improper registrations and controls may lead to some of the materials being abandoned by the regulatory system; these are known as “orphan sources”. For example, in 2013 alone, 153 incidents have been reported involving nuclear or other radioactive material that was out of regulatory control, meaning lost or stolen.¹⁰² Of these, 92% involved non-nuclear, radioactive materials used in industrial and medical applications. In 2014 this number more than doubled, with a total of 325 incidents included in a database that registers nuclear or other radioactive material going out of regulatory control worldwide.¹⁰³ This is a serious problem, as these materials could potentially be used as raw materials for developing a dirty bomb. However, using such sources for creating a weapon that effectively disperses radioactive materials is not an easy undertaking.

To date, non-State groups have not made use of radiological weapons, but this does not mean that they are not able or willing to do so, as demonstrated by the caesium-137 device planted by Chechen rebels in 1995.¹⁰⁴ In fact, in 1998, the same Chechen separatist group was suspected to be involved in another incident in Argun, an area close to Grozny, Chechnya, when the Chechen Security Service discovered a container filled with radioactive materials attached to an explosive mine, hidden near a railway line.¹⁰⁵ One may wonder why the Chechen

100 C. D. Ferguson, above note 20, p. 33.

101 J. M. Bale and G. Ackerman, above note 10, pp. 57–58.

102 Jessica Varnum, “CNS Releases Annual Nuclear Trafficking Report, 153 Incidents in 2013 Reported”, James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies at Monterey, 19 March 2014, available at: www.nonproliferation.org/cns-releases-annual-nuclear-trafficking-report-153-incidents-in-2013-reported/.

103 Benjamin Pack and Bryan Lee, *CNS Global Incidents and Trafficking Database: Tracking Publicly Reported Incidents Involving Nuclear and Radioactive Materials*, 2014 Annual Report, James Martin Center for Nonproliferation Studies, April 2015, available at: www.nti.org/media/pdfs/global_incidents_and_trafficking2015.pdf?_=1429915567.

104 John Pichtel, *Terrorism and WMDs: Awareness and Response*, CRC Press, Boca Raton, FL, 2011, p. 176.

105 Lexi Krock and Rebecca Deusser, “Chronology of Events”, in *Nova: Dirty Bomb*, February 2003, available at: www.pbs.org/wgbh/nova/dirtybomb/chrono.html.

separatists did not detonate their dirty bombs.¹⁰⁶ Since they had already conducted violent and high-profile attacks in the war for Chechen independence, it seems unlikely that they feared alienating their constituencies. One can only speculate; perhaps the explosives did not work properly, perhaps the separatists wanted to achieve more psychological/symbolic impact, or perhaps they wanted more visibility.

Nuclear weapons

Nuclear weapons are generally considered to be the most difficult weapons to acquire or manufacture. A non-State group could attempt to obtain an intact nuclear weapon from a State's arsenal or make its own improvised nuclear device, but it will confront significant barriers to doing so.

Nuclear-armed nations guard their weapons heavily, and even if non-State actors succeed in stealing, buying or being given one, several technical hurdles exist to detonating nuclear weapons, such as permissive action links and de-arming, arming, firing and fusing systems.¹⁰⁷ With regard to knowledge that is needed for the creation of crude nuclear weapons, it must be assumed that this is widespread and no longer limited to an exclusive club of scientists. The information is also available to non-State actors. The fear of proliferation of facilities, equipment and techniques required for the production of highly enriched uranium is increased by the uncovering of the Khan network,¹⁰⁸ in which Abdul Qadeer Khan reportedly sold weapon designs and centrifuge technology to a number of unpredictable regimes, including Iran, North Korea and Libya.¹⁰⁹ Even after uncovering the Khan network, control of dual-use goods remains challenging because proliferators will try to mislead suppliers into believing they are for a civilian, non-nuclear use.¹¹⁰

The main ingredient of an improvised nuclear device, and the hardest to acquire, is fissionable material. Highly enriched uranium and plutonium are the two traditional types of materials that have fuelled nuclear weapons. Non-State actors would likely have to acquire these materials from existing stockpiles because enriching uranium is an expensive and very technically demanding process, and plutonium exists only in trace amounts in nature and is thus produced or reprocessed in reactors.¹¹¹ Both uranium enrichment and plutonium production appear to be beyond the current capabilities of non-State actors. Furthermore, to design and build a bomb that would have a chance of working, technical challenges concerning the delivery system would also have to be

¹⁰⁶ *Ibid.*

¹⁰⁷ C. D. Ferguson, above note 20, p. 35. A permissive action link is a security device that prevents unauthorized detonation of the weapon.

¹⁰⁸ E. Bakker, above note 69, p. 146.

¹⁰⁹ David E. Sanger, "The Khan Network", Conference Paper, Conference of South Asia and the Future, Stanford University, 4–5 June 2004.

¹¹⁰ D. Albright, P. Brannan and A. Scheel Stricker, above note 76, pp. 85–106.

¹¹¹ C. D. Ferguson, above note 20, p. 36.

overcome.¹¹² Therefore, it is thought that without the assistance of a State sponsor, any slightly advanced design would be too challenging for non-State actors to build.

However, it is not unthinkable that non-State actors could produce or acquire such weapons in the future. Fissile materials are housed in numerous buildings in many countries, and security measures at these sites vary widely, from excellent to appalling.¹¹³ As of yet, the non-State actor group that has come closest to developing a nuclear weapon is Aum Shinrikyo. Investigators discovered that the cult had tried to buy Russian nuclear warheads and had set up an advanced laboratory on a 500,000-acre ranch in Australia.¹¹⁴ At the ranch, investigators found that the sect had been mining uranium, a main material for making atomic bombs. However, while the cult succeeded in creating and using chemical and biological weapons, it was never able to complete a nuclear weapon, even though it had, in the mid-1990s, more than \$1 billion in assets and many scientists working for the group. It also failed to acquire State-arsenal nuclear weapons despite repeated attempts, including approaches to Russian officials.¹¹⁵ Nevertheless, apocalyptic groups in general can be considered to pose the greatest threat when it comes to nuclear and biological terrorism, because some of them might want to bring about the apocalypse they foresee. By using nuclear weapons, the means becomes the end itself.

Execution of an attack

Although primitive CBRN weapons may be relatively easily developed, weaponization of CBRN materials into systems capable of inflicting massive physical impact is extremely challenging. CBRN agents certainly have the potential for toxic effects, but this potential can only be realized if the agent is actually delivered to the target. Apart from a nuclear device, the scope of the effect of a CBRN weapon is largely determined by the nature of the threat agent as well as the weapon system used, in particular the efficiency of its delivery. Chemical weapons, for instance, can dissipate before harming many people if the agent is not properly aerosolized or if meteorological conditions are unsuitable for dispersal.¹¹⁶ The purity of the chemical agent and efficiency of the delivery can also have a large impact on the ultimate effects of an attack. In the sarin attack on the Tokyo subway system, for example, the full potential for catastrophic damage was not achieved as the sarin that was used was not pure and the dispersal technique was not well developed.¹¹⁷

112 For a more technical discussion, see Christophe Wirtz and Emmanuel Egger, "Use of Nuclear and Radiological Weapons by Terrorists?", *International Review of the Red Cross*, Vol. 8, No. 859, 2005, available at: www.icrc.org/eng/resources/documents/article/review/review-859-p497.

113 R. Kazi, above note 16, p. 4.

114 William J. Broad, "Seismic Mystery in Australia: Quake, Meteor or Nuclear Blast?", *New York Times*, 21 January 1997, available at: www.nytimes.com/1997/01/21/science/seismic-mystery-in-australia-quake-meteor-or-nuclear-blast.html.

115 C. D. Ferguson, above note 20, p. 40.

116 J. M. Bale and G. Ackerman, above note 10, pp. 10–11.

117 See R. Pangi, above note 7.

Similarly to chemical agents, it may be relatively easy to produce batches of certain pathogenic organisms, but delivering these in a viable state so that they infect large numbers of people is far more technically challenging. The dispersal of biological agents presents a number of difficulties since sunlight, oxidation, air pollution, humidity and other environmental and meteorological phenomena can deactivate a large part of the agent before it has reached its targets.¹¹⁸ To date, methods used by non-State actors to disperse CBRN agents have been primitive and inefficient,¹¹⁹ although the 2001 anthrax letters could be seen as an exception. What seems likely in the future, although still not a simple endeavour, is the creation of a “dirty bomb”, combining components that are accessible and not necessarily expensive with an improvised explosive device.

Even if a non-State actor succeeds in obtaining or creating a CBRN weapon, a further constraint may be the transportation and emplacement of the device. For executing an attack with a CBRN weapon or enabling the release of CBRN materials, a target needs to be selected. Via careful observation and surveillance, a non-State actor will have to acquire information on the surroundings of the trigger spot, the movements of targets and emplacement possibilities to ensure maximum damage. Once the target has been chosen, a more detailed plan will likely be made and confirmed, and rehearsals may be conducted. The weapon will be transported to the detonation spot and emplaced. Finally, a triggering/detonation mechanism, set off either by a triggerman on the spot or via a remote control system, would be necessary to ensure release of the CBRN materials. The non-State actor may lack control over the effects of CBRN agents after the release, particularly if the actor has developed a primitive CBRN device in which low-grade toxic materials are used or higher-grade materials are improperly disseminated.

Potential humanitarian consequences

As noted above, CBRN agents have the potential for massive toxic effects, but these can only be realized if the agent is properly delivered to the target. This raises the question of what the likely humanitarian consequences of CBRN use by non-State actors will be. Although in many cases it is extremely difficult, or not possible at all, to conduct a sound quantitative assessment to characterize the possible consequences of a CBRN attack, this section discusses the effects associated with such attacks and addresses both immediate effects, such as deaths and injuries, and long-term effects, such as contamination of affected environments, as well as third-order effects, such as economic damage and extreme legislation to prevent future attacks.

118 J. M. Bale and G. Ackerman, above note 10, p. 56.

119 *Ibid.*, p. 14.

Immediate effects

During a CBRN attack, people and the environment are exposed to and may be contaminated by CBRN materials. After such attacks, the primary immediate need is to save lives and treat the injured. The severely injured require immediate life-saving medical care and need to be stabilized in preparation for evacuation and further treatment, including decontamination. First responders will attempt to provide the necessary aid as soon as possible, but certain areas may be out of reach owing to physical inaccessibility. This makes it difficult or impossible to quickly get to the victims. The same problem exists in the case of a conventional attack, but CBRN attacks pose some additional, particular challenges. For example, depending on the agent, its persistency and the actual levels of exposure and contamination, certain areas and the people in them may remain off-limits and inaccessible to responders for a longer period of time or may only be visited for very short durations. The specific risks to the health and security of personnel bringing assistance are a particular unique feature which differentiates CBRN events from conventional attacks.¹²⁰ Therefore, the equally important first reaction to an incident should be to contain the site and agent in order to limit spread and make sure no additional exposure and/or contamination will take place. On a more positive note, in contrast to an attack with conventional weapons, after which the impacts of explosions cannot be mitigated, prompt intervention may substantially reduce catastrophic effects. For example, proper decontamination and rapid medical treatment can save lives and prevent further spread of agents.

The latter will not likely apply to nuclear weapons. The use of even a single nuclear weapon with a relatively small destructive power in or near a populated area is likely to produce humanitarian needs that will be difficult or impossible to address. The significant destruction of infrastructure and radioactive contamination of large areas, posing serious risks to the health of anyone in or entering the area, would considerably complicate the delivery of humanitarian assistance.¹²¹ Fortunately, nuclear weapons are generally considered to be the hardest of all weapons to acquire or manufacture and, as such, are unlikely to be within non-State actors' capabilities or reach. Future CBRN attacks will more likely take the form of relatively crude, low-level attacks with radiological or toxic materials.

Radioactive materials used in an attack could cause radiation sickness as well as long-term radiation effects, but the majority of death and injuries would most likely result from the blast. Subsequently, the effects would be widespread panic with subsequent economic disruption and other societal impacts. A radiological dispersal incident has the potential to disrupt life and business in a community through denial of access and service due to real or perceived environmental and facility contamination. Recovery from a radiological agent

120 Robin Coupland and Dominique Loye, "International assistance for victims of use of nuclear, radiological, biological and chemical weapons: time for a reality check?", *International Review of the Red Cross*, Vol. 91, No. 874, June 2009, p. 333.

121 *Ibid.*, p. 334.

attack will challenge every level of government and the citizenry. Decontamination of even a small area would require vast resources and would be time-consuming.¹²²

As regards chemical weapons, the symptoms of improvised devices may resemble those of classical chemical warfare agents – indeed, some toxic industrial chemicals, such as chlorine, have been used as warfare agents in the past. The nature of the injuries sustained when exposed to improvised chemical weapons will depend on the kind of agent; for example, the agent may attack the body's central nervous system, like nerve agents such as sarin or VX. Health facilities may be paralyzed by the arrival of people affected by chemical agents. In particular, hospital staff may fear secondary exposure (despite the fact that the dangers of secondary exposure are limited, especially in the case of non-persistent agents) and may thus be reluctant to treat patients without wearing protective equipment. Attacks with improvised weapons are less likely to cause a large number of deaths, but a society can nevertheless be gripped by panic once it is known that a chemical weapon has been used. This panic can also be a significant burden on the health-care system, in particular if many of the “worried well” flood hospitals. They may deprive actual victims of getting the medical attention they need.

The time from exposure to onset of symptoms is generally much longer for pathogens than for acute doses of chemical agents or toxins. Therefore, psychological effects, such as fear of not knowing whether or not one is contaminated, may largely dominate the immediate effects of a biological attack. Onset of clinical signs and symptoms may occur days, weeks or months after exposure to a pathogen depending on its incubation time. Exposed individuals may unknowingly incubate and further disperse the agent. As a result of extensive international air travel, a disease may spread extremely rapidly. Initially, many infectious agents tend to produce non-specific symptoms that mimic common illnesses – for example, flu-like symptoms – which complicates and delays diagnosis. As soon as it becomes clear that an outbreak has occurred, widespread panic may occur as people will want to know where and when agents have been released and if they are at risk of being infected – particularly after an intentional release, because it may happen again.

Long-term effects

From a first responder's point of view, the immediate effects of a CBRN attack last about a day, depending on the type of agent, scale of release, numbers affected and persistency of the agent in the environment. For some agents longer-term effects will occur, both resulting from the primary contact with a CBRN material or as a result of secondary contamination, physically or biologically. Treatment of outbreaks is an example of an immediate, medium- and long-term effect. Generally, relevant responder entities have experience in treating outbreaks, albeit from natural causes. Even if it is proven that an outbreak results from an intentional release, it

¹²² *Ibid.*

may not significantly change the management of the epidemic from a health perspective, although it may change reactions in the political and media environments. Usually, measures to prevent diseases from spreading must be taken as soon as possible. A distinction should be made between contagious micro-organisms, like smallpox, plague or Ebola, and non-contagious micro-organisms, such as anthrax and tularaemia. The first category is capable of human-to-human transmission, in which prophylaxes may prevent further spread and protect people who have not been infected. Quarantine is of utmost importance. As for non-contagious agents, an outbreak may be contained by decontamination of contaminated sites. Incidentally, the difference between whether or not an agent is contagious may not necessarily be clear to the public. In both cases hospitals may be overwhelmed by the number of people worrying about being exposed and infected.

Long-term effects may be of an economical, societal or political nature. For example, as mentioned in the previous section in regard to radiological incidents, decontamination efforts may be time-consuming and extremely costly. As a result of the anthrax letters in 2001, the remediation of US Postal Service facilities alone, which were only some of the many contaminated facilities, cost more than \$200 million.¹²³ Besides financial consequences, a difficult technical and political question regarding decontamination relates to the “safe” level of activity at which the population can return: how clean is clean? The extended periods for which significant portions of buildings and infrastructure are considered “contaminated”, and the stigma that this causes, have a chilling effect on business. Furthermore, as long as sites may not be reoccupied, there may be many people who require assistance as a result of being displaced, homeless, in need of food, missing family members or friends or merely needing information.

Finally, considering the effects of CBRN attacks, it is not surprising that the international community has acted with great vigour to adopt international instruments and standards as well as multilateral alliances, treaties, agreements, regulations and voluntary controls in the aftermath of major CBRN incidents in order to prevent them recurring in the future. However, although measures taken to prevent or suppress terrorist offences should ensure respect for the rule of law, democratic values, human rights and fundamental freedoms as well as other provisions of international law, in practice this is not always the case. The 9/11 attacks, for example, have been used to justify “State terror”; soon after the attacks, it became clear that the United States intended to use all means possible against individuals implicated in terrorism, including torture and other cruel, inhuman or degrading punishments or treatment.¹²⁴

123 National Resource Council, *Reopening Public Facilities after a Biological Attack: A Decision Making Framework*, National Academies Press, Washington, DC, 2005, p. 1.

124 J. Rehman, above note 58, p. 908. However, inducing “attacks” on innocent victims in an attempt to eradicate terrorists could lead to the reverse effect. Terrorism often thrives in environments in which human rights are violated. Non-State actors may exploit such violations to gain support for their cause and motivate new generations of militants to seek revenge. Thus, regimes may end up in a vicious circle in which terrorism is met with terrorism.

Conclusions

This paper has explored and discussed the actual threat and consequences emanating from CBRN weapons pursuance by non-State actors. As for motivation and intent to use such weapons, in particular the fear that is spread by the threat of using CBRN materials alone makes them appealing for non-State actors. Nationalist, separatist or irredentist groups, radical religious fundamentalist groups, apocalyptic or millenarian “new religious movement” groups, single-issue groups, right-wing groups and social revolutionary or secular left-wing groups have been identified as potential CBRN weapons users. It is questionable whether these groups will actually use these indiscriminate weapons as they may target a too wide spectrum of victims, although religious fundamentalists and apocalyptic groups may be less restrained by such considerations.

Due to globalization, which facilitates the spread of knowledge, capabilities and materials, non-State actors may increasingly be able to acquire relevant CBRN weapons-related knowledge and skills. Due to their creative ways of generating funds, several existing groups may have the financial resources to be able to fund a CBRN programme. Fortunately, technical barriers still form a gap between the theoretical possibility and the operational reality. In particular, producing a sophisticated means of delivery seems too challenging for non-State actors at present.

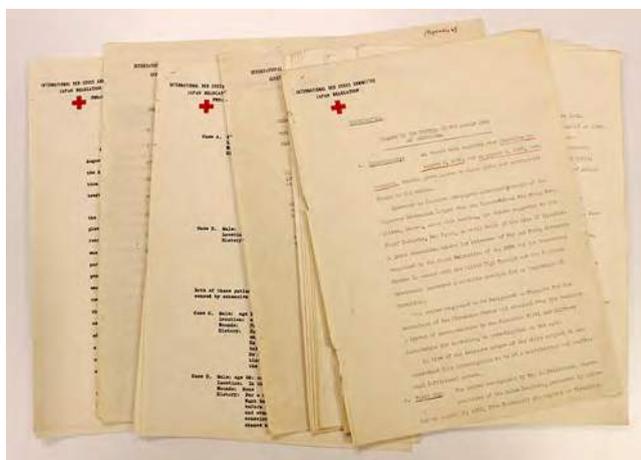
It is generally agreed that it is most difficult for non-State actors to acquire fissile material and nuclear weapons capability, that biological seed stock and radiological materials fall somewhere in the middle, and that chemical weapons and their precursors are the most easily obtainable CBRN weapons. Most likely, crude, low-level attacks may take place in the future, including toxic or radiological materials. Depending on the means of delivery, for example via improvised explosive devices, the effects of such attacks may be limited in terms of physical damage and numbers of victims. Nevertheless, the fear that spreads among society may cause severe economic and societal damage.

The concern about potential use of CBRN weapons by non-State actors seems warranted. However, CBRN attacks that may be expected by non-State actors in the future will likely be more disruptive than destructive.

REPORTS AND DOCUMENTS

ICRC report on the effects of the atomic bomb at Hiroshima

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On 29 August 1945, ICRC delegate Fritz Bilfinger arrived in Hiroshima and was the first outsider to witness the devastation wrought by the atomic bomb. The next day, he sent a telegram to the ICRC delegation in Tokyo describing the horrific conditions and calling for immediate relief action; this action was subsequently organized by Dr Marchel Junod, who had arrived in Japan as the ICRC's head of delegation on 9 August 1945. Dr Junod would later travel to Hiroshima to witness for himself the scale of the destruction there.

The following is Bilfinger's report (including annexes), dated 24 October 1945, detailing the effects of the atomic bomb in Hiroshima as he witnessed them three weeks after the bomb was dropped on 6 August 1945. It was confidential at the time of writing. It was made public in January 1996 and is being reproduced in full, with annexes, for the first time in the pages of the Review. The ICRC's public archives are available for consultation by the public, by appointment.

Archival source: ACICR, B G 008/76-X. Photos © Sarah Roxas/ICRC.

ICRC historical archives

The following document comes from the ICRC historical archives. The ICRC archives collect and preserve ICRC documents dating from the organization's inception to the present day, and make them available for research. The ICRC's historical archives, run by professional archivists and historians, comprise 6,700 linear metres of textual records and a collection of photographs, films and other audio archives.

The ICRC's public archives represent an essential historical source for surveying, studying and debating contemporary diplomatic history, particularly in the field of humanitarian operations and their impact on States, societies, cultures and armed conflicts or other situations of violence.

The public archives cover the history of the ICRC since its foundation in 1863 to 1975, and are available for consultation, by appointment. If you wish to consult the ICRC's historical archives in Geneva, you may schedule an appointment via email at archives@icrc.org.

INTERNATIONAL RED CROSS COMMITTEE
JAPAN DELEGATION



CONFIDENTIAL

REPORT ON THE EFFECTS OF THE ATOMIC BOMB
AT HIROSHIMA

1. Introductory: An atomic bomb exploded over Hiroshima on August 6, 1945, and on August 9, 1945, over Nagasaki, causing great losses to human lives and substantial damage to the cities.

Inasmuch as Japanese newspapers mentioned protests of the Japanese Government lodged with the International Red Cross Committee, Geneva, about this bombing, the writer suggested to the Chief Delegate, Dr. Junod, an early visit of the lieu of disaster. A joint evacuation scheme for Prisoners of War and Civil Internees organized by the Japan Delegation of the IROC and the Protecting Powers in accord with the Allied High Command and the Japanese Government presented a suitable occasion for an inspection of Hiroshima.

The writer requested to be designated as Delegate for the evacuation of the Hiroshima Sector and obtained from the Gaimusho a letter of recommendation to the Hiroshima Civil and Military Authorities for conducting an investigation on the spot.

In view of the delicate nature of the whole subject it was understood this investigation to be of a confidential and unofficial (officieux) nature.

2. Visit day: The writer accompanied by Dr. M. Weidemann, representative of the Swiss Legation, proceeded by motor-car on August 29, 1945, from Fuchumachi via Miyoshi to Hiroshima.

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3. Diary:

August 29, 1945:

Arrival outskirts of Hiroshima at 1100.

Arrival at Prefectural Office (Kencho) at 1130.

Official call on Governor J. Takano.

Introduced to Vice-Governor Mr. Ishibashi,
Mr. H. Buzai, Chief of Special High Police
(TokkoKa), and Mr. Kitajima, Chief of Public
Health Department.

Made arrangements for City inspection.

At 1500 official call on Lt. Gen. Tani, Com-
mander of Hiroshima Garrison.

Conducted investigations about two missing
U.S. Airmen.

Made arrangements for the following day for
touring city conducted by Captain Shishido,
eye-witness of the bombing.

Was informed that Marshal Hata, whom the writer
met in China, was unharmed, as the former was
staying at Miyajima during the time of the
bombing.

1800 left for Miyajima, staying there overnight.

August 30, 1945:

1000 toured City with Capt. Shishido.

Visited one emergency hospital in centre of City.

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Called on Red Cross Hospital of Japan Red Cross Society, introduced to Prof. K. Takeuchi, President of the Japan Red Cross Society, Hiroshima Chapter and Vice-President Mr. Shigato.

1700 departure by motorcar for Fuchumachi.

4. Report of Eye-witnesses: Obtained detailed verbal report from Mr. Danai, Chief of Special High Police (App. 1) and Captain Shishido, both eye-witnesses. Mr. Tomino the IRCC interpreter translated these statements into English.
5. Geographical Description: The City of Hiroshima lies at the mouth of the Ota River (Otagawa) within a triangular delta, the base of which is estimated to be about 20 kilometers and the depth 12 kilometers, surrounded, with the exception of the river mouth, by wooded hills ranging up to about 500 meters. The City is built on the delta plain, crossed by at least 6-7 river arms, connected by many bridges.
6. Weather conditions: On the day of the bombing it was fine weather.
7. Effects of bombing: Three-fold: by air-pressure, rays and heat.
8. Point of explosion: There are unmistakable signs that the explosion took place at a point above the centre of the City. Captain Shishido claims that military experts estimate the height where the bomb exploded to ^{be} about 500 meters.

The centre of the explosion must have been above Aioi Bridge, near the Chamber of Commerce building (Shoko Kaigi-sho). Noticeable were the effects of pressure on the bridge rails of the Aioi Bridge, both bent outwards. Most of the telegraph, light and tramway poles were broken or bent away from the centre of explosion. No signs

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of a suction effect as a result of the explosion could be traced.

- a 9. The affected area conveniently sub-divided into three sections, one innercircle, totally destroyed, two kilometers diameter, an adjoining ring with houses greatly damaged extending up to six kilometers diameter and an outer periphery including slightly damaged houses, their location extending up to 10 kilometers away from the centre (see Map App.2).

The surrounding hillside covered by forests showed reddish patches of burnt trees within the woods which indicated the effects of heat or rays on the vegetation of hillsides.

10. Sound effect: Eye-witnesses of the City interviewed confirm that whilst they all noticed a strong light effect similar to electric arc welding or magnesium flashlight, they did not hear any sound. On the other hand, persons further away beginning within the suburbs heard the sound of an enormous blast. It is claimed that the explosion was heard 16 kilometers away.
11. Effects on structures, vehicles, etc.: With the exception of some concrete buildings in the centre most of the houses, like in many other Japanese cities of this size, are built of wood, a mixture of clay, mud and straw (kabe). Practically all houses of such structure collapsed within the city under the pressure from above, causing a huge dust cloud to rise to heaven. A number of casualties resulted from the destruction of these houses, whereby people were buried or wounded by the debris. Vast areas of the town were thereby flattened out, the only exception being chimney stacks. Also concrete buildings of the heaviest construction within the centre

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were heavily damaged, but not completely destroyed. All inflammable parts within these buildings were burnt as a result of the intense heat. However, heavy concrete bridges within the centre were only superficially damaged. The Aioi Bridge showed large transversal cracks in the pavement near the supports which seemed to indicate the force of the air-pressure in the centre of the bridge which must have caused this peculiar deformation.

Noteworthy is also the fact that some steel structures including steel bridges in the centre collapsed completely.

Large trees within the centre having a diameter of up to two meters were uprooted and some of the heavy branches of at least 80 cm diameter broken like matches by the force of the concussion.

Damaged vehicles within the city were strewn all over the place. Burnt-out tramways were thrown out of their rails and seen at least thirty meters away from the street. One eye-witness reported that all passengers of these tramways were instantly killed with all bodies found still in sitting or standing position. Burnt-out automobiles were crushed like tin-boxes, clearly indicating that pressure came from above.

The time of explosion being 0815, most of the population were already on their way to work, having finished their breakfast, therefore most of the fire places (hibachis) were extinguished. Nevertheless great fires broke out mostly caused by the enormous heat radiating from the explosion. Numerous isolated trees far from the nearest buildings were completely scorched in the central section clearly indicating that they were burnt by the explosion heat. One eye-witness related that he distinctly saw after his house had

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collapsed, the broken main wooden roof beam of his house starting to burn at both ends of the fracture.

12. Effects on men: The first apparent effects to victims were burns of the exposed parts of their bodies by heat, possibly by the rays. Victims inspected at the Hospitals showed burns mostly on faces, hands and legs, and breasts or backs, whichever was exposed at the time of the explosion. Strange enough no serious damage to eye-sight has been noticed or reported to the investigators.

Generally speaking, men seem to have been more burnt than women as their bodies were less covered.

Another more serious consequence seemed to be the effects of the rays. Many dying cases were shown to the investigators with no apparent surface wounds. They showed black blood spots on the skin, were losing their hair, suffering from heavy fever, diarrhoea and died within a few days all showing these symptoms. Doctors claim that their marrow bones have been affected by the rays resulting in a partial paralysis, thereby failing to renew the reproduction of white blood cells. Many of the dying victims showed a reduced number of white blood cells being as low as 600.

Those victims who were in the immediate vicinity of the centre in the streets were completely burnt and unrecognizable. The Military Authorities say that they could only identify the dead soldiers by their shoes. The Police Authorities also mention that parents could not recognize their youngsters as all victims of the school looked completely alike. On the day of the investigation still carloads of dead bodies were being carried away to the cremation

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place and the city was filled with the stench of the corpses.

There was considerable discussion as to the after-effects of the bomb and some opinion voiced whereby the damaged area was still radiating destructive rays. One case was cited of a family arriving from Osaka after the bombing and digging for eight days within the shambles of the city showing symptoms noticed on victims (see app. report). No confirmation could be obtained and the investigators rather doubt that they are radiation after effects. Films had been brought along for taking pictures. Unfortunately, the camera jammed and the films were not exposed. The developed films were clear and did not show any signs of fogginess, perhaps an indication that there was no longer radioactive material in the area.

13. Effects on Animals: Animals exposed to the explosion showed similar symptoms as men. When leaving Hiroshima one wounded horse showing signs of burns was noticed. On the investigators' inquiry the Authorities claimed that no effects on fishes in the various river channels, even near the centre, have been observed.

One member of the Police alluded that even the worms in the earth were killed by the rays and heat within the centre, but this could not be verified.

14. Effects on Vegetation: All trees within the centre were completely destroyed, broken and charred. Near the City castle where the Military Headquarters was installed, large ponds of lotus fields showed that most of the leaves had been burnt. However, there were still some new green leaves noticeable; as well as small patches of green grass at various places in the centre.

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Police Authorities claimed that the growth of vegetation, although not completely stopped, has been **considerably** slowed down. This could also not be verified.

Woods on the surrounding hills were partly burnt indicating a rather irregular effect, either of heat or rays on these forests.

Some newspapers published pictures whereby rice fields were affected by the explosion 6-7 kilometers away from the centre. Investigators could not notice any effects on the rice fields they passed by.

15. Various effects: Newspapers also reported different effects of the bomb rays on white and dark materials, whereby the latter were more affected than the former. The Police Authorities seem to have heard about this phenomenon but could not obtain for the investigators any confirmation. However, it seems likely that white clothing acted as a protective medium against the rays.
16. Medical aid: Due to the complete destruction of all hospitals within the city and the loss of the major part of medical personnel and nurses, the medical attendance for the victims was sadly deficient.

Although the city authorities immediately established about eighty emergency hospitals, which hardly deserve this name in view of the appalling sanitary conditions existing there, very little medical care could be given to the victims at first.

Investigators visited on August 30, 1945, the Morikawa Emergency Hospital, established in the Centre of the city within the ruins of a concrete building and operated by the Prefectural Office. It was opened on the 15th of August and accepted 290 patients. On the day

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of this visit 197 patients were present, 45 had died and about fifty transferred to other places, probably in the country.

Conditions in this hospital surpass all imagination, as patients are still lying on the concrete floor, only very few having straw mats. Few have mosquito nets and myriads of flies cover the wounded. Many cases were seen where large body burns were left without bandages, the patients probably expected to die. Sanitary conditions are terrible, patients lying in their excrements.

As the roof of this building was demolished and it being a rainy day, water was dripping on the wounded and dying. The few bandages noticed on some patients were old and full of puss. Medical equipment was practically non-existent. The place looked more like a morgue than an emergency hospital.

Homage must be paid to Dr. Magasaki Goro, who, with insufficient means was working with three assistants and about twenty girl nurses day and night.

The Red Cross Hospital of the Japan Red Cross Society being located in the outskirts of the city remained in a better condition, although all windows had been shattered and all medical equipment, including the X-Ray Department, and blood transfusion equipment destroyed.

Of the Red Cross Hospital 75% of its personnel had been wounded or killed. Out of 460 nurses 300 were wounded and 150, some slightly wounded, still working at the Hospital. The Hospital has a capacity for 1000 patients, but at present only 400 beds were occupied. No reason was given why not more patients were accepted.

The situation with regard to medicines was somewhat better there, but bandages and surgical pads in dire need. The Hospital claimed

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to be able to make blood tests, but had no blood transfusion equipment, as the latter had been destroyed during the disaster. The doctors also claimed to be very short of Sulfamides.

17. Statistics: Statistics and estimates of dead and wounded in relation with this disaster vary for several reasons.

On account of the war situation the city of Hiroshima, showing at the last census a population of 400,000, was somewhat reduced by various measures. Men were called to military service and labour corps, and many children previously evacuated. The nearest estimate seems to be a population of 250,000 on the day of the bombing.

At the moment of the disaster many people were on the streets on the way to offices, factories and for labour service, with the result that casualties were very high.

Due to the complete breakdown of the civil administration as a result of the bombing it was next to impossible to establish reliable statistics of the dead and wounded, in fact, additional bodies are being unearthed daily. Furthermore, no organized assistance for the victims was possible for some days. Many wounded were brought by their relatives to the neighbouring villages and towns and cared for by their families.

Figures given by the Military Authorities and by the civil authorities are at variance, and change daily as many wounded still die everyday.

Hiroshima being an important naval arsenal and at the time a mobilization centre of the Army there was at the time of bombing a considerable strength of Japanese soldiers stationed in Hiroshima. Most of the Armed Forces were billeted at the Hiroshima Castle compound nearby the centre of the disaster and the casualties among

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the military were therefore exceptionally high. Several eye-witnesses report that they saw many soldiers who were located in a military camp about three kilometers away from the centre all severely wounded rushing on the main street northward away from the fires. Most of them must have been working with the upper part of their bodies uncovered, which was not unusual in this season of the year, causing severe burns to their backs and chests. Most of them died on the spot but many ran, severely wounded and terror-stricken along the main street, their hair turning brown, heads swollen up within a few hours almost twice the normal size, their faces darkened, their lips swollen and bleeding and their eyes almost closed on account of swollen lids. The exposed part of their bodies, either chest or backs and bare arms showed the bare flesh or huge blisters which were cut open at some emergency dispensary in order to relieve the pain. A great number of these soldiers collapsed on the street. At an emergency military hospital many of them were treated only by covering the open wounds with Mercurochrome or castor oil. A few hours after the disaster a penetrant repelling odour came from these wounded persons.

The investigators' estimate of victims on the visiting day at Hiroshima and surroundings amounts to approximately 100,000 wounded.

18. Relief: In view of the appalling conditions particularly with regard to the care of the wounded a telegram (Appendix 3) was dispatched on August 30, 1945, to the Chief Delegate requesting the assistance of the Allied High Command to immediately supply Hiroshima with medical relief, and recommending the immediate dispatch of a medical commission to study conditions.

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On September 9, 1945 an American Military Technical Commission headed by General Farrell, accompanied by Dr. Junod with six planes, carrying about 12 tons of medical supplies for the city of Hiroshima arrived. This medical relief has been distributed to the hospitals under the auspices of the I.R.C.C. (App.4).

Mr. Tomino, interpreter of the Japan Delegation of the International Red Cross Committee was dispatched on September 14, 1945, to Hiroshima to attend to the administration of this medical relief. Unfortunately, he happened to be in Miyajima on the night of September 17 when a severe typhoon struck the Hiroshima area. On account of a landslide the guest house in which Mr. Tomino lived was washed away and he was severely wounded. Three days later he died of his injuries. The Japan Delegation of the International Red Cross Committee was unaware of this account until a week later as all communications with the Hiroshima Prefecture were interrupted. Over 4000 persons lost their lives during this typhoon in this area.

20. CONCLUSION: Although many other bombed cities in Japan show similar large devastated areas as Hiroshima the fundamental difference lies therein that the atomic bombed city was blasted away within one instant which accounts for the disastrous effects, particularly as regards the large loss of human lives.

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The Hiroshima catastrophe will require the full attention of the International Red Cross Committee presenting a major new problem:

The effects of the atomic bomb surpass by far those of other known military weapons, including poison gas. The International Red Cross Committee should participate in the international discussions concerning the control of nuclear energy and exercise its influence to have the use of atomic power as a destructive force outlawed.

TOKYO, October 24, 1945

A handwritten signature in dark ink, appearing to read "F. W. Bilfinger".

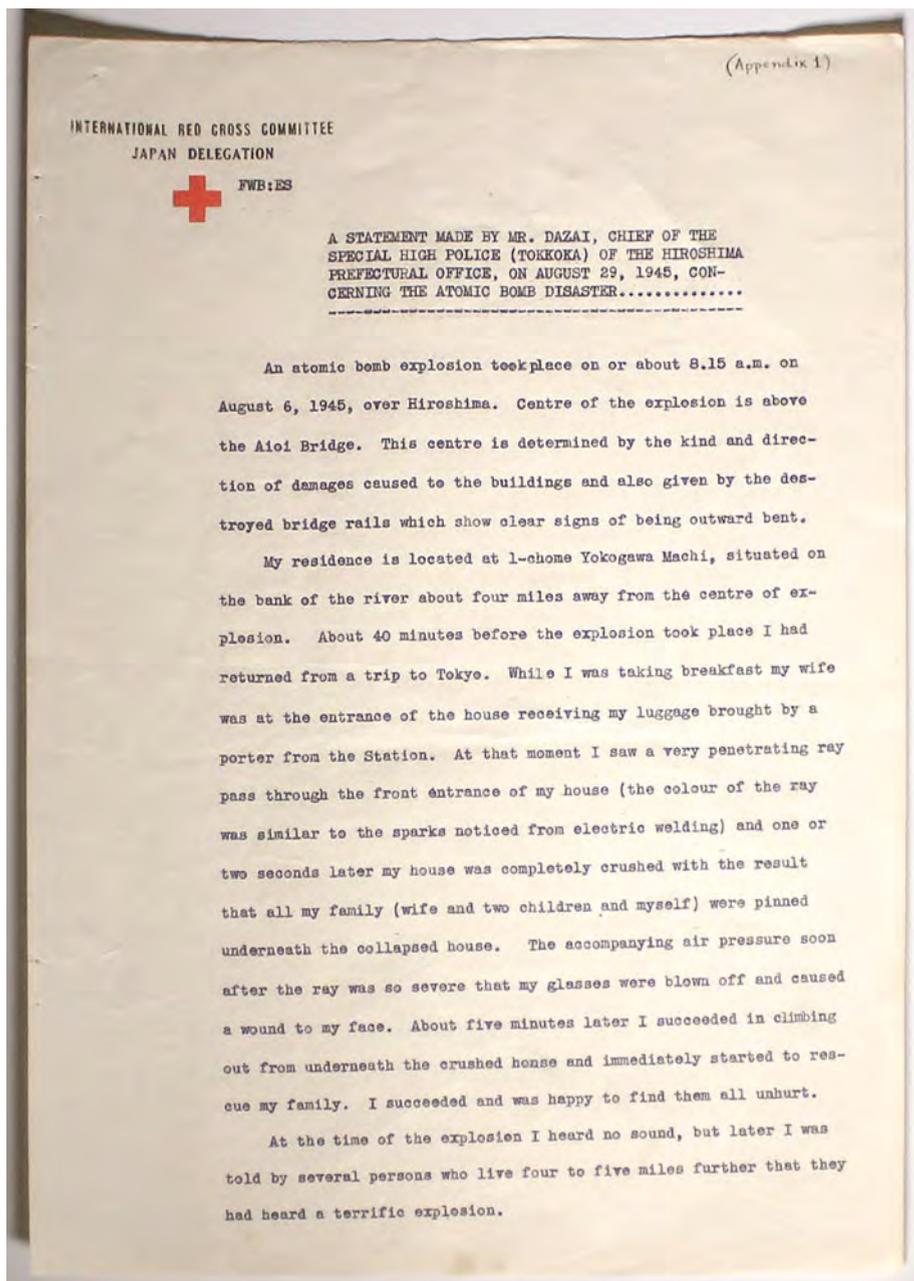
F.W. Bilfinger
Delegate

Encls.:

Appendices
and 48 photographs
secured from Domei News
Agency which form an
integral part of this
report.

Appendix 1

Statement made by Mr Dazai, chief of the special high police (*Tokkoka*) of the Hiroshima prefectural office, on 29 August 1945, concerning the atomic bomb disaster.



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As soon as I had collected the members of my family from the destroyed house I intended to proceed to an open field located about a few blocks away from my house, but found out that I could not direct my steps to that place as we were completely enveloped in a cover of smoke. I noticed that not only my immediate surrounding but also the mountains and the city were enveloped in a cloud of smoke. Eventually, I found one way open northward and we proceeded until we arrived at an open place on which vegetables were grown. On the way from my house to this field I noticed a number of people on the street who were crying in agony covered with blood. The street was covered with wiring and cables torn down by the air pressure and stones, bricks and lumber were scattered obstructing our passage. Just as we arrived to the vegetable field I noticed that a huge fire started up in the centre of the town. I left my family in this field and went to the Automobile Training School in Oshiba, where I borrowed a car and proceeded to the Kabe Police Station. From there I sent several Policemen and members of the Protection Association into all directions with the purpose of finding out if there was any road open to the centre of the City. This action was repeated several times until 4 p.m. as every road was blocked by fire and heat. At the Kabe Police Station I dispatched my first report to the Home Ministry (Naimusho) in Tokyo and at the same time I issued instructions to the eleven Police Stations located in the vicinity of Hiroshima City, instructing them to arrange immediately for a supply of food and medical attendance for the

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wounded and burnt.

Late in the afternoon I obtained the information that there was a way leading to Tammonin one of the emergency centres designated by the Governor for the Prefectural Police to assemble. I started off with some policemen and arrived at 8 p.m. the same evening. On the way from Kabe to Tammonin I expected to encounter strong heat and fires. However, this was not the case as by noon nearly all buildings were more or less burnt out and by 4 p.m. most of the heat had already radiated. As I am very shortsighted and I had lost my glasses during the explosion I was unable to see distinctly my surroundings on the way to Tammonin, but my Policemen who accompanied me explained that trams had been shifted from the rails to the side of the street; numerous corpses as well as wounded and burnt persons were lying all over the road. Steel telegraph poles were bent and broken and lying in the passages and trees were torn to pieces.

When I arrived at Tammonin the Governor, who later found out that he had lost his wife and children, and several other staff members were already there. The Governor happened to be in Fuchumachi at the time of the explosion. From then on systematic rescue work was being organized by the Prefectural personnel.

At 5 a.m. of the following day we proceeded to Higashi Police Station. This Station is very strongly constructed and some houses surrounding it were evacuated and torn down before the explosion. Policemen attached to this Station did their best to prevent the

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building from catching fire from outside and thus we found this building almost intact. We therefore transferred our Government Prefectural Office for the next 10 days to this Station and worked and lodged in this building.

Appendix 2

Clinical report of the hospital in Osaka prefecture on the effects of the atomic bomb.

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FWB:ES



CLINICAL REPORT OF THE ATTACHED HOSPITAL OF OSAKA
PREFECTURE ON THE EFFECTS OF THE ATOMIC BOMB.....

Case A. Male: age 37: company employee.
Location: 3 km. from centre of explosion.
Wounds: Almost nil. Burns around mouth.
History: Appetite had almost completely gone from the day of explosion. Came to Osaka three days after. Temperature 40 c. Strong nausea. Therefore taken into this hospital as a patient.
High temperature continued, pulse varying from 110 to 120. Burns around the mouth enlarged and began to swell up. Bleeding from the gum. Dark blood spots appeared on the body. Lost his hair. White blood cells in one unit decreased to 430, whereas a healthy man would normally have from 6000 to 7000. Injections of nourishment and heart stimulant had been given without any results and the patient died on the 18th day after the explosion.

Case B. Male: age 28: factory worker.
Location: In factory 1.2 km. from centre of explosion.
History: The factory building fell upon him, but did not cause any serious wounds to the patient. There were burns around his mouth. These burns became enlarged as the days went by and bleeding from the gums and tonsils developed. All hairs of his scalp came off and bleeding from many places of his body started as in Case A. White blood cells decreased to 2000. Died on the 16th day after the explosion.

Both of these patients had swelled spleen and liver similar to the symptoms caused by excessive X-Ray treatment.

Case C. Male: age 26: student enlisted in the Army.
Location: about 1 km. from the centre of explosion.
Wounds: Practically none.
History: Felt quite well for a few days (four or five days) and was helping with the rescue and relief work in the city. He then developed loss of appetite and weariness of the body, diarrhoea and high temperature of 40c to 42c. He also developed coughs (blood mixed in the sputum), bleeding from the gums and died on the 11th day after the explosion.

Case D. Male: age 38: company employee.
Location: In the vicinity of Hiroshima.
Wounds: None
History: For a week he was engaged in relief work in the city. Went back home after that and soon died. Symptoms just before his death were as follows: pulse became very fast and even when his body became numb he kept his full consciousness until his death. There appeared to be no chance of clinical treatment in this case.

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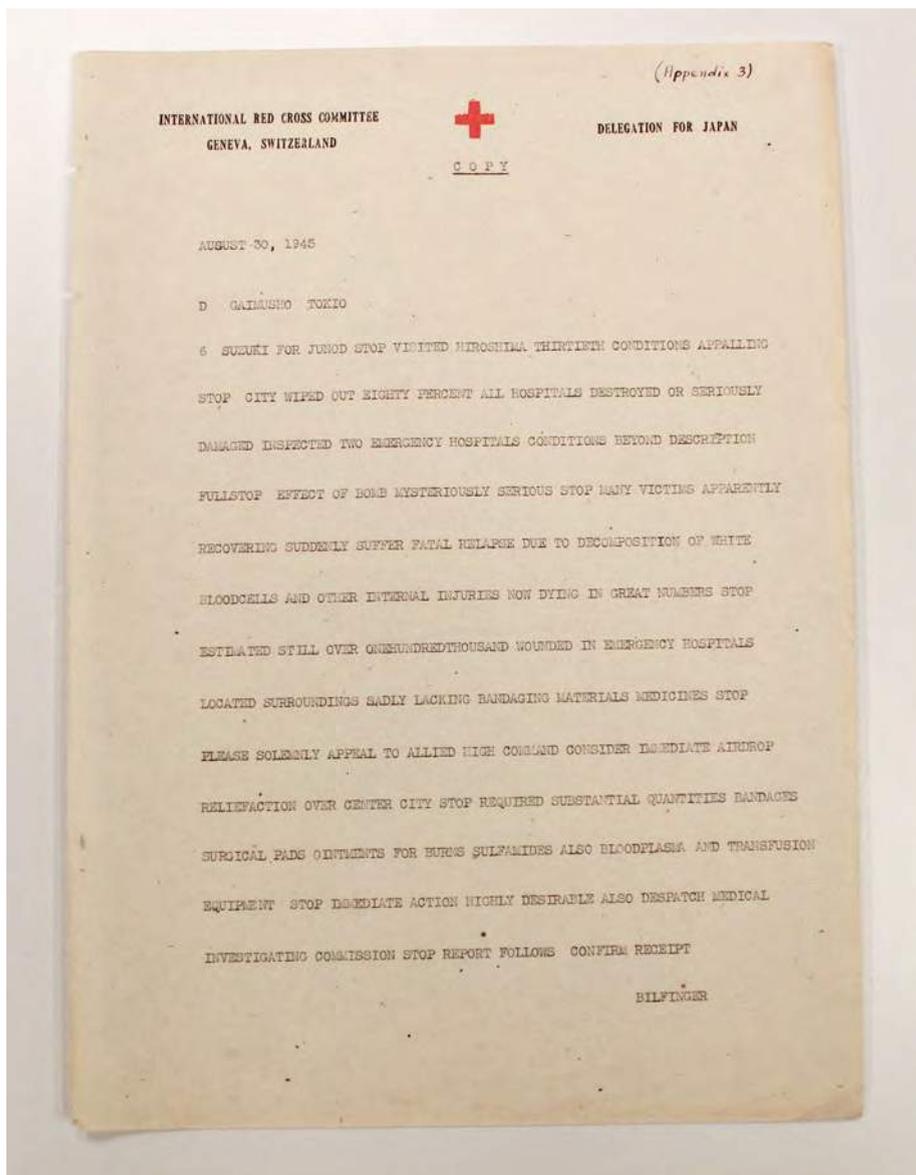


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Those who moved about immediately after the explosion, doing relief and rescue work seemed to have become the most serious cases. Those who were transported by stretchers received less effects of the rays. In this Osaka Hospital approximately 400 patients have been brought in and an average of 40 patients are dying everyday and it looks as if the cases are all hopeless.

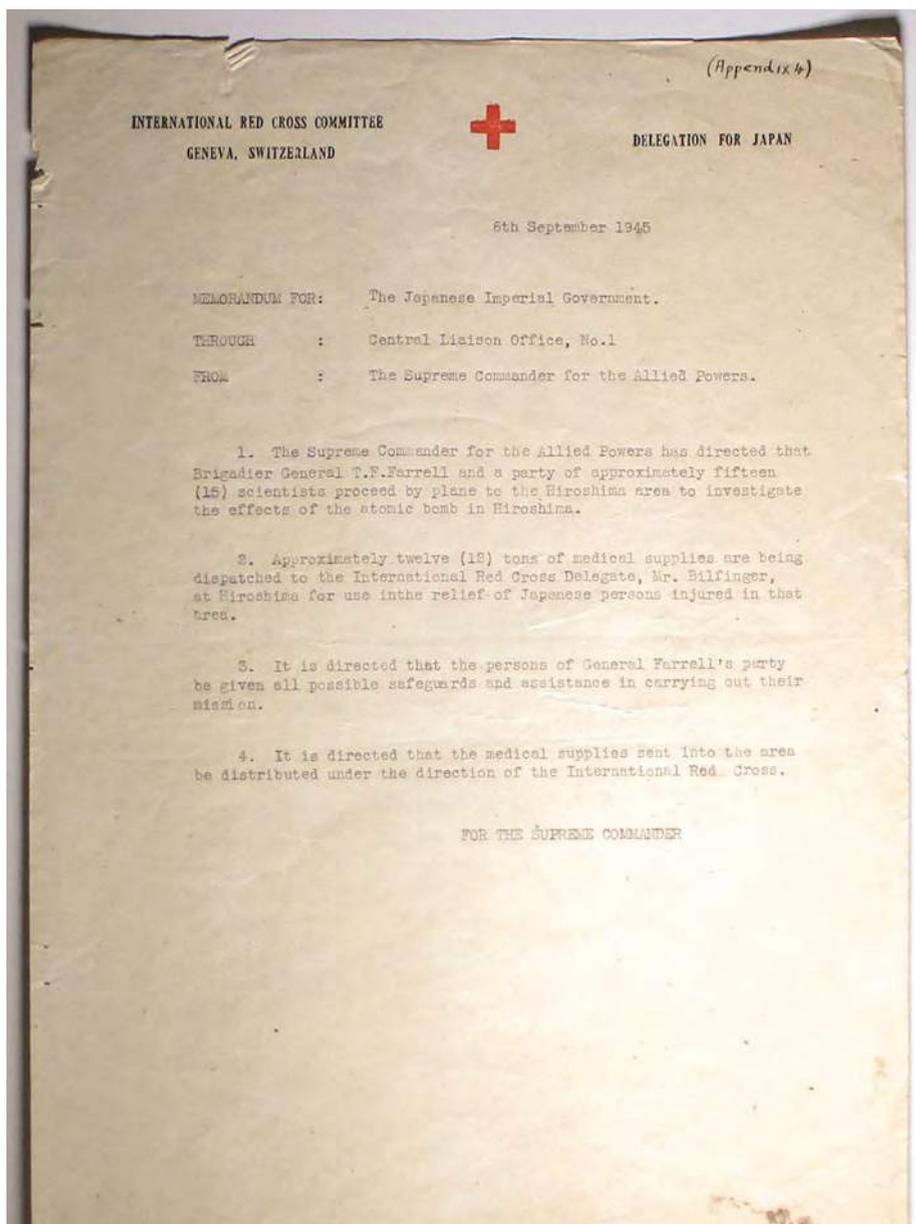
Appendix 3

Copy of the telegram from ICRC delegate Fritz Bilfinger sent on 30 August 1945 describing the effects of the atomic bomb in Hiroshima.



Appendix 4

Memorandum from the Supreme Commander for the Allied Powers to the Japanese Imperial Government detailing the interim medical relief to be provided by the allied powers, the distribution of which was ensured by the ICRC.



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PREFECTURAL POLICE STATISTICS ON HIROSHIMA CASUALTIES
(Excluding Armed Forces stationed in Hiroshima)

Dated August 20, 1945 **

Population	250,000
Casualties	200,000
Dead	33,000
Missing	30,000
Severely wounded*	14,000
Slightly " *	43,500

* Concerning the two latter figures it must be stated that they continuously decrease as many of the wounded die. On September 1, 1945, the reported death rate reached 53,000.

** Above figures are the official figures reported to the Prefectural Police and therefore do not include the many victims who are daily dying in the surrounding villages and towns where they have been brought to.

REPORTS AND DOCUMENTS

Bringing the era of nuclear weapons to an end

Speech given by Mr Jakob Kellenberger, President of the International Committee of the Red Cross, to the Geneva Diplomatic Corps on 20 April 2010

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In recent weeks and months, the issues of nuclear disarmament and nuclear non-proliferation have assumed a new urgency on the world stage. Energetic diplomatic efforts are heralding long overdue progress on nuclear weapons issues in the post-Cold War era.

The International Committee of the Red Cross [ICRC] firmly believes that the debate about nuclear weapons must be conducted not only on the basis of military doctrines and power politics. The existence of nuclear weapons poses some of the most profound questions about the point at which the rights of States must yield to the interests of humanity, the capacity of our species to master the technology it creates, the reach of international humanitarian law, and the extent of human suffering we are willing to inflict, or to permit, in warfare.

The currency of this debate must ultimately be about human beings, about the fundamental rules of international humanitarian law, and about the collective future of humanity.

The ICRC has a legitimate voice in this debate. In its 150-year history, the organization has witnessed immeasurable human suffering caused by war, and it understands the potential of international humanitarian law to limit such suffering. The ICRC also brings to the debate its own direct testimony on the consequences of the use of nuclear weapons and their potential to render impossible the mission of humanitarian assistance that this organization exists to fulfil. Dr Marcel Junod, an ICRC delegate, was the first foreign doctor in Hiroshima to assess the effects of the atomic bombing and to assist its victims. His testimony, in an article entitled “The Hiroshima Disaster”, stored in the

ICRC's archives and first published in 1982, told of the human reality of this weapon.

We ... witnessed a sight totally unlike anything we had ever seen before. The centre of the city was a sort of white patch, flattened and smooth like the palm of a hand. Nothing remained. The slightest trace of houses seemed to have disappeared. The white patch was about two kilometres in diameter. Around its edge was a red belt, marking the area where houses had burned, extending quite a long way further ... covering almost all the rest of the city.

According to witnesses encountered by Junod, in a few seconds after the blast,

thousands of human beings in the streets and gardens in the town centre, struck by a wave of intense heat, died like flies. Others lay writhing like worms, atrociously burned. All private houses, warehouses, etc., disappeared as if swept away by a supernatural power. Trams were picked up and hurled yards away, as if they were weightless; trains were flung off the rails Every living thing was petrified in an attitude of acute pain.

As Junod recounts, destruction of this magnitude does not spare medical infrastructure or doctors and their materials. Of 300 doctors in Hiroshima, 270 were reported dead; of 1,780 nurses, 1,654 were dead; of 140 pharmacists, 112 were dead. Miraculously, the Japanese Red Cross hospital that Junod visited was built of stone and remained largely intact. However, it could no longer function as its laboratory equipment was unusable, a third of its staff had been killed, and there was no possibility of blood transfusion as the donors were either dead or had disappeared. Of a thousand patients who had taken refuge there on the first day, 600 rapidly died.

The suffering caused by the use of nuclear weapons is increased exponentially by devastation of the emergency and medical assistance infrastructure. The specific characteristics of nuclear weapons – that is, the effects on human beings of the radiation they generate – also cause suffering and death for years after the initial explosion. For survivors, the immediate future may include life-threatening dehydration and diarrhoea from injuries to the gastrointestinal tract, and life-threatening infections and severe bleeding caused by bone marrow suppression. If they survive these threats, they face an increased risk of developing certain cancers and of passing on genetic damage to future generations. Thus over time many more lives are lost. In Hiroshima and Nagasaki, fatalities increased two- to three-fold over the following five years.

Although nuclear weapons' potential for destructive force increased by a factor of many thousands during the Cold War, the ability of States and international agencies to assist potential victims did not. The ICRC has recently completed a thorough analysis of its capacity, and that of other international agencies, to bring aid to the victims of the use of nuclear, radiological, chemical or biological weapons. Despite the existence of some response capacity in certain countries, at the international level there is little such capacity and no realistic,

coordinated plan. Almost certainly, the images seen in Hiroshima and Nagasaki will also be those resulting from any future use of nuclear weapons.

We now know that the destructive capacity of the nuclear weapons used in Hiroshima and Nagasaki pales in comparison to those in current arsenals. According to many scenarios of nuclear weapon use, the human and societal destruction would be much worse. We also know that use of a fraction of the weapons held in current arsenals would affect the environment for many years and render agriculture impossible in vast areas. The implications for human life are indeed sobering.

The International Committee of the Red Cross has long been preoccupied by nuclear weapons, by the immense threat they pose to civilians and by their implications for international humanitarian law. Already on 5 September 1945, the ICRC publicly expressed the wish that nuclear weapons be banned. From 1948 on, the entire International Red Cross and Red Crescent Movement, through its International Conferences, called for the prohibition of weapons of mass destruction in general, and of nuclear weapons in particular. In a communication to States party to the Geneva Conventions in 1950, the ICRC stated that before the atomic age,

war still presupposed certain restrictive rules; above all ... it presuppose[d] discrimination between combatants and non-combatants. With atomic bombs and non-directed missiles, discrimination became impossible. Such arms will not spare hospitals, prisoner of war camps and civilians. Their inevitable consequence is extermination, pure and simple [Their] effects, immediate and lasting, prevent access to the wounded and their treatment. In these conditions, the mere assumption that atomic weapons may be used, for whatever reason, is enough to make illusory any attempt to protect non-combatants by legal texts. Law, written or unwritten, is powerless when confronted with the total destruction the use of this arm implies.

On this basis, the ICRC called on States to take “all steps to reach an agreement on the prohibition of atomic weapons”.

In 1996 the ICRC welcomed the fact that the International Court of Justice, in its Advisory Opinion on nuclear weapons, confirmed that the principles of distinction and proportionality found in international humanitarian law are “intransgressible” and apply also to nuclear weapons. In applying those principles to nuclear weapons, the Court concluded that “the use of nuclear weapons would generally be contrary to the principles and rules of international humanitarian law”. It was unable to decide whether, even in the extreme circumstance of a threat to the very survival of the State, the use of nuclear weapons would be legitimate.

Some have cited specific, narrowly defined scenarios to support the view that nuclear weapons could be used legally in some circumstances. However, the Court found that

[t]he destructive power of nuclear weapons cannot be contained in either space or time The radiation released by a nuclear explosion would affect health,

agriculture, natural resources and demography over a very wide area. Further, the use of nuclear weapons would be a serious danger to future generations

In the light of this finding, the ICRC finds it difficult to envisage how any use of nuclear weapons could be compatible with the rules of international humanitarian law.

The position of the ICRC, as a humanitarian organization, goes – and must go – beyond a purely legal analysis. Nuclear weapons are unique in their destructive power, in the unspeakable human suffering they cause, in the impossibility of controlling their effects in space and time, in the risks of escalation they create, and in the threat they pose to the environment, to future generations, and indeed to the survival of humanity. The ICRC therefore appeals today to all States to ensure that such weapons are never used again, regardless of their views on the legality of such use.

The international community now has at hand a unique opportunity to reduce and eliminate the threat of nuclear weapons for this and succeeding generations. The UN Security Council, meeting at summit level in September 2009, endorsed the objective of “a world without nuclear weapons”. Four months earlier the Conference on Disarmament in Geneva unanimously agreed upon a programme of work and negotiations on nuclear weapon issues, including nuclear disarmament. Some of the most renowned political and military leaders of recent decades have concluded that nuclear weapons undermine national and international security and support their elimination. Presidents Obama and Medvedev have recognized their countries’ special responsibility for the reduction of nuclear weapons. The Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons, to be held in New York next month, provides an historic opportunity for both nuclear and non-nuclear weapon States to agree on concrete plans for the fulfilment of all the treaty’s obligations, including those concerning nuclear disarmament.

In the view of the ICRC, preventing the use of nuclear weapons requires fulfilment of existing obligations to pursue negotiations aimed at prohibiting and completely eliminating such weapons through a legally binding international treaty. It also means preventing their proliferation and controlling access to materials and technology that can be used to produce them.

The opening sentences of Marcel Junod’s testimony began: “The physical impact of the bomb was beyond belief, beyond all apprehension, beyond imagination. Its moral impact was appalling.” We must never allow ourselves to become morally indifferent to the terrifying effects of a weapon that defies our common humanity, calls into question the most fundamental principles of international humanitarian law, and can threaten the continued existence of the human species.

The ICRC today appeals to all States, and to all in a position to influence them, to seize with determination and urgency the unique opportunities now at hand to bring the era of nuclear weapons to an end.

REPORTS AND DOCUMENTS

Nuclear weapons: Ending a threat to humanity

Speech given by Mr Peter Maurer, President of the International Committee of the Red Cross, to the diplomatic community in Geneva on 18 February 2015

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This year is the 70th anniversary of the atomic bombings of Hiroshima and Nagasaki – events that have left an indelible mark on humanity’s conscience and consciousness.

I was in Hiroshima last week. I visited the Peace Memorial Museums and spoke to *hibakusha* – survivors. 70 years after the nuclear bombs were dropped on these cities, the lives of the survivors, the lives of countless people in Japan, are still overshadowed by these two watershed events in the history of modern warfare.

This year’s 70th anniversary is a forceful reminder of the catastrophic and lasting human cost of nuclear weapons. It is a stark reminder of the incineration of two cities and their inhabitants. For the survivors, it is a reminder of the burns, blindness and blast injuries that went untreated because the medical infrastructure had been destroyed; of the slow and painful deaths; of the suffering endured by those who were exposed to radiation and 70 years later are still being treated for cancers and other diseases.

Seventy years ago, ICRC and Japanese Red Cross staff worked in unimaginable conditions to aid the victims and relieve the suffering caused by the atomic blasts. But how could we treat victims when hospitals had been reduced to rubble and ash and their medical supplies contaminated? The Japanese Red Cross Hospital, 1.5 kilometres from the hypocentre of the Hiroshima bomb, was somehow still standing after the explosion. There, doctors and nurses from the Japanese Red Cross did what they could. But it was clearly not enough to alleviate the suffering of those affected by the blast.

Based on these experiences, the ICRC concluded as early as September 1945 that the humanitarian consequences of nuclear weapons were simply unacceptable.

From a humanitarian perspective, nuclear weapons should be abolished. Later, the ICRC, along with the broader Red Cross and Red Crescent Movement, called on States to reach an agreement to prohibit nuclear weapons.

Throughout history, humanitarian disasters have often been the catalyst for the adoption of new laws to prevent further suffering, deaths and atrocities in war. One such example was the use of poison gas in the First World War, which led to the adoption of the 1925 Geneva Protocol and the subsequent banning of chemical and biological weapons.

Yet today, 70 years after Hiroshima and Nagasaki – names that recall humanitarian disasters like no other – clear progress towards the prohibition and elimination of nuclear weapons is lacking. Nuclear weapons are the one weapon of mass destruction on which we are still confronted with a legal gap.

We recognize the efforts that have been made and the fundamental importance of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and all the commitments it contains, as well as other efforts to advance nuclear disarmament. But in light of the potential humanitarian consequences, progress in the field of disarmament is, as of now, insufficient.

Five years ago my predecessor forcefully reiterated the ICRC's call for the non-use and elimination of nuclear weapons. The UN Security Council Summit and the US and Russian presidents had the previous year committed to “create the conditions for a world without nuclear weapons.”

We were heartened that in May 2010 all NPT States Parties recognized, for the first time, the “catastrophic humanitarian consequences of any use of nuclear weapons” and that nuclear-weapon States Parties committed to accelerating progress on the steps leading to nuclear disarmament and to undertaking further efforts to reduce and ultimately eliminate all types of nuclear weapons.

I have invited the diplomatic community back here today because the ICRC is gravely concerned that these undertakings are at risk.

In three months' time the commitment to move towards a world without nuclear weapons will again be addressed in the framework of the NPT Review Conference. This is a pivotal moment for the Treaty and for efforts to ensure that nuclear weapons are never again used. Much has happened since the last Review Conference. There are new developments and perspectives that the ICRC believes States must take into account as they prepare for the Conference and for any future work to address the dangers of nuclear weapons.

The Review Conference will have before it extensive and, in some areas, new information on the humanitarian consequences of nuclear weapons. Thanks to the conferences held in Oslo, Nayarit and Vienna, the international community now has a much clearer grasp of the risk that nuclear weapons might be used or accidentally detonated and the effects that such an event would have on people and societies around the globe, as well as on the environment.

These conferences have confirmed and expanded what the ICRC learned from its experience in Hiroshima. Here are some of the key points that we take away from these meetings:

- Nuclear weapons are unique in their destructive power and in the scale of human suffering they cause. Their use, even on a limited scale, would have catastrophic and long-lasting consequences for human health, the environment, the climate, food production and socioeconomic development.
- The health impacts of these weapons can last for decades and impact the children of survivors through genetic damage to their parents. This has been evident where nuclear weapons have been both used and tested. We could not have imagined that Japanese Red Cross hospitals would still be treating victims of cancer and leukaemia attributable to radiation from the atomic blasts – today, 70 years on.
- Seventy years after the dawn of the “nuclear age,” there is no effective or feasible means of assisting a substantial portion of survivors in the immediate aftermath of a nuclear detonation, while adequately protecting those delivering assistance, in most countries or at the international level.
- The humanitarian consequences of a nuclear-weapon detonation would not be limited to the country where it occurs but would impact other countries and their populations. Thus, the continued existence of nuclear weapons and the risk of their intentional or accidental use is and must be a global concern.

Testimonies by nuclear experts and former nuclear force officers have shown that accidental nuclear-weapon detonations remain a very real danger. Malfunctions, mishaps, false alarms and misinterpreted information have nearly led to the intentional or accidental detonation of nuclear weapons on numerous occasions since 1945. The non-use of nuclear weapons over the past 70 years provides no assurance that such weapons will not be used in the future. Only the prohibition and elimination of nuclear weapons can prevent the severe humanitarian consequences that would entail.

In reality, the growing number of States that possess nuclear weapons and the potential for non-State actors to acquire them or related materials increases the risk of both deliberate and accidental detonations. The fact that an estimated 1,800 nuclear warheads remain on “high alert” status, ready to be launched within minutes, further amplifies those risks. Calls since the end of the Cold War to reverse such policies have unfortunately gone unheeded.

The information acquired since the last NPT Review Conference has increased the ICRC’s concerns about nuclear weapons. In our view, these findings have significant implications for the assessment of nuclear weapons under the fundamental rules of international humanitarian law. The new information about the health and environmental effects and the absence of an adequate assistance capacity in most countries should trigger a reassessment of nuclear weapons by all States in both legal and policy terms.

Already in 1996, in response to the Advisory Opinion of the International Court of Justice, the ICRC concluded that “it is difficult to envisage how any use of nuclear weapons could be compatible with the requirements of international humanitarian law.”

The evidence that has emerged since only strengthens these doubts. With every new piece of information, we move further away from any hypothetical scenario where the humanitarian consequences of the use of nuclear weapons could be compatible with international humanitarian law. This leads us, time and again, to the conclusion that the use of nuclear weapons must be prohibited and the weapons eliminated altogether.

The ICRC believes that reducing the risk of nuclear-weapon use and ensuring their elimination through a legally binding international agreement is a humanitarian imperative.

Significant steps have already been taken. States with the largest stockpiles of nuclear weapons have, since the end of the Cold War, significantly reduced the number of warheads that they possess. The 2010 New START treaty will further reduce the number of deployed nuclear weapons. Important steps have also been taken to increase security for nuclear materials. 115 States have signed treaties establishing nuclear-weapon-free zones and nearly all countries have committed to refrain from testing nuclear weapons by joining the Comprehensive Nuclear-Test-Ban Treaty or by establishing moratoria on nuclear testing.

However, other trends since 2010 give reason for grave concern. There is no evidence of negotiations for “rapid reductions” of nuclear weapons and even fewer signs of momentum towards their “total elimination”. Reports that the pace of reduction of nuclear arsenals has slowed and of the modernization of nuclear weapons by some States raise concerns that their role in security policies is not actually being reduced and may provide incentives for proliferation.

The 70th anniversary of the first use of nuclear weapons is the moment to signal that the era of nuclear weapons is coming to an end and that the threat of these weapons will be forever banished. It is the time to draw legal, political and operational conclusions from what has been learned about those “catastrophic humanitarian consequences” that States party to the Non-Proliferation Treaty recognized five years ago.

In 2011, the Council of Delegates of the International Red Cross and Red Crescent Movement appealed to all States “to ensure that nuclear weapons are never again used” and “to prohibit the use of and completely eliminate nuclear weapons through a legally binding international agreement, based on existing commitments and international obligations.”

I echo that call here today. The ICRC also appeals to States to fulfil the commitments contained in Article 6 of the NPT by establishing a time-bound framework to negotiate a legally binding agreement – and to consider the form that such an agreement could take. The catastrophic humanitarian consequences of nuclear weapons and current trends are too serious to ignore. The prohibition and elimination of these weapons through a legally binding agreement is the only guarantee that they will never be used again.

States Parties should make the NPT Review Conference this May a turning point for decision-making and progress in this area.

Until the very last nuclear weapon is eliminated, more also needs to be done to diminish the immediate risks of intentional or accidental nuclear detonations. We

call on States that possess nuclear weapons and their allies to take further concrete steps to reduce the role and significance of nuclear weapons in their military plans, doctrines and policies. We urge nuclear-armed States to reduce the number of warheads on high alert and to be more transparent about action taken to prevent accidental detonations. Many of these steps derive from long-standing political commitments and multilateral action plans and should be followed through as a matter of urgency.

Protecting humanity from the catastrophic humanitarian consequences of nuclear weapons requires courage, sustained commitment and concerted action. Today's complex security environment highlights both the challenges and necessity of such action. Nuclear weapons are often presented as promoting security, particularly during times of international instability. But weapons that risk catastrophic and irreversible humanitarian consequences cannot seriously be viewed as protecting civilians or humanity as a whole.

We know now more than ever before that the risks are too high, the dangers too real. It is time for States, and all those of us in a position to influence them, to act with urgency and determination to bring the era of nuclear weapons to an end.

REPORTS AND DOCUMENTS

What's new in law and case law around the world?

Biannual update on national implementation of international humanitarian law* January-June 2015

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The biannual update on national legislation and case law is an important tool in promoting the exchange of information on national measures for the implementation of international humanitarian law (IHL).

In addition to a compilation of domestic laws and case law, the biannual update includes other relevant information related to accession and ratification of IHL and other related instruments, and to developments regarding national committees for the IHL or similar bodies. It also provides information on some efforts by the ICRC Advisory Service during the

ICRC Advisory Service

The ICRC's Advisory Service on International Humanitarian Law aims to provide a systematic and proactive response to efforts to enhance the national implementation of IHL. Working worldwide, through a network of legal advisers, to supplement and support governments' own resources, its four priorities are: (i) to encourage and support adherence to IHL-related treaties; (ii) to assist States by providing them with specialized legal advice and the technical expertise required to incorporate international humanitarian law into their domestic legal frameworks;¹ (iii) to collect and facilitate the exchange of information on national implementation measures and case law;² and (iv) to support the work of committees on IHL and other bodies established to facilitate the IHL implementation process.

* This selection of national legislation and case law has been prepared by Cédric Apercé, legal attaché in the ICRC Advisory Service on International Humanitarian Law, with the collaboration of regional legal advisers.

period covered to promote universalization of IHL and other related instruments and their national implementation.

Update on the accession and ratification of IHL and other related international instruments

Universal participation in IHL and other related treaties is a first vital step toward the respect of life and human dignity in situations of armed conflict. In the period under review, eighteen IHL and other related international conventions and protocols were ratified or acceded to by twenty-five States.³ In particular, there has been notable adherence to the Arms Trade Treaty (ATT). Indeed, eight States have ratified the ATT in the first half of 2015, bringing the number of States Parties as of 30 June 2015 to sixty-nine.

Other international treaties are also of relevance for the protection of persons during armed conflicts, such as the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, its Optional Protocol, and the International Convention for the Protection of all Persons from Enforced Disappearance (CPPED).

The following table outlines the total number of ratifications of and accessions to IHL treaties and other relevant related international instruments, as of the end of June 2015.

Ratifications and accessions, January–June 2015

Conventions	States	Ratification/ accession date	Number of parties
1972 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction	Mauritania	28 January 2015	173
	Andorra	2 March 2015	

1 In order to assist States, the ICRC Advisory Service proposes a multiplicity of tools, including thematic fact sheets, ratification kits, model laws and checklists, as well as reports from expert meetings, all available on the unit's web page at: www.icrc.org/en/war-and-law/ihl-domestic-law (all internet references were accessed in December 2015).

2 For information on national implementation measures and case law, please visit the ICRC Database on National Implementation of IHL, available at: www.icrc.org/ihl-nat.

3 To view the full list of IHL-related treaties, please visit the ICRC Treaty Database, available at: www.icrc.org/ihl.

(Cont.)

Conventions	States	Ratification/ accession date	Number of parties
1976 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques	Kyrgyzstan	15 June 2015	77
1977 Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts	Palestine	4 January 2015	168
1980 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects	Palestine Algeria	5 January 2015 6 May 2015	121
1980 Protocol I to the Convention on Conventional Weapons on Non-Detectable Fragments	Palestine Algeria	5 January 2015 6 May 2015	115
1980 Protocol III to the Convention on Conventional Weapons on Prohibitions or Restrictions on the Use of Incendiary Weapons	Palestine Algeria	5 January 2015 6 May 2015	112

Continued

(Cont.)

Conventions	States	Ratification/ accession date	Number of parties
1984 Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment	Vietnam	5 February 2015	158
	South Sudan	3 April 2015	
1989 Convention on the Rights of the Child	South Sudan	23 January 2015	195
1995 Protocol IV to the Convention on Conventional Weapons on Blinding Laser Weapons	Algeria	6 May 2015	105
1998 International Criminal Court Statute	Palestine	2 January 2015	123
1999 Second Protocol to the Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict	South Africa	11 February 2015	68
2001 Amendment to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects	Algeria	6 May 2015	82
2002 Optional Protocol to the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment	Mongolia	12 February 2015	79
	South Sudan	30 April 2015	
	Rwanda	30 June 2015	

(Cont.)

Conventions	States	Ratification/ accession date	Number of parties
2005 Protocol Additional (III) to the Geneva Conventions of 12 August 1949, and relating to the Adoption of an Additional Distinctive Emblem	Palestine	4 January 2015	72
	Luxembourg	27 January 2015	
	Belgium	12 May 2015	
	Romania	15 May 2015	
2006 International Convention for the Protection of All Persons from Enforced Disappearance	Mongolia	12 February 2015	46
	Malta	27 March 2015	
2008 Convention on Cluster Munitions	Palestine	2 January 2015	92
	Paraguay	12 March 2015	
	Canada	16 March 2015	
	South Africa	28 May 2015	
2010 Amendment to Article 8 of the Rome Statute of the International Criminal Court	Malta	30 January 2015	24
	Costa Rica	5 February 2015	
	Czech Republic	12 March 2015	
2013 Arms Trade Treaty	Switzerland	30 January 2015	69
	Côte d'Ivoire	26 February 2015	
	Belize	19 March 2015	
	Chad	25 March 2015	
	Paraguay	9 April 2015	
	Liberia	21 April 2015	
	Barbados	20 May 2015	
	Dominica	21 May 2015	

National implementation of international humanitarian law

The laws and case law presented below were either adopted by States or delivered by domestic courts in the first half of 2015. They cover a variety of topics linked to IHL, such as detention, criminal procedures, international criminal justice, sexual violence, victims and witnesses' rights, enforced disappearances, protected persons and regulation of private security services.

This compilation is not meant to be exhaustive; it represents a selection of the most relevant developments relating to IHL implementation and related issues collected by the ICRC. The full texts of these laws and case law can be found in the ICRC's Database on National Implementation of IHL.⁴

A. Legislation

The following section presents, in alphabetical order by country, domestic legislation adopted during the period under review (January–June 2015). Countries covered are Belarus, Bosnia and Herzegovina, the Central African Republic, Côte d'Ivoire, Croatia, Malta, Spain, Sri Lanka, Switzerland and Ukraine.

Belarus

*Law No. 244-Z on Martial Law*⁵

On 22 January 2015, the president of Belarus promulgated Law No. 244-Z introducing amendments and additions to certain laws of the Republic of Belarus on martial law as a new edition of Law No. 185-Z of 13 January 2003 on martial law.

The law defines the purpose of martial law as to create the necessary conditions to eliminate a threat of war or repel an attack, outlining its relevance for situations of armed conflict and ongoing violence.

Moreover, the law introduces definitions of internment, military censorship and martial law. Some provisions allow the mandatory involvement of persons aged 16 in work of a defensive nature.

Finally, the procedure for imposing martial law as well as for temporary limitation of the rights and freedoms of citizens is established by the law. Communication of those limitations of rights to other States party to the International Covenant on Civil and Political Rights is also considered.

⁴ See the ICRC Database on National Implementation of IHL, available at: www.icrc.org/ihl-nat.

⁵ Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=FBA49A6EA941EC18C1257F3B0051359F&action=openDocument&xp_countrySelected=BY&xp_topicSelected=GVAL-992BU6&from=state.

Bosnia and Herzegovina

*Law No. 40/15 on Amendments to the Criminal Code*⁶

On 18 May 2015, the Parliamentary Assembly of Bosnia and Herzegovina adopted the Law on Amendments to the Criminal Code. The law harmonizes the domestic legislation with international standards of criminal justice.

It modifies the definition of rape in the context of Articles 172 (crimes against humanity) and 173 (war crimes against civilians) by eliminating the use of coercive force or threat of force on the victim or a person close to the victim as elements of the crimes.

Article 190 as modified by the law also provides a more extensive definition of torture, encompassing superior and subordinate criminal responsibilities. This crime carries a penalty of a minimum six years' imprisonment.

In addition, the law further introduces an article criminalizing enforced disappearance. According to the newly established article, a public official or any other person acting in such capacity, or anyone acting with the consent of a public official, who deprives another person of his/her liberty and withholds information on his/her whereabouts, thereby putting him/her outside the protection of the law, shall be punished by a prison sentence of a minimum eight years. This provision addresses both superior and subordinate criminal responsibilities. Likewise, a superior order does not relieve the person of his or her criminal responsibility, but might serve to reduce the punishment if a court considers it in the interest of justice.

Central African Republic

*Organic Law No. 15-003 on the Creation, Organization and Functioning of the Special Criminal Court*⁷

On 3 June 2015, the president of the Central African Republic promulgated Organic Law No. 15-003 on the Creation, Organization and Functioning of the Special Criminal Court.

Article 3 of the law provides that the Court is competent for serious violations of human rights and IHL committed on the territory of the Central African Republic since 1 January 2003, notably crimes of genocide, crimes against humanity and war crimes.

6 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=2EF4A23EC264EC96C1257F7F00548906&action=openDocument&xp_countrySelected=BA&xp_topicSelected=GVAL-992BU6&from=state.

7 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=92C4EC76991F04C4C1257ECB004E25D5&action=openDocument&xp_countrySelected=CF&xp_topicSelected=GVAL-992BU6&from=state&SessionID=DLUWOZRFVN.

Furthermore, crimes under the jurisdiction of the Court have no statute of limitations, and the Court enjoys primacy over national jurisdictions. Articles 56 and 57 affirm the principle of individual criminal responsibility and the irrelevance of official capacity, while Articles 57 and 58 provide for criminal responsibility of commanders and other superiors. The Court may impose penalties referred to in the Penal Code of the Central African Republic on a person convicted of a crime under its jurisdiction within the limit of life imprisonment as provided by Article 59.

The Special Criminal Court is created in Bangui for a renewable period of five years and is composed of national and international judges divided in four chambers. Article 24 reads that international judges will be nominated upon proposition of the Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA). In line with Article 53, the budget of the Court is supported by the international community in consultation with the government of the Central African Republic.

Côte d'Ivoire

*Law No. 2015-133 modifying and completing Bill No. 60-366 of 14 November 1960 instituting the Penal Procedure Code*⁸

On 9 March 2015, the president of Côte d'Ivoire promulgated the law modifying and completing the Penal Procedure Code. The law aims at ensuring domestication of the Statute of the International Criminal Court (ICC) and complementarity with the ICC.

In particular, it abolishes the ten-year statute of limitations for prosecuting war crimes, crimes against humanity and genocide, and establishes that these crimes are not subject to any statute of limitations.

*Law No. 2015-134 modifying and completing Law No. 81-640 of 31 July 1981 instituting the Penal Code*⁹

On 9 March 2015, the president of Côte d'Ivoire promulgated the law modifying and completing the Penal Code. The law aims at ensuring domestication of the ICC Statute and complementarity with the ICC.

Articles 16, 18 and 21 of the law respectively integrate the disposition relative to the crimes of genocide, crimes against humanity and war crimes, whereas Article 23 introduces within Côte d'Ivoire domestic legislation the disposition on responsibility of commanders and other superiors provided by the

8 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=7F92464A77B81CFAC1257ECB00486AB3&action=openDocument&xp_countrySelected=CI&xp_topicSelected=GVAL-992BU6&from=state&SessionID=DLUWOZRFVN.

9 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=EDA0E02729E84FA8C1257EBB0049F134&action=openDocument&xp_countrySelected=CI&xp_topicSelected=GVAL-992BU6&from=state&SessionID=DLUWOZRFVN.

ICC Statute. The law also states that amnesty, mitigating circumstances, suspended offences and statutes of limitations are not applicable to those crimes.

Finally, Article 31 of the law also provides for the abolition of the death penalty in relation to international crimes.

Croatia

*Law on the Rights of Victims of Sexual Violence in the Homeland War*¹⁰

On 2 June 2015, the president of Croatia promulgated the Law on the Rights of Victims of Sexual Violence in the Homeland War. This legislation defines sexual violence in the context of the Croatian Homeland War from 5 August 1990 to 30 June 1996, and states the status and rights of victims of such violence. It refers to acts committed on the territory of the Republic of Croatia or during captivity in an enemy camp or prison outside Croatian territory.

Article 2 reads: “[S]exual violence in the Homeland War is sexual violence that has been committed contrary to criminal laws or international humanitarian law and the Geneva Conventions, as a war crime or crime against humanity, as well as an offense against sexual freedom that is not qualified as a war crime but was committed in circumstances directly related to the Homeland War, in connection with military and police operations as follows ...”

According to Article 3, a victim of sexual violence is a person against whom was committed or who was, in conditions of confinement, induced to commit against her/himself or against some third person, one or more forms of sexual violence by a military or police person, a member of a paramilitary forces or a civilian.

In its Articles 14 to 27, the law sets out the status and rights of victims of sexual violence, including psycho-social support, legal assistance, medical care, medical rehabilitation, medical physical examination, compulsory and supplementary health insurance, and pecuniary compensation. These rights are personal and cannot be transferred to another person or be inherited, except due and unpaid pecuniary compensation.

The law also specifies the procedure for obtaining the status and exercise of the rights for victims in its Articles 28 to 36. Furthermore, it provides details of the establishment of a Commission for Victims of Sexual Violence as an independent, mixed expert body which provides opinion on whether a person is a victim of sexual violence, as well as on the form or the consequences of sexual violence (Article 10). The Commission gathers judges, attorneys, lawyers, medical experts and other professionals with experience in the protection of human rights (Article 12) and should give its opinion within thirty days based on facts and evidence set out in the criminal proceedings (Article 13).

10 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=E7CFB467BEAE9444C1257F18004AA23F&action=openDocument&xp_countrySelected=HR&xp_topicSelected=GVAL-992BUG&from=state&SessionID=DLUWOZRFVN.

Malta

*Act No. VIII amending the Criminal Code of 1854*¹¹

On 17 March 2015, the president of Malta approved Act No. VIII amending the Criminal Code of 30 January 1854.

Pursuant to Article 54G, as amended by the Act, a criminal action for genocide, crimes against humanity, war crimes and crimes of aggression may be initiated by the national courts, even if it has been committed outside the territory of Malta, or against any citizen or permanent resident of Malta who outside Malta conspires to commit any of these crimes, or a person subject to military law.

Spain

*Organic Law 1/2015 modifying Organic Law 10/1995 of the Penal Code*¹²

On 30 March 2015, Organic Law 1/2015 modifying the Penal Code was promulgated. This law prohibits the act of publicly negating or minimizing crimes of genocide, crimes against humanity and crimes against protected persons and property in times of armed conflict. In addition, it criminalizes nuclear and radiological weapons possession and storage.

Article 510 of the Penal Code, which criminalizes discriminatory speech, is thereby amended through the addition as a criminal offence of negating, minimizing or praising publicly the commission or perpetrators of the crimes of genocide, crimes against humanity and crimes against protected persons and property in times of armed conflict committed against a specific group or against members of such group.

Moreover, the law amends Articles 566 and 567, which prohibit the illegal production, trade and stockpiling of certain weapons, by adding nuclear and radiological weapons to a list that already included antipersonnel mines and cluster munitions as well as biological and chemical weapons. Through the modification of Article 347, the development, use and traffic of certain nuclear materials or other hazardous substances which cause or are likely to cause death or serious injury to persons or substantial damage to the environment shall also be punished.

This law has no retroactive effect.

11 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=F667132FF110CDD5C1257EF400623098&action=openDocument&xp_countrySelected=MT&xp_topicSelected=GVAL-992BU6&from=state.

12 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=95A4A12F347D96C3C1257EB900448826&action=openDocument&xp_countrySelected=ES&xp_topicSelected=GVAL-992BU6&from=topic&SessionID=DNMSXFGMJQ.

Sri Lanka

*Assistance to and Protection of Victims of Crime and Witnesses Act, No. 4 of 2015*¹³

On 7 March 2015, the Assistance to and Protection of Victims of Crime and Witnesses Act was promulgated.

The Act gives effect to appropriate international norms, standards and best practices relating to the protection of victims of crime and witnesses by setting out the rights and entitlements of those victims, as well as their protection and promotion. While of general scope, the Act can be specifically relevant for any transitional justice mechanism that may be established in Sri Lanka.

Part IV of the Act establishes the National Authority for the Protection of Victims of Crimes and Witnesses, managed by a board composed of the secretary of Ministries of Justice, Police, Women's Affairs and Children, a nominee of the attorney general and members of the Human Rights Commission as well as five appointed professionals in the areas of criminology, the criminal justice system, promotion of human rights or medicine. The National Authority is in charge, *inter alia*, of assistance to and protection of victims of crime and witnesses; payment of compensation to victims of crime; advice to the Sri Lanka Police Department; and reviewing existing policies and legislation adopted by various authorities.

*Gazette Extraordinary No. 1904/41 related to Property Rights of Displaced Persons*¹⁴

On 4 March 2015, the minister of justice and labour relations of Sri Lanka enacted Gazette Extraordinary No. 1904/41.

The order designates certain conflict affected areas as being within the scope of the settlement dispute mechanism established by the Mediation (Special Categories of Disputes) Act, No. 21 of 2003. This alternative means of dispute resolution addresses property concerns vis-à-vis displaced persons in relation to conflict in the north/northeast of the country.

Switzerland

*Ordinance on Private Security Services Abroad*¹⁵

On 24 June 2015, the Swiss Federal Council adopted the Ordinance on Private Security Services Abroad. The Ordinance contains implementing provisions for

13 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=CE8093495C102190C1257F7F00570D97&action=openDocument&xp_countrySelected=LK&xp_topicSelected=GVAL-992BUB&from=state.

14 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=43D8E97E74D1A6A6C1257F8E002EA9C4&action=openDocument&xp_countrySelected=LK&xp_topicSelected=GVAL-992BUE&from=state.

15 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=47F407214D5031EBC1257F7F005981A4&action=openDocument&xp_countrySelected=CH&xp_topicSelected=GVAL-992BUB&from=state.

the Federal Law on Private Security Services Provided Abroad adopted on 27 September 2013.¹⁶

Article 1 of the Ordinance defines the notion of complex environment – as referred to by Article 4 of the Federal Law – by three cumulative criteria. An area is considered as a complex environment when (i) the area is experiencing or recovering from unrest or instability due to natural disaster or armed conflict in terms of the Geneva Conventions and Additional Protocol I; (ii) the rule of law has been substantially undermined; and (iii) the capacity of the State authority to handle the situation is limited or non-existent. The definition adopted is close to the definition adopted by the International Code of Conduct for Private Security Providers.

Article 2 provides that companies are deemed to have acceded to the International Code of Conduct for Private Security Service Providers – as required by Article 7(1) of the Federal Law – if they are members of the International Code of Conduct for Private Security Providers Association.

Furthermore, the Ordinance designates the Directorate of Political Affairs of the Federal Department of Foreign Affairs as the competent authority for the implementation of the legislation, as well as for receiving declaration of activities from private security companies under Article 10 of the Federal Law. It also provides for simplifications of the declaration procedure for certain services and an accelerated procedure in case of emergency situations. Finally, Article 4 stipulates what information has to be declared to the above-mentioned authority and Article 5 details in which situation the identity of the principal or the recipient of a service must be disclosed.

*Ordinance on the Use of Private Security Companies Abroad by the Federal Government*¹⁷

On 24 June 2015, the Swiss Federal Council also adopted the Ordinance on the Use of Private Security Companies Abroad by the Federal Government, outlining the conditions under which a federal authority can employ a private security company in Switzerland or abroad. This ordinance implements and further develops the provisions contained in Section 7 of the Federal Law on Private Security Services Provided Aboard adopted on 27 September 2013.¹⁸

According to Article 1, the Ordinance applies to federal authorities that contract a private security company for the performance of protection tasks in Switzerland or abroad. Article 2 further specifies that such delegation of performance of protection is subject to statutory basis authorization.

16 “What’s New in Law and Case Law Around the World?”, *International Review of the Red Cross*, Vol. 96, No. 893, 2014, or see: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=A593659189CD7578C1257D2D00547E77&action=openDocument&xp_countrySelected=CH&xp_topicSelected=GVAL-992BUB&from=state.

17 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=6C9257ECE3AB7126C1257F7F005D60F4&action=openDocument&xp_countrySelected=CH&xp_topicSelected=GVAL-992BUB&from=state.

18 See above note 16.

Prior to contracting a private security company, the authority shall consult the security officer of its department, or the Federal Department of Foreign Affairs (FDFA) and the Federal Department of Defence, Civil Protection and Sport when the company is operating abroad (Article 3). Moreover, the company must meet the cumulative criteria set out by Article 4 encompassing good reputation, guarantees on recruitment and training of personnel, solvability, internal control system, authorization to carry out activities in the domain of private security, and liability insurance.

In addition, Article 5 underlines the importance of adequate training for personnel of private security companies. In particular, such training should include fundamental rights, use of force, first aid and anti-corruption components. Personnel of private security companies should be clearly identifiable (Article 6) and shall not carry weapons unless in Switzerland (Article 7) or when exceptional situations require it (Article 8). In any case, the recourse to force would be limited to legitimate defence and state-of-necessity situations. Articles 9 and 10 recognize the possibility that a private security company may undertake police measures if its personnel are adequately trained and authorized by the relevant law.

Finally, the Ordinance provides a list of clauses required for a contract with private security companies and refers to model contracts elaborated by the Federal Department of Justice and Police and the FDFA for this purpose.

Ukraine

*Law on Accession to the International Convention for the Protection of All Persons from Enforced Disappearance*¹⁹

On 17 June 2015, the president of Ukraine promulgated the Law on Accession to the International Convention for the Protection of All Persons from Enforced Disappearance. The law declares Ukraine's accession to the Convention, and contains specific reservations and declarations.

In relation to Article 13 and 14 of the Convention, Ukraine empowers the Prosecutor General's Office of Ukraine (concerning request during the pre-trial investigation) and Ministry of Justice of Ukraine (concerning request during the court proceedings or execution of judgments) to consider requests according to Articles 10 to 14 of the Convention.

Ukraine recognizes the competence of the Committee on Enforced Disappearances to receive and consider communications from or on behalf of individuals subject to its jurisdiction claiming to be victims of violations of the Convention by Ukraine, as well as to receive and consider communications in

19 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/implementingLaws.xsp?documentId=8D2D92A8DA58E2FBC1257F7F005F5258&action=openDocument&xp_countrySelected=UA&xp_topicSelected=GVAL-992BUA&from=state.

which a State Party claims that another State Party is not fulfilling its obligations under the Convention (Article 31 and 32).

Finally, Ukraine made a reservation considering itself not bound by paragraph 1 Article 42 of the Convention on additional dispute settlement procedures between State Parties by arbitration or the International Court of Justice with regard to the interpretation or application of the Convention.

B. National IHL committees and similar bodies

National authorities face a formidable task when it comes to implementing IHL within the domestic legal order. This situation has prompted an increasing number of States to recognize the usefulness of creating a group of experts or similar body – often called a national IHL committee or a national commission for IHL – to coordinate activities in the area of IHL. Such committees *inter alia* promote ratification of or accession to IHL treaties, make proposals for the harmonization of domestic legislation with the provisions of these treaties, promote dissemination of IHL knowledge and participate in the formulation of the State’s position regarding matters related to IHL. In January 2015, Kuwait reactivated its committee, bringing the total number of national IHL committees across the world to 107 by June 2015.

Kuwait

In January 2015, the Kuwait IHL Committee was reactivated as a result of Ministerial Decision No. 18.

The main function of the national committee is to assist in bringing domestic legislation in line with obligations under the Geneva Conventions, their Additional Protocols and other IHL instruments. One of its mandates is to coordinate the activities of State bodies involved in the implementation of IHL. It provides recommendations, proposals and advice for implementing IHL at the national level, and is also responsible for the organization of training and dissemination programmes in IHL.

The Kuwait IHL Committee is composed of representatives of the Ministries of Foreign Affairs, Defence, Justice, the Interior and Communication as well as the Faculty of Law of Kuwait University and the Kuwait Red Crescent Society. It is chaired by the minister of justice, *awqaf* and Islamic affairs.

C. Case law

The following section lists, in alphabetical order by country, relevant domestic case law related to IHL and released during the period under review (January–June 2015). Countries covered are India, Nepal, South Africa and Uganda.

India

*WP(C).No. 24902 of 2014 (K): Shyam Balakrishnan v. State of Kerala, Kerala High Court*²⁰

Keywords: arbitrary arrest, law enforcement procedure, oversight mechanism.

On 22 May 2015, the High Court of Kerala delivered its judgement in the case of *Shyam Balakrishnan v. State of Kerala*.

Acting on a writ petition filed by Shyam Balakrishnan, who claimed he was illegally arrested by the Kerala police on suspicion of being a Maoist in the context of the current insurgency, the Court ruled that a person could be arrested only if he is involved in unlawful activities. Judge Muahmmmed Mustaque specified that being a Maoist is no crime; therefore, the police cannot detain a person merely because he is a Maoist.

Based on Articles 21 and 22 of the Constitution, the Court refers to directions to be followed in cases of arrest or detention set out in *D. K. Basu v. State of W. B.* [AIR 1997 SC 610]. According to this case, an arrest or detention must follow the following requirements: clear and visible identification of police personnel; preparation of a memo of arrest countersigned by the arrestee; information of a relative of the arrestee; communication of the place, time and venue of custody; notification of rights; inscription in the diary of the place of detention; medical inspection of the arrestee; legal representation; copies of all documents to be sent to the magistrate; and inscription of the arrest on a police board.

Additionally, the Court entitles the petitioner to compensation for unlawful acts committed against him by the State. However, it considers that the State machinery failed in the action and not the individual officers, who were acting without *male fide* intention. Furthermore, the Court deliberates that the State failed to create adequate a supervisory oversight mechanism to safeguard against deprivation of liberty of individuals.

Nepal

*070-WS-0050: Review of the Investigation of Disappeared Persons and Truth and Reconciliation Commission Act, 26 February 2015, Supreme Court*²¹

Keywords: Truth and Reconciliation Commission, amnesties, victims' rights, war crimes.

20 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/caseLaw.xsp?documentId=BD228D8B7DD4B956C1257F80002AAED2&action=openDocument&xp_countrySelected=IN&xp_topicSelected=GVAL-992BU6&from=state.

21 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/caseLaw.xsp?documentId=3EB2FC583759622EC1257F80005B7B99&action=openDocument&xp_countrySelected=NP&xp_topicSelected=GVAL-992BU6&from=state.

On 26 February 2015, the Supreme Court of Nepal delivered its review of the Investigation of Disappeared Persons and Truth and Reconciliation Commission Act.

Based on the writ petition presented by 234 victims of Nepal's armed conflict, the Court ordered that the concerned commissions and the government of Nepal act in accordance with previous decisions as well as the Nepali Constitution, international human rights law and IHL with regards to the provisions of the Act.

On the basis of Article 100(1) of the Interim Constitution of Nepal, the Court states that the Commission formed under the Act cannot displace a judicial authority, nor provide for alternatives to judicial functions. It further specifies the distinction between political acts and acts of a criminal nature committed in the context of an armed conflict. Such determination of the criminal character of an act belongs only to a judicial authority.

In addition, the Court reaffirms that reconciliation can never occur without the consent of the victim or as a vector for amnesty for the perpetrators of serious violations of human rights.

According to the judges, a transitional justice process cannot be successful if it allows perpetrators of serious offences to escape through the guise of reconciliation. Moreover, the case details that a transitional justice process is composed of (i) investigating and truth seeking, (ii) prosecution of the most serious crimes, (iii) reparation and (iv) guarantee of non-recurrence.

In 2014, the Supreme Court had already struck down as unconstitutional a 2013 ordinance that had established the Truth and Reconciliation Commission, as it provided the Commission with discretionary powers to grant amnesties.²²

South Africa

*Southern African Litigation Centre v. Minister of Justice and Constitutional Development and Others, Gauteng Division of the High Court of South Africa*²³

Keywords: arrest warrant, immunities, ICC, Al Bashir.

On 23 June 2015, the Gauteng Division of the High Court of South Africa issued its decision in the case of *Southern African Litigation Centre v. Minister of Justice and Constitutional Development and Others*. The case considers the Implementation of the Rome Statute of the International Criminal Court Act No. 27 of 2002 (Rome

22 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/caseLaw.xsp?documentId=78AA53666CB1B3B7C1257E96002CE9D5&action=openDocument&xp_countrySelected=NP&xp_topicSelected=GVAL-992BU6&from=state.

23 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/caseLaw.xsp?documentId=481F300878BA3075C1257F1E00386F19&action=openDocument&xp_countrySelected=ZA&xp_topicSelected=GVAL-992BU6&from=state.

Statute Act) with regard to the arrest of a head of State against whom a warrant of arrest has been issued by the ICC.

In June 2015, Omar Hassan Ahmad Al Bashir, president of Sudan, arrived in South Africa to attend the African Union (AU) Summit of Heads of State. Following his arrival, the Southern African Litigation Center sought an application before the Court seeking an order compelling South African officials to arrest President Al Bashir, on the basis of South Africa's obligation under the Rome Statute Act. The respondent opposed the application, noting that all participants attending the AU Summit enjoy full immunity from arrest.

According to the respondent, the General Convention on the Privileges and Immunities of the Organization of African Unity (OAU Immunities Convention) affords immunity to "members of the Commission, staff members and other representatives of intergovernmental organizations" attending AU meetings. Pursuant to this, the South African minister of international relations and cooperation entered into a host agreement with the AU and, exercising her discretion in terms of the South African Diplomatic Immunities and Privileges Act 37 of 2001 (DIPA), published a notice in the *Government Gazette* on 5 June 2015 according immunities to parties attending the AU Summit as per the OAU Immunities Convention. The respondent argued that this notice is the basis of the immunity being given to President Al Bashir.

The Court considered the immunities regime in South Africa, noting that in the terms of Article 4 of the DIPA, heads of State are immune from prosecution only to the extent afforded by customary international law. Moreover, the DIPA does not domesticate the OAU Immunities Convention that South Africa has not ratified. Thus, AU staff do not automatically have immunity and the OAU Immunities Convention is not automatically applicable. In addition, the notice published by the minister in the *Gazette* affords immunity insofar as the OAU immunities Convention does – that is, to "members of the Commission, staff members and other representatives of intergovernmental organizations". It does not afford immunity to member States or their delegates. As such, the notice does not grant immunity to heads of State. Therefore, the only basis on which President Al Bashir could claim immunity is customary international law, which is excluded given that the Rome Statute Act excludes immunity for heads of State. Consequently, the Court held that President Bashir did not enjoy immunity on any of the grounds listed by the respondent. In any event, the minister may not exercise his or her discretion in a manner that would be unlawful and contrary to South Africa's domestic and international obligations. The Rome Statute Act enables the prosecution of customary international law crimes and its provisions enjoy pre-eminence in South Africa's constitutional regime. The minister's notice and the agreement entered into with the AU could not possibly trump these obligations. Therefore, the Court ordered that South African officials are obliged to arrest President Al Bashir.

The South African government has applied for leave to appeal the decision.

Uganda

*Constitutional Appeal No. 01 of 2012: Thomas Kwoyelo alias Latoni v. Uganda, Supreme Court*²⁴

Keywords: Uganda, amnesty, grave breaches of the Geneva Conventions.

On 8 April 2015, the Supreme Court of Uganda ordered the retrial of Thomas Kwoyelo (a former Lord's Resistance Army commander) by the International Crime Division of the High Court of Uganda. In doing so, the Supreme Court reverses the 2011 Constitutional Court judgment granting him full amnesty.

On 6 September 2010, the director of public prosecutions (DPP) indicted Thomas Kwoyelo for grave breaches of the Geneva Conventions committed during the Ugandan Civil War from 1992 to 2005. Kwoyelo lodged an application to the Constitutional Court of Uganda in 2011, stating that the refusal of the DPP and the Amnesty Commission to grant him a certificate of amnesty while the same had been granted to other applicants in circumstances similar to his was discriminatory and unconstitutional under the 1995 Constitution of Uganda. The Constitutional Court, in its ruling No. 36 of 2011, concluded that the respondent was entitled to amnesty as he had renounced his rebel activities.

On 11 April 2015, the DPP, represented by the attorney general, brought the present appeal. In responding to this appeal, the Supreme Court considered that the Amnesty Act does not provide for blanket amnesties, but is limited to participation in the rebellion and does not extend to war crimes. In the opinion of the Court, the Geneva Conventions Act still applies, and the indictment of Thomas Kwoyelo under Article 147 (i.e., grave breaches) thereof does not violate the Constitution of Uganda. It further specifies that the respondent has not suffered discrimination or unequal treatment under the law as certain individuals remain ineligible for the amnesty, and that the DPP is acting within his powers not to certify the respondent for granting the amnesty.

Other efforts to strengthen national implementation of IHL

To further its work on implementation of IHL, the ICRC Advisory Service organized, in cooperation with respective host States, or regional or subregional organizations, a number of national workshops and several regional conferences directed at engaging national authorities in the period under review.

Of particular interest was the Sixth South Asia Regional Conference on IHL, entitled "IHL: Yesterday, Today and Tomorrow", which was co-organized by the Sri Lankan Ministry of Foreign Affairs and the ICRC and took place on

24 Available at: www.icrc.org/applic/ihl/ihl-nat.nsf/caseLaw.xsp?documentId=20E1082342C75A5AC1257ED60046A45B&action=openDocument&xp_countrySelected=UG&xp_topicSelected=GVAL-992 BU6&from=state.

19–21 May 2015 in Colombo, Sri Lanka. It gathered senior government officials, members of parliament, members of the armed forces and police, academics and ICRC experts from Afghanistan, Bangladesh, Bhutan, Iran, Maldives, Pakistan and Sri Lanka. The conference dealt with topics such as IHL and peace operations, armed conflict and terrorism, IHL and means and methods of warfare.

Another event of interest was the Fifth Regional Seminar on Implementation of IHL, co-organized with the Ministry of Justice of Belarus, from 17 to 21 March 2015 in Minsk, Belarus. The seminar brought together governmental officials and members of national IHL committees from Azerbaijan, Armenia, Belarus, Germany, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Poland, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. The event was also attended by representatives and experts of the ICRC, the Belarus Red Cross Society, the Organization for Security and Cooperation in Europe, the Collective Security Treaty Organization, the Commonwealth of Independent States and academia. The main topic on the agenda was related to the subjects covered during the upcoming 32nd International Conference of the Red Cross and Red Crescent Movement. Among other topics reviewed during the seminar, particular attention was given to the issues developing in and of interest to the region, such as the legal framework on the protection of missing persons and their families, weapons and IHL, and the new tools and mechanisms of implementation. Representatives from authorities of the respective countries were also asked to prepare reports on the level of implementation of IHL.

Similar regional conferences were also conducted in Naivasha, Kenya,²⁵ and Abuja, Nigeria,²⁶ respectively organized in cooperation with the Office of the Attorney General and Department of Justice of Kenya and the Economic Community of West African States (ECOWAS).

25 Third Regional Seminar on National Implementation of International Humanitarian Law, Naivasha, Kenya, 19–21 May 2015.

26 ECOWAS–ICRC IHL Review Seminar on International Humanitarian Law Treaties in West Africa, “Review Meeting of the Plan of Action on Implementation of International Humanitarian Law in West Africa” Abuja, Nigeria, 9–11 June 2015.

BOOK REVIEW

Nuclear Weapons under International Law

**Gro Nystuen, Stuart Casey-Maslen and Annie Golden
Bersagel (eds)***

Book review by Eleanor Mitchell, formerly an intern at the
Legal Division of the ICRC and now a trainee at Matrix
Chambers.

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What are we really looking for in a new text on nuclear weapons?

To some extent, it can rightly be said that all the key issues have been canvassed at some length in the (almost) two decades since the International Court of Justice (ICJ) handed down its Advisory Opinion on the *Legality of the Threat or Use of Nuclear Weapons* (Nuclear Weapons Advisory Opinion).¹ There have, however, been significant changes in the context against which these issues must be considered. Particularly notable are scientific advances, which have deepened our understanding of the humanitarian effects of nuclear weapons (as highlighted at the recent conferences held on the subject), and technological advances, which have focused the legal debate on weapons of the “low-yield” or “tactical” variety.

A number of authors have provided valuable contemporary analysis which incorporates, and even focuses on, these changes.² Still, there remains much to be said for the availability of an up-to-date “one-stop shop” for discussion not only of the traditional core questions, but also of those which have received less extensive attention from legal scholars. *Nuclear Weapons under International Law* provides precisely this. In addition, it acts as a timely reminder that the existence of large stockpiles of nuclear weapons demands not resignation, but rather continued reflection, debate, and ultimately action.

* Published by Cambridge University Press, 2014.

While it is impossible to do justice to every chapter in the space available, the following pages offer some insights into the book's six substantive parts – each of which addresses one of the broad areas of law and policy engaged by nuclear weapons – before ending with some concluding thoughts on the final part.

Part I, “Nuclear Weapons and *Jus ad Bellum*”, provides a thorough overview of the three key issues arising under *jus ad bellum*: the compliance of any use of nuclear weapons with the requirements of necessity and proportionality; the compliance of any threat of use with those same requirements; and the implications of the Nuclear Weapons Advisory Opinion for the doctrine of the strict separation of *jus ad bellum* and *jus in bello*.

Nobuo Hayashi's chapter on necessity and proportionality manages to be both detailed and succinct. In particular, his concise summary of the disputed issues relating to each criterion³ serves to highlight just how little is really agreed – even as a matter of principle – where tricky issues of *ad bellum* compliance are at stake. The scope for debate is still greater when it comes to applying these principles to the use of nuclear weapons. Hayashi helpfully identifies three alternative interpretations of the ICJ's (in)famous *non-liquet*:⁴ in essence, that an “extreme circumstance of self-defence” (i) may render the destructive force of nuclear weapons necessary and proportionate; (ii) will invariably render it so; or (iii) may render necessity and proportionality inapplicable.⁵

Hayashi endorses the third option; while some may find themselves unpersuaded, the reader's ability to form a view on the matter is testimony to his engaging presentation of the issues. His conclusion – that the prospects of the general rules of *jus ad bellum* “comprehensively outlawing” the use of nuclear weapons are “distinctly limited”⁶ – is mirrored in many subsequent chapters. However, the further statement that “attempting to nail the square peg in the form of weapon-specific considerations into the round hole in the form of function-driven *jus ad bellum* only complicates the latter” is perhaps a little pessimistic. After all, a conclusion that there are no reasonably foreseeable circumstances in which a particular weapon could be used in compliance with international law is a strong argument in favour of a comprehensive ban.

1 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, *ICJ Reports 1996* (Nuclear Weapons Advisory Opinion).

2 See, e.g., Dakota Rudesill, “Regulating Tactical Nuclear Weapons”, *Georgetown Law Journal*, Vol. 102, 2013; Charles Moxley, John Burroughs and Jonathan Granoff, “Nuclear Weapons and Compliance with International Humanitarian Law and the Nuclear Non-Proliferation Treaty”, *Fordham International Law Journal*, Vol. 34, No. 4, 2011; Charles Moxley, “The Unlawfulness of the Use or Threat of Use of Nuclear Weapons”, *ILSA Journal of International and Comparative Law*, Vol. 8, 2002; Susan Breau, “Low-Yield Tactical Nuclear Weapons and the Rule of Distinction”, *Flinders Law Journal*, Vol. 15, No. 2, 2013; Robert Chatham, “Tactical Nuclear Weapons”, *The Reporter*, Vol. 37, No. 2, 2010.

3 *Nuclear Weapons under International Law*, pp. 17–24.

4 Namely, that it could not “conclude definitively” whether the use of nuclear weapons would be unlawful “in an extreme circumstance of self-defence, in which the very survival of the State would be at stake.” Nuclear Weapons Advisory Opinion, above note 1, para. 105(2)(E).

5 *Nuclear Weapons under International Law*, pp. 28–29.

6 *Ibid.*, p. 30.

Hayashi's following chapter on threats under *jus ad bellum* is a welcome contribution to an apparently scant literature, on a subject to which the ICJ devoted little attention in its Nuclear Weapons Advisory Opinion. One of the most interesting aspects of the discussion concerns the relationship between the concepts of "possession", "deterrence" and "threat" – along with the extent to which credibility is relevant to the existence and/or lawfulness of the latter.⁷ Helpfully, Hayashi proposes his own definition of a "threat" in international law: a communicated intention to use force against another, combined with apprehension of that intent.⁸ This proposal should act as a stimulus for further debate, both on the definition itself (as a matter of *lex ferenda* or *lex lata*) and, as Hayashi points out, on its application in the context of "nuclear umbrella" arrangements. On the former front, one option might be to incorporate a "subjective-objective" test of reasonableness, with a view to rendering the definition easier to apply in the absence of reliable contemporaneous information regarding States' intention and understanding.⁹ As to the broader issue of the lawfulness of (properly identified) "threats" to use nuclear weapons, Hayashi's discussion of alternatives to the "Brownlie formula"¹⁰ – though regrettably brief¹¹ – canvasses the interesting possibility that the proportionality of a threat should be independently assessed, such that the kind and degree of force threatened must be proportionate to that required to repel the attack which the threatener seeks to deter.

Finally, Jasmine Moussa's chapter on the separation of *jus ad bellum* and *jus in bello* provides a persuasive summary of the legal arguments in favour of this doctrine – so persuasive, in fact, that readers may be left wondering if there really is a strong contrary case to be made. The overarching question that readers may be left with is an academic one: namely, how the doctrine (and hence the arguments for and against it) fits into the general framework of international law. Should we be considering it as a potential customary norm, or as the consistent conclusion of a series of exercises in treaty interpretation? On a more practical level, the only issue not explored in the chapter (beyond a brief reference to Article 25 of the Draft Articles on State Responsibility¹²) is whether there might be an exception to the doctrine of strict separation in "an extreme circumstance of self-defence" – something that may perhaps be addressed in future contributions on the subject.

7 Hayashi accurately points out the remarkable unhelpfulness of the ICJ's apparent conflation of a "threat" with an "unlawful threat": *ibid.*, pp. 39–40, 51.

8 *Ibid.*, p. 51.

9 The classic example would run along the lines of "an act or statement of State A which could reasonably, given the circumstances, be interpreted as communicating an intention to use force against State B". Consideration could then be given to whether this should simply raise the presumption of a "threat", which could be rebutted by evidence either that this was not State A's intention or that State B did not understand it to be so. Also relevant here would be Hayashi's discussion of the relationship between effectiveness and credibility: see pp. 54–55.

10 Essentially that, if using force is unlawful, a threat to use it must be equally unlawful.

11 *Nuclear Weapons under International Law*, pp. 42–46, 55–56.

12 *Ibid.*, pp. 85–86.

Part II, “Nuclear Weapons and International Law”, also covers all the key issues that readers may hope to explore: compliance with the rules on the conduct of hostilities; compliance with the “unnecessary suffering” rule; and the use of nuclear weapons by way of belligerent reprisal.

Stuart Casey-Maslen’s chapter on the conduct of hostilities echoes a theme mentioned briefly above: namely, the extent to which one’s assessment of the lawfulness of the use of nuclear weapons turns on one’s position on more general legal issues, in this case relating to the underlying rules of international humanitarian law (IHL). Perhaps the clearest example is one not discussed in detail by Casey-Maslen: namely, the extent to which one considers that the “reverberating effects” of an attack – and hence, for example, the long-term health effects of nuclear fallout – must be taken into account in assessing its proportionality. The chapter also introduces a second theme, which recurs throughout the text: the extent to which this assessment further depends on technical issues relating to the characteristics and effects of “low-yield” or “tactical” nuclear weapons. The critical question is whether there are certain scenarios in which the effects of these weapons could be controlled in the manner required by IHL, such that their use would comply with the prohibition on indiscriminate attacks – an attack on an isolated deep-sea submarine being a classic example. In the absence of detailed technical analysis, Casey-Maslen rightly goes no further than to conclude that compliance might be possible in such “specific and highly improbable” scenarios.¹³ Technical issues are also at the heart of the debate as to whether, in most or all of these situations, a conventional weapon could achieve the same military objective with less civilian harm, rendering the attacker obligated by the rule of precautions to discount the nuclear alternative.¹⁴ Interestingly, Casey-Maslen’s conclusion on the issue – that, given the “unique” characteristics of nuclear weapons, “in many instances this threshold would not be met”¹⁵ – is at odds with that of some other commentators.¹⁶ This is a divide that scientists, rather than lawyers, may need to resolve.

Simon O’Connor’s chapter on the prohibition on weapons of a nature to cause superfluous injury or unnecessary suffering (referred to here as the “unnecessary suffering rule” for brevity) constitutes a valuable addition to the relatively sparse existing literature. One of the most important points to make is that, as O’Connor notes partway through the chapter, the rule takes the debate on nuclear weapons a step further than the rules on the conduct of hostilities by focusing on combatants rather than civilians. Thus, it tackles head-on the “isolated submarine” scenario with which readers were confronted in the previous chapter.¹⁷ O’Connor offers no firm conclusion as to whether nuclear

¹³ *Ibid.*, p. 126.

¹⁴ *Ibid.*, pp. 122–123.

¹⁵ *Ibid.*, p. 123.

¹⁶ See, e.g., D. Rudesill, above note 2.

¹⁷ O’Connor gives the alternate example of the bombing of a military installation in a desert area: *Nuclear Weapons under International Law*, p. 146.

weapons violate the unnecessary suffering rule *per se*, focusing instead on the proposition that the requirement to choose an alternative weapon where the suffering caused would “arguably” be excessive leaves little scope for the use of nuclear weapons.¹⁸ However, the significance of this conclusion depends on how likely it is that a conventional weapon could achieve the same military objective – leaving readers with a variant of the technical debate identified above.¹⁹

Another question the chapter leaves open is whether the unnecessary suffering rule would still have a role to play if no conventional weapon could achieve the desired objective. On one view of the literature reviewed by O’Connor, the idea that “necessity” is evaluated by reference to what is needed to achieve a given military objective suggests that, if only a nuclear weapon would suffice to achieve the relevant military objective, any suffering it caused would be “necessary” even if it did not serve a separate or additional military purpose.²⁰ On another view, a secondary comparison would be required between the necessity of achieving the relevant military objective and the degree of suffering entailed in doing so. This may be a question for further exploration in future literature.

Gro Nystuen’s chapter on threats of use under IHL works valiantly to identify plausible arguments as to why a mere threat, without more, might engage (let alone violate) the relevant rules. At no point, however, are readers likely to find any of them especially persuasive: so comprehensive are Nystuen’s rejoinders that one might be forgiven for wondering whether the formulation of the ICJ’s *non-liquet* as it relates to threats of use owes as much to unfortunate drafting as to anything else.

Concluding this part, Casey-Maslen’s chapter on reprisals sets out the relevant principles clearly and comprehensibly, and demonstrates the extreme unlikelihood of a nuclear weapon ever being used in compliance with them. Readers are left with the impression that the scope for the lawful use of nuclear weapons under IHL is narrow to the point of incredibility – a point developed further in other contributions to this issue of the *Review*.²¹

Part III, “International Criminal Law”, deals with the application of general rules to the specific issue of nuclear weapons. However, it is in this part more than the others that readers may occasionally feel there are too few considerations specific to nuclear weapons to render extended discussion especially profitable. To take one example, in relation to Casey-Maslen’s very able discussion of the potential use of nuclear weapons in the commission of genocide, it seemed that the question

18 *Ibid.*, p. 141.

19 If so – and this is perhaps a useful link to draw – the attacker would arguably be required to select any conventional weapon likely to cause either less civilian harm or less suffering to combatants, leaving the scope for the use of nuclear weapons narrow indeed.

20 *Nuclear Weapons under International Law*, p. 146.

21 See Louis Maresca and Eleanor Mitchell, “The Human Costs and Legal Consequences of Nuclear Weapons under International Humanitarian Law”, in this issue of the *Review*. See also Jakob Kellenberger, “Bringing the Era of Nuclear Weapons to an End”, statement, 20 April 2010; and Peter Maurer, “Nuclear Weapons: Ending a Threat to Humanity”, speech, 18 February 2015, both available in the “Reports and Documents” section of this issue of the *Review*.

posed might have been shortly answered: nuclear weapons can be used to commit genocide just as any weapon can. That said, the chapter also contains several very interesting weapon-specific insights – for example, in the context of crimes against humanity, Casey-Maslen suggests that the destruction caused by a single nuclear weapon may be sufficient to satisfy at least half of the requirement of a “widespread and systematic attack” against the civilian population.²² Similarly, the chapter offers an intriguing analysis of the possibility that liability for “aiding and abetting” might arise in relation to the supply of component parts for nuclear weapons subsequently used in the commission of international crimes.²³

To this, Annie Golden Bersagel’s chapter on the Rome Statute of the International Criminal Court (ICC) adds a useful history of nuclear weapons under the Statute, alongside a very interesting discussion of the tension between three key provisions: Article 8(2)(b)(xx), which effectively limits the ICC’s jurisdiction over inherently indiscriminate weapons and weapons of a nature to cause superfluous injury or unnecessary suffering to cases where the weapon in question is “subject to a comprehensive prohibition” and is included in an annex to the Statute; Article 10, which provides that the Statute should not be interpreted as “limiting or prejudicing” existing or developing rules of law for other purposes; and Article 21, which designates IHL as a subsidiary source of law. Golden Bersagel walks readers carefully through each provision and concludes that, taken together, they “cannot preclude either a progressive or a regressive development of customary international law”; as a result, continued vigilance is required in order to prevent the latter.²⁴

Part IV, “International Environmental Law”, provides an excellent introduction to a set of issues that is often subsumed within general discussions of IHL. Erik V. Koppe’s chapter on the use of nuclear weapons under the environment-related laws of armed conflict in many ways extends the discussion in Part II. His conclusion that Additional Protocol I to the Geneva Conventions (AP I) applies to the use of nuclear weapons as it does to any weapon is persuasive;²⁵ by contrast, his argument that the declarations on the subject made by France and the United Kingdom constitute reservations which are incompatible with the nature and purpose of the treaty may prove somewhat more controversial.²⁶ As to the consequences of applying AP I, Koppe concisely identifies the further constraints that the relevant provisions – and, of course, the applicable rules of customary international law – place on the use of nuclear weapons, including (for example) the obligation to take all feasible precautions to avoid or minimize incidental environmental damage. The chapter therefore consolidates the conclusion drawn in Part II regarding the extremely limited scope for the use of nuclear weapons in accordance with IHL.

22 *Nuclear Weapons under International Law*, p. 204.

23 *Ibid.*, pp. 215–220.

24 *Ibid.*, p. 240.

25 *Ibid.*, pp. 254–256.

26 *Ibid.*, pp. 356–357.

The following chapter on environmental approaches to nuclear weapons, by Martina Kunz and Jorge E. Vinuales, provides an interesting counterpoint, focusing both on the application of environmental treaties during armed conflict and on the potential regulation of nuclear weapons outside an armed conflict scenario. As to the former, readers may be eager to see some more specific examples of the types of rules that, if they continued to apply during armed conflict, might regulate the use of nuclear weapons above and beyond the general rules of IHL. As to the latter, it is certainly – as Kunz and Vinuales suggest – worthwhile to consider how environmental law might regulate potential nuclear spills or accidents even absent actual or threatened use.

Don Mackay’s chapter on nuclear testing under international law rounds out Part IV, and provides an excellent introduction for those who are new to the subject. Of particular interest is Mackay’s conclusion that we are in practice very close to a universal prohibition on nuclear testing, despite frustratingly slow progress on the Comprehensive Nuclear-Test-Ban Treaty.²⁷ Readers may also be interested to hear more on the author’s passing reference to a possible customary norm against atmospheric testing,²⁸ and on the links (if any) between restrictions on testing and the maintenance and modernization of existing stockpiles.

The first two chapters of Part V, “International Disarmament Law”, on nuclear weapons-free zones, are both accessible and instructive. Marco Roscini’s contribution offers what reads as a very sensible set of proposals regarding the desirable contents of an agreement for a nuclear weapons-free zone in the Middle East – proposals which, it is to be hoped, will feed into more detailed discussions on the subject. The chapter also provides a clear, if somewhat dispiriting, overview of the obstacles to reaching such an agreement. Cecilia Hellestveit and Daniel Mekonnen then make a forceful general case for the utility of nuclear weapons-free zones in improving global security and enhancing efforts toward disarmament.

The focus of Part V then shifts to the Non-Proliferation Treaty (NPT). The conclusion of Gro Nystuen and Torbjorn Graff Hugo’s chapter – namely, that the NPT has been effective in minimizing nuclear proliferation but remains “unimpressive” as a norm reflecting the unacceptability of the use of nuclear weapons²⁹ – is well-supported and persuasive. Daniel H. Joyner’s more specific chapter on Article VI of the NPT – requiring States Parties to “pursue negotiations in good faith on ... nuclear disarmament, and on a treaty of general and complete disarmament under strict and effective international control” – clearly illustrates the divergent interpretations of the provision and the resulting tensions between States Parties. His own position on the issue is perhaps a little ambiguous as far as the current *lex lata* is concerned: he refers to an “evolving understanding” that Article VI of the NPT imports a positive obligation to move toward disarmament, but just one paragraph later references the same obligation

27 *Ibid.*, p. 305.

28 *Ibid.*, pp. 316–317.

29 *Ibid.*, p. 396.

as though its existence were not in doubt.³⁰ On either view, however, his larger thesis – that nuclear weapons States are presently failing to comply with Article VI³¹ – is firm, and will cause many readers to reflect on the kind of action one would expect to see in order to effect a return to compliance.

This picture of inaction on disarmament contrasts starkly with Casey-Maslen’s chapter on nuclear terrorism, which describes the fairly impressive progress that has been made in limiting non-State actors’ capacity to access the materials required to develop nuclear weapons of their own.

Part VI, “International Human Rights Law”, focuses on the lawfulness of the use of nuclear weapons under a number of different human rights instruments. Louise Doswald-Beck’s overview chapter clearly identifies the rights most likely to be affected, and discusses a number of them in some detail. The discussion of the right to life is particularly interesting in that, although conventional wisdom suggests that the scope and content of this right largely depend on whether the context is one of armed conflict, the jurisprudence of (at least) the UN Human Rights Committee and the European Court of Human Rights might suggest a somewhat different approach.³² While the latter is unsurprising given the more detailed phrasing of the underlying instrument, it would be valuable to hear further thoughts on how the jurisprudence of the Human Rights Committee squares (or fails to square) with the conventional approach. Also notable is Doswald-Beck’s suggestion that any use of nuclear weapons would be likely to constitute inhumane treatment of the immediate victims,³³ as if accepted it could be determinative of their lawfulness. The extent to which these issues warrant further debate is confirmed by the contrast between Doswald-Beck’s bold conclusion that “any use of nuclear weapons will result in human rights violations”³⁴ and Casey-Maslen’s more tentative statement that violations would be “highly likely”.³⁵

Part VI is rounded out by Casey-Maslen’s excellent chapter on the right to remedy and reparation, which expands on the point – also made by Doswald-Beck in the conclusion of her chapter – that individual remedies for human rights violations are often far easier to obtain than remedies for violations of (for example) IHL.

Finally, Part VII provides a concise and thoughtful summary of the preceding contributions, concluding that while “use of nuclear weapons in most instances would be outlawed” in international law, “a clear-cut and comprehensive prohibition ... is still missing”.³⁶

In considering the text as a whole, a few key themes stand out. The first is how singularly ambiguous, and hence unhelpful, the ICJ’s *non-liquet* has proven:

30 *Ibid.*, p. 417.

31 *Ibid.*, p. 414.

32 *Ibid.*, pp. 444–449.

33 *Ibid.*, pp. 452–454.

34 *Ibid.*, p. 459.

35 *Ibid.*, p. 461.

36 *Ibid.*, p. 486.

nearly two decades after the Nuclear Weapons Advisory Opinion was handed down, long passages must still be devoted to its possible meanings, with no possibility of consensus in sight. Secondly, the book confirms that the remaining areas of uncertainty relate, to a large extent, to more general debates about the interpretation of the underlying legal rules, and to technical debates relating to the characteristics and effects of nuclear weapons. In the context of a legal text, it is to be expected that more attention is devoted to the former than to the latter; however, readers may feel that the next thing they will need is a more comprehensive and detailed primer on the relevant technical and military issues.

The third, related theme is just how narrow the scope of the debate around lawful use has become. The scenarios contemplated are increasingly specific and (in some cases) far-fetched, and one could be forgiven for concluding that future unlawful use is overwhelmingly more likely than future lawful use. Finally, the text consistently confirms that this is an issue crying out for further action by the international community. The more our understanding of the relevant issues grows, the more difficult to defend the present deadlock appears, from a legal standpoint as well as a moral one. For readers wishing both to broaden and to deepen their knowledge in this area, *Nuclear Weapons under International Law* provides an engaging and valuable resource.

BOOK REVIEW



Chemical Control: Regulation of Incapacitating Chemical Agent Weapons, Riot Control Agents and their Means of Delivery

Michael Crowley*

Book review by Neil Davison, Arms Unit, Legal Division, ICRC.



Imperfections in international arms control agreements are a common outcome of multilateral negotiations. But, they can have significant implications, especially where exceptions are made for specific parties or circumstances, as is the case for the treaty prohibiting chemical weapons. When agreement finally came in late 1992 – after decade-long negotiations – on a Chemical Weapons Convention (CWC), it contained a special provision for law enforcement. With the use of toxicity as a weapon in armed conflict finally beyond the pale, States retained the right – to a certain extent – to use it against their own citizens.

The political and legal compromises made at the time of the negotiations left an uneasy question of double standards, the implications of which are examined in great depth by Michael Crowley in *Chemical Control*.

* Published by Palgrave Macmillan, Basingstoke, 2016. This review was written in Mr Davison's personal capacity and does not necessarily reflect the views of the ICRC.

Dr Crowley is a long-time expert in the varied weapons that are used and misused for law enforcement, and the associated policy and human rights issues. He holds positions at the University of Bradford and the Omega Research Foundation and draws on a wealth of experience of research in this field, in particular on the use of toxic chemicals as weapons for law enforcement. His research complements work done by a small group of academics, non-governmental organizations working on human rights issues, and international organizations including the International Committee of the Red Cross (ICRC).

Turning to the subject of the book, the CWC's green light for the use of certain toxic chemicals as weapons for "law enforcement including domestic riot control purposes"¹ created two distinct but related problems. The first has been the widespread use and misuse of riot control agents, or "tear gas", as these sensory irritant chemicals are commonly known. And the second, potentially even more concerning, has been the interest among some countries in using highly toxic chemicals – primarily dangerous anaesthetic and sedative drugs – as weapons to incapacitate people by impairing their brain function.

Crowley's book collects the disparate pieces of these two complex problems and examines them in parallel using his "holistic arms control" framework. His approach involves three stages: first, a technical and operational assessment of the weapons in question; second, consideration of the full range of applicable legal obligations and associated control mechanisms; and third, policy proposals for improvements of these mechanisms.

The problem with tear gas

Riot control agents (or "tear gas"), despite the rather innocuous name, are types of toxic chemicals that cause intense pain and irritation to the eyes and respiratory tract, resulting in severe watering of the eyes, coughing and difficulty breathing – effects that are often accompanied by anxiety and panic. Whilst these effects are intended to be temporary and reversible (lasting no more than thirty minutes), the health risks are very much dependent on the context, as Crowley explains.² Depending on the circumstances and intensity of exposure, more severe effects can include vomiting, skin blistering, permanent injury to eyes, skin and lungs, and in extreme circumstances, even death. Use in high concentrations, in enclosed spaces or against vulnerable individuals – for example, children, the elderly, and those suffering from heart and lung conditions – is particularly dangerous.

What is striking for weapons used so frequently in law enforcement operations, as Crowley documents, are the lack of international standards regulating the nature and concentrations of these chemicals,³ as well as the

1 CWC, Art. II.9(d).

2 *Chemical Control*, pp. 46–50.

3 *Ibid.*, pp. 46–47.

munitions and devices used to deliver them.⁴ Much is left to the discretion of weapons manufacturers selling their wares on an expanding international market.

This is even more disquieting given the scale of misuse uncovered by Crowley during a five-year period from 2009 to 2013.⁵ Based on reports from the United Nations and non-governmental organizations, he documents the use of riot control agents to facilitate human rights abuses in ninety-five different countries across the globe. He highlights, in particular, the misuse of riot control agents: for torture and ill treatment; in dangerously large quantities and in enclosed spaces, resulting in serious injuries and deaths; for suppression of peaceful demonstrations; and in conjunction with firearms or other weapons, leading to excessive use of force.⁶

The sheer numbers of “tear gas” weapons procured and used in some countries are astonishing considering the requirement under international human rights law to use minimum force for law enforcement. In one example that Crowley cites, 130,000 canisters of tear gas were used during just twenty days of protests.

The overall picture calls for much greater attention to the problem through human rights mechanisms and export control regulations, as well as among States party to the CWC. The latter, as Crowley suggests,⁷ would be well advised to more closely consider, among other aspects, their obligation to ensure that the “types and quantities” of riot control agents and their delivery systems used for law enforcement are consistent with those purposes.

Crowley’s reports of sporadic use of tear gas in armed conflict⁸ – as well as development of “wide area” munitions that may be incompatible with law enforcement (notably, multiple munition launchers, rocket-propelled grenades, automatic grenade launchers, mortars, large-calibre projectiles, helicopter-launched munitions and even cluster bombs)⁹ – are also very worrying given the absolute prohibition, under the CWC and customary international humanitarian law, against using riot control agents as a “method of warfare”. This prohibition has its origins in past incidents of chemical warfare in which the use of tear gas often escalated to use of much more toxic chemicals, such as chlorine and mustard gas, as witnessed in the First World War, in Yemen in the 1960s, and during the Iran–Iraq War in the 1980s. With the contemporary resurgence of chemical warfare in Syria, such risks remain relevant today.

Re-branding chemical weapons

Alongside the problems posed by misuse of riot control agents, Crowley also examines the interest in, development of and mercifully limited use to date of other, more toxic chemicals as weapons for law enforcement, in particular

4 *Ibid.*, Chapter 4.

5 *Ibid.*, pp. 50–70.

6 *Ibid.*, pp. 70–80.

7 *Ibid.*, p. 270.

8 *Ibid.*, pp. 80–82.

9 *Ibid.*, pp. 94–106.

anaesthetic and sedative drugs that have been described as “incapacitating chemical agents”.

Here the paradox of retaining toxicity as a weapon for law enforcement is much more acute, bordering on the absurd. As Crowley alludes to in a section on historical weapons development,¹⁰ these weapons are a hangover from past military chemical warfare programmes in several countries, which encompassed the pursuit of both “off the rocker” (psychosis-inducing) and “on the floor” (unconsciousness-inducing) drugs as chemical weapons.¹¹

Despite the opening for signature of the CWC in early 1993, interest in these types of chemicals persisted in some countries, with a view to their use in certain law enforcement situations, such as hostage scenarios. What is shocking, especially for weapons often promoted as “less lethal”, is that some of these chemicals are of comparable toxicity to well-known chemical warfare agents, such as nerve agents (which also affect the central nervous system). Fentanyl and related compounds are good examples of the chemicals in question. Carfentanil is an opioid drug that is chemically related to the morphine you might receive during a serious medical procedure for pain relief and anaesthesia, only 10,000 times stronger. It is used to tranquilize large wild animals, and one small drop is sufficient to kill a person. Fentanyl itself, which is around 500 times stronger than morphine and has a lethal dose of 2 milligrams, has been held responsible for a significant number of recent deaths among heroin users in the European Union and the United States.¹²

The contradictions posed by the use of these dangerous drugs as weapons, and the serious risks to health and life, are crystal clear. However, in the context of discussions among States party to the CWC, these toxic chemicals were for too long separated in the minds of policy-makers by a gulf in vocabulary – “less lethal weapons” instead of “weapons of mass destruction”, and “drugs” instead of “toxic chemicals”. This terminological sleight of hand helped perpetuate an irreconcilable possibility: that chemical agents as toxic as “traditional” chemical warfare agents might be used legitimately as weapons for law enforcement.

However, this perception is now shifting. The ICRC, as Crowley notes, has been at the forefront of efforts to highlight the dangers posed by these weapons, and to emphasize the strict constraints of the full range of international law applying to the use of toxic chemicals as weapons for law enforcement. In February 2013 it issued a policy statement calling on all States to limit any such use to riot control agents only,¹³ a position that has been gaining support from an increasing number of States over the past three years.¹⁴

10 *Ibid.*, pp. 17–19.

11 See also Neil Davison, “*Non-Lethal*” Weapons, Palgrave Macmillan, Basingstoke, 2009, Chapter 5.

12 See, for example, European Monitoring Centre for Drugs and Drug Addiction, “Fentanyl Drug Profile”, 8 January 2015, available at: www.emcdda.europa.eu/publications/drug-profiles/fentanyl.

13 ICRC, “ICRC Position on the Use of Toxic Chemicals as Weapons for Law Enforcement”, Statement, 6 February 2013, available at: www.icrc.org/eng/resources/documents/legal-fact-sheet/2013-02-06-toxic-chemicals-weapons-law-enforcement.htm.

14 ICRC, “Conference of the States Parties to the Chemical Weapons Convention, 2015”, Statement, 2 December 2015, available at: www.icrc.org/en/document/conference-states-parties-chemical-weapons-convention-2015.

It is in relation to the consideration of the full range of States' legal obligations that Crowley's holistic arms control approach has already made an impact by looking beyond circular discussions of the CWC's law enforcement provision and towards other areas of international law that must also be brought to bear on the problem.

An argument that comes through strongly in the book is the importance of obligations under human rights law¹⁵ as well as the under-explored obligations stemming from the near-universal international treaties controlling narcotic drugs, which require that some of these toxic chemicals are only used for medical and scientific purposes.¹⁶ These are legal obligations that States will not be able to ignore should they finally manage, as per Crowley's recommendations¹⁷ and indeed those of the ICRC,¹⁸ to break the fifteen-year deadlock and address this issue at the international level through the policy-making mechanisms of the Organisation for the Prohibition of Chemical Weapons in the Hague.

The importance of civil society initiatives

Another key issue, to which Crowley devotes the whole of Chapter 12, is the role of civil society in exerting pressure on policy-makers to address these two distinct problems of the misuse of tear gas and the pursuit of dangerous psychoactive drugs as weapons. In particular, the value of meticulous open-source research on weapons development – *Chemical Control* very much included – and the documenting of misuse of specific weapons should not be underestimated in bringing political attention to bear on issues that might otherwise remain hidden in the shadows or relegated to the corridors. Crowley cites two examples of successful civil society initiatives related to riot control agents.¹⁹ The first, which Crowley initiated, was in response to the marketing of military munitions designed for armed conflict and containing riot control agents, which are by their nature prohibited under the CWC as chemical weapons. This directly resulted in actions by those concerned to destroy the munitions and prevent their promotion in the future. The second example was a successful effort by a coalition of non-government organizations to prevent the further shipment of large quantities of “tear gas” munitions to a country where there was good reason for concern that they would be misused.

Holistic arms control as a new approach

The comprehensive nature of Crowley's holistic arms control approach is both the strength and the weakness of this book. In reviewing all possible legal obligations

15 *Chemical Control*, Chapter 8.

16 *Ibid.*, Chapter 11.

17 *Ibid.*, pp. 268–270.

18 See ICRC, above note 13; ICRC, above note 14.

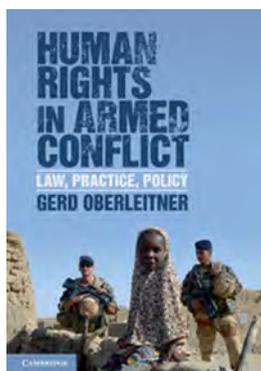
19 *Chemical Control*, pp. 232–235.

and control mechanisms, Crowley helps identify new avenues to address the core problems identified. However, at times the reader is left with some lack of clarity about which obligations are most important and which avenues might be most fruitful to pursue from a policy perspective.

That said, Crowley does a good job of structuring his research in a way that helps the reader make sense of the technical aspects of these weapons as well as the complex array of applicable international law. One area where the analysis might have been deeper is in the final stage of his holistic arms control assessment, which sets out a strategy to strengthen existing control mechanisms. Here ideas for policy approaches beyond the CWC might have been expanded further.

But Crowley's book is both an invaluable reference and a useful source of new ideas for addressing two problems stemming from the decision by States to prohibit toxicity as a weapon of war while leaving open its use for law enforcement. His holistic arms control concept could even have broader influence and value if applied to legal and policy discussions on a wider range of weapons issues.

BOOK REVIEW



Human Rights in Armed Conflict: Law, Practice, Policy

Gerd Oberleitner*

Book review by Ezequiel Heffes, LL.M., Geneva Academy of International Humanitarian Law and Human Rights, law degree from the University of Buenos Aires School of Law.

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There seems to be no doubt about the application of human rights in armed conflicts, but until now, how they are applied had been only partially explored. In *Human Rights in Armed Conflict*, Gerd Oberleitner offers a meticulous analysis and asks profound questions about the “purpose, nature and scope of the whole *jus in bello*”. Indeed, the book’s main hypothesis is that human rights impact upon and are gradually changing the *jus in bello* as we know it. This issue, however, is not merely a matter of legal theory, but a confrontation between advocates of a human rights-oriented law enforcement paradigm and advocates of a security-oriented armed conflict paradigm.

Rather than presenting a lengthy discussion on the interaction between international human rights law (IHRL) and international humanitarian law (IHL) or a collection of topical essays, Oberleitner explores whether the language of IHRL can and should be used to express matters hitherto articulated in military codes from a practical and accessible perspective. *Human Rights in Armed Conflict* should thus be viewed as part of a growing trend which comes with an exponential explosion of jurisprudence and academic legal literature on this subject.¹ Its arrival should not be surprising and is certainly welcome.

Oberleitner’s book fills an important gap in the literature, and it serves to revisit the practical application of IHRL in armed conflicts. In the words of the author, the book is

* Published by Cambridge University Press, Cambridge, 2015.

an inquiry into how the *law* of human rights impacts upon, contradicts, changes or complements international humanitarian law, and it is also interested in understanding if the *policy* of human rights ... is compatible with or opposed to the aims, purposes and objectives of regulating warfare under the law of armed conflict as it stands.²

Finally, the book examines whether the practice of IHRL and its international mechanisms and institutions have a role to play in IHL issues.

The analysis of these topics is organized in five parts, which are filled with a good amount of academic literature and case law. A general introduction presents the idea of human rights in armed conflict as a matter of political and legal thought. This is based on the “ideas, trends and events which have shaped the law of war throughout history” and explores “how the law connected with the emerging idea of human rights, up to and including their contemporary convergence”.³ The introduction begins by affirming that IHL represents the precursor of IHRL and one of its most important sources, taking into account that IHRL “in the strict sense of the word” has existed since the 1940s, while IHL has a long story of codification prior to that decade.⁴ This is the reason why Oberleitner reviews IHL historically, concluding that the relationship between these two frameworks can only be reasonably discussed after 1948. It is interesting to note that this part presents the Martens Clause as an interpretative tool through which IHL can reference IHRL. The author takes as an example a case involving the maltreatment of interned civilians during the German occupation of Belgium in 1950, where the Conseil de Guerre de Bruxelles “reasoned that because such acts of inhuman treatment were not specifically prohibited under the Hague Regulations one must resort to the Martens Clause to fill this gap. This, in turn, necessitates drawing on international human rights law.”⁵

The second part of the book deals with the theoretical relationship between IHL and IHRL, analyzing three main approaches: *lex specialis*, complementarity and the possible integration of both legal regimes. Oberleitner recognizes that today it remains unclear if *lex specialis* is a tool for interpreting norms or for solving norm conflicts. Yet, he addresses how it has been applied by different entities within the international realm, concluding that, for instance, the International Committee of the Red Cross (ICRC) applies either IHL or no law at all, offering its humanitarian services instead in the latter case. Although the ICRC advocates for the complementarity of IHL and IHRL, it continues to emphasize their

1 Within this vast body of literature, there are a few books that stand out: see, for instance, Orna Ben-Naftali (ed.), *International Humanitarian Law and International Human Rights Law*, Oxford University Press, Oxford, 2011; Robert Kolb and Gloria Gaggioli (eds), *Research Handbook on Human Rights and Humanitarian Law*, Edward Elgar, Cheltenham and Northampton, 2013.

2 *Human Rights in Armed Conflict*, p. 2.

3 *Ibid.*, p. 6.

4 *Ibid.*, p. 9.

5 *Ibid.*, p. 34.

differences and the indispensability of the *lex specialis* of IHL for determining their relationship.⁶

Oberleitner's general conclusions on the subject are certainly enlightening. He affirms that deriving the speciality of IHL merely from the existence of an armed conflict simply refers to the temporal scope of this legal regime, and the argument that it is made for armed conflicts "says nothing else than precisely that: international humanitarian law applies in armed conflict. But it says nothing about its relationship with other legal regimes in such a situation."⁷ The author finally affirms that the idea of *lex specialis* is not an adequate device for explaining this relationship, since it has not allowed a predictable clarification of the complementary application of IHRL and IHL. In his words, it is only "an artificial solution for a real problem and has effectively only served to argue for the exclusivity of humanitarian law and to keep human rights at bay".⁸

Though the author offers an insightful analysis, two issues should be noted at this stage. Oberleitner argues that Article 3 common to the four Geneva Conventions of 1949 is "special" for the prohibition against taking hostages since it has no counterpart in IHRL,⁹ dismissing the possible application of the International Convention against the Taking of Hostages.¹⁰ In addition, more practical examples could have better clarified certain problematic scenarios suggested by the author. For instance, only at the end of the second section is it pointed out that with respect to the right to life, IHL may be the *lex specialis* in situations of armed conflict, but for judicial guarantees it would be IHRL.¹¹ Certainly, a reference to other provisions earlier in the text could have been helpful.

In any case, after rejecting the *lex specialis* maxim, Oberleitner explores the possibility of an interpretative framework guided by the idea of maximum protection through the norms that are most favourable to the individuals concerned. This is why, according to the author, the complementary character of both regimes must be understood as an active interplay and mutual influence, and as a process geared towards this policy goal. Oberleitner vigorously argues that more humanitarian law should apply in situations of armed conflict, whereas in scenarios which resemble law enforcement operations (such as situations of

6 *Ibid.*, p. 73. Recently the ICRC has restated its view confirming that "IHL constitutes the *lex specialis* governing the assessment of the lawfulness of the use of force against lawful targets in [international armed conflict]". ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, Report, 31 October 2015, pp. 34–35, available at: www.icrc.org/en/document/international-humanitarian-law-and-challenges-contemporary-armed-conflicts (accessed on 18 November 2015).

7 *Human Rights in Armed Conflict*, p. 97.

8 *Ibid.*, p. 342.

9 *Ibid.*, p. 102.

10 International Convention against the Taking of Hostages, UN Doc. A/34/46, 1979. Regarding its application in non-international armed conflicts, a complementary analysis should be done with respect to Articles 12 and 13, leading to the conclusion that the Convention applies to cross-border non-international armed conflicts or when the hostages or alleged offenders are foreigners. See also Andrew Clapham, "The Complex Relationship between the Geneva Conventions and International Human Rights Law", in Andrew Clapham, Paola Gaeta and Marco Sassòli (eds), *The 1949 Geneva Conventions: A Commentary*, Oxford University Press, Oxford, 2015, pp. 707–708.

11 *Human Rights in Armed Conflict*, p. 102.

occupation and peace operations, but also when individuals are detained in armed conflict), more human rights provisions should be relevant.¹² In the final chapter of this second part, however, Oberleitner criticizes that both “exclusivists” and “complementarists” agree that the distinctiveness of both legal frameworks needs to be preserved, and “deny and reject any further integration of human rights into humanitarian law”.¹³ While, according to him, a technical merger of IHRL and IHL is difficult to imagine in practical terms, this criticism is why he explores a possible “human rights-based *jus in bello*” approach,¹⁴ which is described as a legal regime governing “all questions of armed conflicts in their various forms” and constituted by IHL, but where IHLR “is applied in a complementary or cumulative fashion while at the same time providing the foundational normative value and operational direction”.¹⁵ Although this is an interesting alternative, the reasons why he moves from the complementarity theory towards this view could have been better explained.

The third part of the book deals with different challenges presented in real-life scenarios, involving the right to life, the extraterritorial application of IHRL, the idea of derogations, and States’ obligations to respect, protect and fulfil human rights obligations. In a very interesting sense, Oberleitner proposes a unified use-of-force regime for all situations outside “combat” governed by IHRL jointly with IHL. He refers, in particular, to those individuals who are exposed to measures such as physical violence, arrest, detention or any other act outside combat; according to Oberleitner, these people are actually subject to law enforcement-like practices to which human rights law can suitably be applied by way of analogy.¹⁶

With regard to the extraterritorial application of IHRL, after referring to the existent jurisprudence, the author accepts its application without territorial restrictions when any State exercises effective and factual control over territory or persons, but at the same time recognizes that the different approaches to qualifying such control or power still need to be reconciled.¹⁷ Interestingly, he then focuses on situations of occupation and suggests the adoption of a capability approach based on the distinction between positive and negative obligations. While State agents can always refrain from carrying out certain actions (and thus respect IHRL), “they do not always have the capabilities to secure or ensure these obligations and protect against violations by third parties. As a consequence, only [positive] obligations can meaningfully be placed on a state acting extra-territorially”.¹⁸ Although Oberleitner seems to look for a more effective legal framework based upon the degree to which a State can reasonably be said to

12 *Ibid.*

13 *Ibid.*, p. 122.

14 *Ibid.*, p. 124.

15 *Ibid.*, p. 126.

16 *Ibid.*, p. 141.

17 *Ibid.*, p. 165. It shall be noted that Oberleitner recognizes this despite the attempts by the United States to argue “that persons held in secret detention facilities outside” its territory were not under the jurisdiction of the United States as they were held in “places” rather than “territories”. He finally affirms in this sense that “there is nothing that puts an end to the ever-shrinking space over which jurisdiction can extend”. *Ibid.*, p. 166.

18 *Ibid.*

exercise control,¹⁹ a fair criticism is again the lack of practical examples: it remains unclear *which* positive obligations should be respected by a State acting abroad.

In the fourth part of the book, the author analyzes the dynamics of war and law, recognizing that changes in either have an impact on the other.²⁰ He explores the application of IHRL to peace operations²¹ and in non-international armed conflicts. Unfortunately the latter is not addressed extensively, which could have been useful considering that recent surveys have concluded that the great majority of ongoing armed conflicts around the world are non-international.²²

Some additional issues are worth noting. Firstly, Oberleitner reiterates his alternative approach in which low-intensity non-international armed conflicts could be governed by more IHRL, and high-intensity conflicts by more IHL rules. Secondly, he reviews several theories that support or reject the existence of non-State armed groups' IHRL obligations, namely: that a non-State armed group which controls territory or otherwise takes over governmental functions may be seen as a government at an embryonic stage, and can only claim legitimacy through embracing international norms – a theory which is later rejected by Oberleitner since it does not function where no territorial control exists or where the taking over of governmental functions is not envisaged; that the human rights obligations of non-State actors are correlative to the human rights which their individual members enjoy; and finally, that “one may simply focus on the capability of non-State actors to adhere to international human rights law”.²³ Oberleitner concludes that whether or not non-State actors are capable of complying with IHRL needs to be decided on a case-by-case basis. Thirdly, the author recognizes that including these entities in the creation of norms will ensure they feel bound by those norms: “utilizing existing and emerging unilateral declarations, codes of conduct or agreements adopted by non-state armed groups may induce the likelihood that they feel bound by such texts”.²⁴ He presents some concerns in this regard, however, by affirming that:

The danger of watering down human rights obligations in this process of “shaping” international human rights law norms so that non-state armed groups can comply with them is, however, real and must be countered. If the standard for, say “due process” is not the one applicable to states under international humanitarian law, is it then a self-defined standard set by the non-state armed group? In other words, can state law simply and generally be substituted by the self-created “law” of a given armed group, or by agreement among groups or governments?²⁵

19 *Ibid.*, p. 167.

20 *Ibid.*, p. 192.

21 *Ibid.*, pp. 201–205.

22 According to different sources, the total number of armed conflicts in recent years fluctuates between thirty and thirty-eight, and only two or three of them are considered to be international. See Stuart Casey-Maslen (ed.), *The War Report 2013*, Oxford University Press, Oxford, 2014, pp. 28–29.

23 *Human Rights in Armed Conflict*, p. 213.

24 *Ibid.*, p. 217.

25 *Ibid.*

Even though this raises some interesting concerns, it is not clear if Oberleitner is casting doubt as to the possibility of actually achieving protective outcomes through decision-making processes by armed groups – although admitting afterwards that rejecting the idea “fails the victims of their acts”²⁶ – or simply dismissing the idea that a parallel normative system could be created (and therefore challenging a State-centrism ideal). In any case, he then moves to the duties of occupying powers, and finally addresses a possible humanization of international law.

The last part of the book is dedicated to how IHRL enforcement mechanisms have dealt with IHL issues. Oberleitner focuses his attention on six institutions to illustrate one of his main conclusions: given the lack of enforcement procedures under IHL, IHRL bodies should stand in as the second-best alternative.²⁷ This is why he discusses the practice of the Human Rights Council, the High Commissioner for Human Rights, the United Nations human rights treaty bodies, the Inter-American Court and Commission, the European Court of Human Rights and the African Commission on Human and People’s Rights. The reasons why these are chosen are extensively supported by jurisprudence and doctrine. Certainly, they do represent the most important human rights institutions acting in the international realm, and the only ones that are able to

provide guidance to States, allow a more informed debate on human rights in armed conflict in concrete situations, put pressure on violators of the law, make humanitarian obligations better known and help to ensure the systemic coherence of the law.²⁸

Although this approach seems a helpful step towards having more protective legal regimes, the role of non-State actors is seemingly left aside. If we consider that these bodies will only be able to solve legal disputes, possibly attributing international responsibility to one or more States, the consequences of breaches by armed groups remain unexplored, as is recognized by Oberleitner: “The human rights obligations of non-state actors (or the lack thereof) will again pose a considerable problem in need of further scrutiny: how can they be held accountable by human rights bodies for violations of the law?”²⁹

Overall, *Human Rights in Armed Conflict* presents novel arguments on the reasons why IHRL should be integrated into IHL, and on how to do it in order to have a more protective legal regime for victims of armed conflicts, and it does so insightfully. A more extensive analysis of non-international armed conflicts would

26 *Ibid.*

27 *Ibid.*, p. 349.

28 *Ibid.*

29 *Ibid.*, p. 338. For recent studies addressing this issue, see Noemi Gal-Or, Cedric Ryngaert and Math Noortmann, *Responsibilities of the Non-State Actor in Armed Conflict and the Market Place*, Brill Nijhoff, Leiden and Boston, MA, 2015; Ezequiel Heffes, “The Responsibility of Armed Opposition Groups for Violations of International Humanitarian Law: Challenging the State-Centric System of International Law”, *Journal of International Humanitarian Legal Studies*, Vol. 4, No. 1, 2013, pp. 81–107.

have been useful, but this piece still represents a very welcome addition to the literature on human rights in armed conflicts. It is, indeed, another recognition that the humanitarian consequences of armed conflicts for civilian populations around the world call for the development of new and effective protection tools.

BOOKS AND ARTICLES

New publications in humanitarian action and the law

This selection is based on the new acquisitions of the ICRC's Library and Research Services

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Air warfare

Articles

Marvin R. Aaron and David R. D. Nauta, "Operational Challenges of the Law on Air Warfare: The Example of Operation Unified Protector", *Military Law and Law of War Review*, Vol. 52, No. 2, 2013, pp. 353–377.

Yoram Dinstein, "Air and Missile Warfare under International Humanitarian Law", *Military Law and Law of War Review*, Vol. 51, No. 1, 2013, pp. 81–91.

Arms

Books

Stuart Casey-Maslen and Gilles Giacca, *The Arms Trade Treaty (2013)*, Geneva Academy of International Humanitarian Law and Human Rights, Geneva, 2013, 44 pp.

ICRC Library and Research Services

The ICRC's Library and Research Services is a public resource presently offering more than 25,000 books and articles, as well as 300 journals. The collection focuses on international humanitarian law, the work of the ICRC and the International Red Cross and Red Crescent Movement, the challenges of humanitarian work and issues of humanitarian concern in war, and the history and development of armed conflict. Other topics include international criminal law, human rights, weapons, detention, and refugees and displaced persons. The ICRC has acquired publications and periodicals since 1863, and holds specific collections, including rare documents dating back to the foundation of the organization.

Articles

William H. Boothby, “How Will Weapons Reviews Address the Challenges Posed by New Technologies?”, *Military Law and Law of War Review*, Vol. 52, No. 1, 2013, pp. 37–59.

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