



## Nuclear weapons

*The treaty represents a seismic shift in asserting the shared interests of humanity and in bringing global democracy to nuclear disarmament.*



*Those of us who happened to be alive since 1945 when nuclear weapons were first exploded, and more recently since evidence of human climate disruption became unequivocal, are in all human evolutionary history the first generations to face such existential threats of our own collective making.*

# Before they end us, we can and must end nuclear weapons

Tilman Ruff

## Finally — we have a treaty banning nuclear weapons

On 24 January 1946, the very first resolution of the UN General Assembly called for the ‘elimination from national armaments of atomic weapons’. More than 71 years later, in Conference Room 1 at the United Nations in New York at 10:47 on 7 July 2017, governments voted 122 to 1 to adopt the text of a historic Treaty on the Prohibition of Nuclear Weapons (UN General Assembly, 2017). A room filled for weeks with formal procedure, composed diplomats and committed campaigners erupted with applause, joy, tears and embraces.

This treaty is the first to categorically outlaw nuclear weapons. It fills a gaping hole in international law, which had seen the worst weapon of mass destruction as the only major type of indiscriminate and inhumane weapon not to be banned by an international treaty. This treaty enshrines a comprehensive prohibition of nuclear weapons. It also provides a path to their elimination.

More of this epic story later. First let’s examine why this treaty is so important, and its implementation so urgent.

## We are here: existential threats

Life is a fragile thing. Many of us living in the modern world enjoy comforts unheard of even for kings, queens and emper-

ors of old. We are insulated like none of our forebears ever were from many realities of life, what sustains it, and from death. Endless food that never runs out, all manner of goods and services from all over the world, wood, minerals, communications, e-everything, electricity, clean water and gas, all brought in. Sewage, other waste, goods and communications shipped out. Heating and cooling at the flick of a switch. Travelling further in a day for a holiday than most of our ancestors travelled in a lifetime. Many of us have so far been able to mostly take for granted fertile soil; growing things; the air, soil and water-cleaning functions of ecosystems. We are increasingly aware through the intrusion of the blunt realities of immutable physics that the habitable climate on which we depend is under severe and accelerating strain. But far fewer of us understand that the greatest risk of acute climate disruption is nuclear weapons. We know the world changed in Hiroshima and Nagasaki in 1945, but mostly we live our lives as if it didn't.

Biologically, we haven't changed much since our hunter-gatherer ancestors lived in Africa. Our social primate brains are remarkably well-adapted to fitting in with social and peer pressure and seeking gratification through the approval of others. We are adept at differentiating between our group, those we can empathise with, and those whose suffering we ignore. Our capacity to be manipulated to inflict organised violence on those we consider 'other' is frightening. Our ability to deny and rationalise seems almost limitless. We generally find it easier to deal with threats that are proximate, imminent, visible and localised, than threats that seem more distant, potential, generalised and beyond our control.

So it is not surprising that most of us live as if nuclear weapons weren't a completely preventable danger that jeopard-

dises not only us, but our children and theirs, everything that human civilisation has created, everything that we love and value and strive for, and the lives and homes of most other species on our shared planet. Lurking every day the knowledge that nuclear weapons exist, deployed and launch-ready. For such recognition means some level of distress, and some acknowledgment of responsibility, and perhaps a sense of obligation to help remove the danger.

Enter existential dangers. For the vast bulk of the long sweep of human history, as perennial and enduring as what educator Jonathan Kozol describes as the three essential truths of love, death and pain, has been our ability to rely on that whatever happens to us individually, life for our descendants will go on.

Celestial events arising beyond planet Earth are one kind of existential threat. Collisions with large meteorites have been responsible for most major extinction events, like that of the dinosaurs 65 million years ago. We may now be able to anticipate and avoid some such catastrophic collisions, and should work collectively to improve these capabilities. In six billion or so years we can expect our Sun to expand into a red giant star and render the Earth uninhabitable.

However, there are two other kinds of existential threats that have emerged recently and are of human origin. Though they are upon us, it is not yet too late to take the urgent preventive action they demand. The first is environmental disruption, and degradation and depletion of vital resources and ecosystems. Rampant climate disruption due to global warming poses the greatest of these inter-related challenges. The second, more acute and less potentially reversible, is the danger of nuclear war.

The World Health Organization, the world's leading technical health agency, has identified nuclear weapons as the greatest immediate threat to human health and welfare (WHO, 1983). Preventing use of nuclear weapons, by accident or design, necessitates their eradication; a necessary, urgent and feasible precondition for securing and sustaining planetary and human survival and health.

Effectively addressing both climate disruption and nuclear weapons is not optional, but essential. There is only one acceptable answer to the stark, binary choice for all of us: Which will it be — the end of nuclear weapons, or the end of us?

The man on television, Sunday midday, middle aged and solid, nice looking chap, all the facts at his fingertips ... Is talking about civilian defence ... It can make an enormous difference, he is saying. Instead of the outright death of 80 million American citizens in 20 minutes, he says, we can, by careful planning and practice, get that number down to only 40 million, ... Of course, he adds, they have the capacity to kill all 220 million of us if they were to try real hard, but they know we can do the same to them ...

If I was 16 or 17 years old and had to listen to that, or read things like that, I would want to give up listening and reading. I would begin thinking up new kinds of sounds, different from any music heard before, and I would be twisting and turning to rid myself of human language.

Lewis Thomas, *Late night thoughts on listening to Mahler's Ninth Symphony*. New York: Viking Penguin, 1983 pp. 167-168.

There are no longer problems of the spirit. There is only the question: When will I be blown up?

William Faulkner, Nobel Prize for Literature dinner speech, 1950.

## What nuclear weapons do

The first step to getting rid of nuclear weapons is understanding why this is so crucial and so urgent. This has two aspects — appreciating just how catastrophic would be the consequences of any use of nuclear weapons, and that there is a very real, and growing, possibility of nuclear war happening.

Evidence of the true extent of the effects of nuclear weapons has frequently not been collected, or covered up, misrepresented or disregarded by governments, in subservience to the myths that nuclear weapons are weapons like any other, only bigger, and can be used to serve legitimate military purposes and enhance security. The reality is vastly different (Ruff, 2013). No humanitarian response, reconciliation or recovery is possible after a nuclear war. The concept of ‘winners’ would be meaningless; there would be only losers.

The bomb that destroyed Hiroshima and killed 140,000 people in the first few months, and is still killing people 73 years later, was by today’s standards a small, tactical size weapon. The average explosive power of the weapons in today’s arsenal is over 13 times larger; the biggest nuclear weapon deployed currently is more than 330 times more powerful. Single nuclear weapons have been detonated with more than four times the destructive power in one bomb than all explosives used in all wars throughout human history.

### *Acute effects*

Nuclear weapons produce an enormous blast wave that causes trauma both directly (such as lung trauma and eardrum rupture), and indirectly through powerful winds that can turn objects including people into missiles. An intense flash of light and initial ionising radiation is produced, together with intense

heat, which causes direct vaporisation, incineration and burns, and ignites anything flammable over a large area.

Apart from their essentially limitless destructive power, a defining feature of nuclear weapons is the release of huge amounts of radioactivity in the initial pulse as well as radioactive fallout containing hundreds of different radioisotopes with half-lives ranging from fractions of a second to millions of years. Fallout is dispersed by wind and water over great distances, eventually worldwide. Ionising radiation causes acute toxicity to many organs (acute radiation sickness) at high doses; and long term, at any level causes dose-related and heritable genetic damage and subsequent lifelong increased risk of cancer and chronic diseases.

An intense burst of radiowaves produced by a nuclear explosion (electromagnetic pulse — EMP) would cause extensive disruption to electrical equipment. The EMP from a nuclear explosion high in the atmosphere would cover a continental size area with voltage a million times greater than lightning. This energy would disrupt the vast array of electrical and electronic equipment on which the critical infrastructure of modern societies is increasingly dependent — including electricity and water supply, telecommunications, computer systems, transport networks, medical equipment, cars and trucks, traffic lights, banking, appliances, and most commerce and trade.

The largest nuclear weapons currently deployed are 5 megatons — the equivalent amount of high explosive would fill a freight train 2,414 km long. The energy released by such a bomb could turn 5 million tons of ice to steam. Within a thousandth of a second, conditions akin to the centre of the Sun would be produced — 100 million°C and 100 million atmospheres of pressure in a fireball that would rapidly expand to 1.8



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km across. Within 4.7 km in every direction, winds of 750 km/h and a blast wave over 140 kilopascals (kPa) would crush, collapse, or explode all buildings, including those of steel and reinforced concrete, and turn the debris into missiles with lethal velocity. Glass and steel would melt; concrete would explode. Wherever they were, all living things would die almost immediately — vapourised, crushed, charred, irradiated.

Out to about 7.5 km in every direction, winds of 460 km/h and blast pressures of 80 kPa would break apart concrete and steel buildings and sweep out their walls, floors, and ceilings. Aluminium would be vapourised. Adults would be hurled over 100 m at high speed. Essentially everyone would be killed or seriously injured, including by crush injuries, ruptured lungs, transected spinal cords, severe haemorrhage, and deep burns.

As far as 12.3 km in every direction, winds of 260 km/h and blast pressures of 35 kPa would crush wooden and brick buildings including houses, schools, shops, and many factories. People would be hurled 7 m. Asphalt would melt. Windows would be fragmented into more than 4,000 projectile glass shards per square metre. Many people would be deaf from ruptured eardrums. In less than 10 seconds a city would be completely devastated.

Stretching 22.6 km in every direction, over an area of 1,605 km<sup>2</sup>, everything flammable would ignite — wood, paper, cloth, plastics, petrol, and oil from ruptured tanks and cars; further fuelled by ruptured gas pipes, downed electricity lines, and leaking chemicals. Within half an hour, thousands upon thousands of fires would coalesce into a giant firestorm 45 km across, with temperatures of more than 800°C, sucking in air creating winds of more than 320 km/h, consuming all available

oxygen. Every living thing would die, and shelters would become crematoria.

Still further out, windows would be shattered, buildings damaged, the air filled with broken debris turned into projectiles. Streets would be impassable. There would be no ambulances, fire engines or police, no power or communications or functioning hospitals. The vast majority of injured and burnt people would die alone without so much as a hand or voice to comfort them and without any relief for their agonising pain.

### *Climate disruption and nuclear famine*

It is in relation to the impacts of nuclear war on climate and food supplies that scientific advances of the greatest moment have been made over the past decade. We have come to understand that it is not just large-scale nuclear war between the United States and Russia that poses a global threat. A series of studies have established beyond doubt that localised, regional nuclear war would also have severe effects worldwide (Mills, 2015).

A commonly studied scenario is a war between India and Pakistan involving 100 Hiroshima-sized warheads targeted on cities. (This is a deliberate underestimate: the combined arsenals of India and Pakistan actually contain 250–270 nuclear warheads.) The direct effects in South Asia are catastrophic. Some 20–40 million people would die in the first week from the direct effects of the explosions, fires and local radiation.

The global consequences would, however, be far more devastating. Fires ignited by the nuclear explosions would loft 6.5 million tons of soot into the upper atmosphere. Global cooling (averaging 1.2–1.5°C), drying and darkening would last for well over 10 years; probably more than 20 years. While the

fuel density of modern cities varies, there is nothing specific to India/Pakistan about such a scenario. Nuclear weapons are extremely efficient at igniting simultaneous fires over large areas, which would rapidly coalesce.

This climate disruption would in turn profoundly reduce food production. Considering only the impact of colder temperatures, the maize crop in the United States, the world's largest producer, would decline an average of 12% over a decade. In China, the world's largest grain producer, mid-season rice would decline by 17% over a decade, maize by 16%, and winter wheat by 31%.

Adequate human nutrition cannot be sustained in the face of widespread and persistent decline in food production of this magnitude. Total world grain reserves typically amount to 60–90 days of global consumption, and would not begin to offset the shortfall over many years. Furthermore, there are currently 815 million people who are already chronically undernourished; and 300+ million people who enjoy adequate nutrition today, but live in countries highly dependent on food imports, which would quickly dry up. Conservatively estimated, without taking account of land polluted by radiation and toxic chemicals, increased UV radiation, disruption to trade and agricultural inputs — seed, fertilizer, fuel, pesticides — or the disease epidemics and social conflict that accompany famine, around two billion people would starve following a regional nuclear war involving 0.7% of the global arsenal and less than 0.1% of its total yield (Helfand, 2013).

Large-scale war between the United States and Russia would be far worse. In December 2017, Russia and the United States were estimated to possess 6,800 and 6,600 nuclear warheads respectively, 92% of the global total (14,550). A 2002 study showed that if just 300 Russian weapons hit urban

targets in the United States , 75 to 100 million people would die in the first half hour from the explosions and firestorms. However, the global climate effects would be far worse. A war involving only the strategic weapons that will still be deployed when the New START Treaty is fully implemented in 2018 (modestly reducing Russian and US strategic nuclear forces), would put 150 million tons of soot in the upper atmosphere, and drop temperatures around the world by 8°C. In the interior regions of North America and Eurasia, temperatures would fall by 25–30°C, for more than a decade. Earth has not been that cold since the coldest point of the last ice age. In the temperate regions of the northern hemisphere, the temperature would fall below freezing for part of every day for at least two years. Food production would stop and the vast majority of the human race would starve.

The evidence of severe global impacts from even a limited regional nuclear war involving a tiny fraction of the world arsenal means that all nuclear arsenals, not only those of Russia and the United States, pose a global danger. During most of the Cold War it was argued that the risk of ‘mutually assured destruction’ would keep the peace between nuclear-armed rivals; however, we now know that a nuclear attack could be suicidal, even without the likely nuclear escalation and retaliation, resulting in ‘self-assured destruction’. Far from safeguarding anyone’s security, nuclear weapons are global suicide bombs.

### **Could nuclear war really happen?**

No doubt, the international security landscape is alarming. Relations between the United States/NATO and Russia are at their lowest ebb since the end of the Cold War, with military exercising and deployments becoming more provocative, exist-

ing nuclear weapons agreements like the INF (Intermediate Nuclear Forces) Treaty in jeopardy, Russian annexation of Crimea, and for the first time in many years, no Russian-US disarmament talks are underway or planned. Tensions simmer between China, the United States, Japan and others in the South China Sea. Almost weekly skirmishes along a disputed border, a continuing nuclear arms race, weak security of nuclear weapons, and policies envisioning early use of nuclear weapons highlight the real danger of armed conflict turning nuclear between India and Pakistan. The situation in various parts of the Middle East is hardly stable. Irresponsible explicit and increasingly extreme nuclear threats have escalated between the Democratic People's Republic of Korea and the United States, bringing closer the grim prospect of war, including nuclear war. Nuclear threats have also been uttered in recent times by Prime Minister Theresa May, President Putin, and leaders in India and Pakistan. The danger of nuclear weapons detonations as a result of cyberattack are growing. No nuclear disarmament negotiations are underway or being planned (Helfand, 2016).

Meanwhile, all nuclear-armed states are committed to indefinite retention of their nuclear arsenals, and all are investing large sums — together over US\$105 billion annually (Blair, 2011) — in modernising them, making them more accurate and 'usable'.

It is no wonder that the 15 Nobel laureate and other custodians of the Domsday Clock, along with most authoritative others, assess the dangers of nuclear war to be as high as they have ever been, and growing. In January 2018, the hands of the Clock were moved forward to two minutes to midnight, as close to midnight as they have ever been, and the highest level of danger since 1953, when both the United States and Russia

in rapid succession tested thermonuclear bombs (Mecklin, 2018).

### **How did the treaty banning nuclear weapons come about?**

The conference to negotiate the ban treaty introduced at the start of this chapter was set up in December 2016 in the United Nations General Assembly (UNGA) by a vote of more than three to one, ‘to negotiate a legally binding instrument to prohibit nuclear weapons, leading towards their total elimination’ (UN General Assembly, 2016b). There were three main sets of factors that led to this mandate. The first is the longest unfinished business of the UN to eliminate nuclear weapons being interminably delayed by all nuclear-armed states failing over decades to fulfil their legally binding obligation to negotiate and achieve nuclear disarmament. Worse, all of them are doing the opposite — massively investing for the indefinite future in extensive modernisation and renewal of their nuclear arsenals. In the United States alone, planned investment in nuclear weapons over the next 30 years amounts to US\$1.2 trillion (US\$1,200,000,000,000; Congressional Budget Office, 2017). The rest of the world, threatened equally by the nuclear sword of Damocles wielded by a self-selected few, has grown increasingly frustrated and impatient.

Second, in contrast to the paralysis in nuclear disarmament, there has been substantial progress in the prohibition and progressive elimination of the other major kinds of indiscriminate and inhumane weapons — biological and toxin weapons, chemical weapons, antipersonnel landmines and cluster munitions. In each case, experience has been consistent. The first crucial step has been codifying in law that the relevant weapon has intrinsically unacceptable effects, should never be

used under any circumstances by any nation, and must be eliminated — as former UN Secretary General Ban Ki-moon said, ‘There are no right hands for the wrong weapons.’ These prohibitions have provided the basis and motivation for progressive elimination of the weapon. This proven approach can be described as stigmatise, prohibit, eliminate. Indeed no other approach has proven effective.

Third, the last eight years have seen a growing ‘Humanitarian Initiative’ regarding nuclear weapons. Renewed political space was created by senior US figures William Perry, George Schultz, Henry Kissinger and Sam Nunn in 2007; and then by President Obama, for the goal of the world free of nuclear weapons. Just prior to the 2010 Review Conference of the non-proliferation treaty (NPT), Jakob Kellenberger, president of the International Committee of the Red Cross (ICRC), articulated with renewed vigour and priority that for the world’s largest humanitarian organisation, prohibiting and eliminating nuclear weapons is unfinished business and an urgent humanitarian imperative. This fortified the resolve of particularly the Swiss government and resulted in the first recognition by the RevCon of the ‘catastrophic humanitarian consequences of any use of nuclear weapons’.

On the back of this, Norway, Mexico and Austria in 2013–14 organised the first ever intergovernmental conferences on the humanitarian impact of nuclear weapons. The essentially unchallenged conclusions of these evidence-based conferences were that any use of nuclear weapons would have catastrophic and potentially irreversible humanitarian consequences to which no effective response was possible; that the risk of nuclear weapons being used was greater than previously estimated, growing, and exists as long as the weapons do; and that there was a legal gap — no comprehensive legal norm

universally prohibiting nuclear weapons (European Integration and Foreign Affairs Federal Ministry, 2014). These conclusions drove a growing movement of a large majority of states through NPT and UN forums. Austria initiated the Humanitarian Pledge, a humanitarian-based commitment to fill the legal gap for the prohibition and elimination of nuclear weapons, signed by 127 states. A UN Working Group on nuclear disarmament recommended to the 2016 UNGA that a treaty prohibiting and providing for the elimination of nuclear weapons was the next best step that the world could take (UN General Assembly, 2016a). This led to the mandate for the ban treaty negotiations being supported by over 120 states at the UNGA in late 2016.

Throughout these processes, a new broad civil society campaign coalition, the International Campaign to Abolish Nuclear Weapons (ICAN), became the principal civil society partner for governments serious about disarmament. ICAN was founded by International Physicians for the Prevention of Nuclear War (IPPNW), and developed and launched in Melbourne in 2007 by IPPNW's Australian affiliate, the Medical Association for Prevention of War.

The breakthrough in strategy for a majority of governments that enabled the treaty, supported by ICAN, was to focus initially on prohibiting nuclear weapons. This was based on the recognition that currently none of the nuclear-armed states are serious about fulfilling their obligation to dismantle their nuclear arsenals. Therefore, disarmament measures that depend on nuclear-armed states are, for now, doomed to failure.

States that do not own nuclear weapons cannot eliminate them, but they could prohibit them, if they utilised a forum in which a majority can act. In the UN Security Council, the five



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permanent nuclear-armed members can each veto any decision. The UN Conference on Disarmament (CD) and NPT conferences both require consensus, which means they can agree to nothing if just one state objects. This constrains them to the lowest common denominator, and has resulted in the CD not being able to agree even on an agenda since 1996. The UNGA can, however, take decisions by two-thirds majority vote. Consensus is not required and no state can veto a decision. It is also the most inclusive and fundamental UN body. The 2017 treaty negotiations were the first multilateral nuclear disarmament negotiations in over 20 years, and the first ever through the UNGA. Not only did they achieve a historic treaty; they did so remarkably efficiently, in just four weeks of negotiations over only eight months from negotiating mandate to treaty adoption. Although all states were welcome and encouraged to join the negotiations, sadly, they were boycotted by all nine nuclear-armed states; and by the 28 members of NATO (except for the Netherlands), Australia, Japan and South Korea, which claim 'protection' from US nuclear weapons; that there are some circumstances in which they would want US nuclear weapons to be launched on their behalf.

Fierce political and economic pressure was brought to bear on many states — South Africa ambassador Mxakato-Diseko described 'incredible pressure' on African (and other) states by nuclear-armed France, Russia, UK and US to discourage them from supporting the treaty. This pressure, however, failed to derail the treaty. The majority of the world's nations broke the stranglehold of the nuclear-armed states. Not surprisingly, the nuclear-armed states don't like it one bit.

## What's in the Treaty?

Drawing on other disarmament treaties, the Treaty on the Prohibition of Nuclear Weapons provides a categorical and comprehensive prohibition of nuclear weapons and any activities supporting their possession, deployment and possible use. Its preamble articulates deep concern about the catastrophic humanitarian consequences of any use of nuclear weapons, the consequent need to eliminate them completely, and that they never again be used under any circumstances. It notes that the risks posed by nuclear weapons threaten the security of all humanity, and that therefore all states share the responsibility to prevent any use. It recognises that the consequences of nuclear weapons use cannot be adequately addressed, pose grave implications for human survival, the environment, socio-economic development, food security and the health of current and future generations. For the first time in a nuclear disarmament instrument, tribute is paid to survivors of nuclear use (hibakusha) and testing, and it recognises the disproportionate impact of nuclear weapons on women and girls, and on indigenous peoples.

The treaty commits each State Party never under any circumstances to develop, test, produce, manufacture, otherwise acquire, possess or stockpile nuclear weapons. It also prohibits the transfer, use or threat of use of nuclear weapons; and to assist, encourage or induce, in any way, anyone to engage in any prohibited activity.

The treaty is carefully crafted to enable states that own nuclear weapons, owned them previously, or have them stationed on their territory, to join. It requires that nuclear weapons, nuclear weapons programs and facilities be eliminated under verifiable, irreversible and time-bound plans to be agreed with State Parties. The details of these elimination

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regimes clearly require the participation of the states that possess the weapons, but the treaty provides a clear framework and non-discriminatory principles for these regimes.

States like Australia which assist in military preparations for use of nuclear weapons can join provided they cease such assistance. There is no requirement to end military cooperation with nuclear-armed states, provided such cooperation does not involve prohibited (nuclear weapons) activities. A number of states that cooperate militarily with the United States but don't claim protection from US nuclear weapons, such as New Zealand, Thailand and the Philippines, are strong treaty supporters.

The treaty provides for nuclear safeguards standards at least consistent with NPT obligations, and that these may change — hopefully strengthen — in the future. No state can reasonably argue that this treaty in any way undermines or contradicts the NPT, or that it could not join it.

The treaty builds on humanitarian and human rights based norms developed in the landmine and cluster munitions treaties, providing for needs-based assistance to victims and feasible clean-up of contaminated environments as obligations for states joining. This is the first treaty related to nuclear weapons that addresses these matters. It calls on states joining it to assist people affected by the use or testing of nuclear weapons, without discrimination, including medical care, rehabilitation and psychological support, as well as for their social and economic inclusion. Clearly much of the harm caused by nuclear weapons cannot be undone in the way traumatic injuries may be able to be treated, and that discrete munitions can be removed, but these provisions should help ensure that the ongoing needs of survivors, and for environmental monitoring and where feasible clean-up, are not

ignored or forgotten. States in a position to assist in these tasks are obliged to do so; and the responsibility of states that have used or tested nuclear weapons draws specific mention.

States' parties will meet at least every two years to review and promote treaty implementation, and a two-thirds majority will be able to amend it, or add protocols to it. The treaty is of unlimited duration, and it must be accepted in toto by states joining; they cannot opt out of any parts of it.

The treaty opened for signature on 20 September 2017. As of 1 August 2018, 59 states have signed and 14 have ratified. It will enter into force 90 days after 50 governments have ratified it.

### **Does the ban treaty matter?**

The treaty represents a seismic shift in asserting the shared interests of humanity and in bringing global democracy to nuclear disarmament. The Red Cross/Crescent movement stated on the day of its adoption: 'The historic significance of this treaty cannot be overstated.' ICRC President Peter Maurer added: 'Today, the world has taken a historic step towards delegitimising these indiscriminate and inhumane weapons, which is a crucial basis for their elimination' (International Committee of the Red Cross, 2017). The significance of the treaty was recognised by the Norwegian Nobel Committee in its award of the 2017 Nobel Peace Prize to ICAN 'for its work to draw attention to the catastrophic humanitarian consequences of any use of nuclear weapons and for its ground-breaking efforts to achieve a treaty-based prohibition of such weapons' (The Norwegian Nobel Committee, 2017).

The ban treaty powerfully codifies in international law a rejection of the legitimacy of nuclear weapons in any hands. As we have seen with other prohibited weapons, norms are powerful. Which states now assert their essential right and

need to wield a smallpox or plague ‘deterrent’, or their legitimacy in threatening to use sarin nerve gas? The strength of the norm against chemical weapons led to the Syrian government being rapidly forced to join the Chemical Weapon Convention in 2013 and the destruction of 1,300 tons of chemical weapons. Despite states like China, Russia and the United States opposing the treaties banning landmines and cluster munitions and failing to sign them, they no longer export these weapons, and manufacture and use have declined substantially. In the same breath as it condemns the treaty banning nuclear weapons, the United States boasts its virtual compliance with the landmine ban, even though it has not joined that treaty either.

The fact that the treaty matters is most clearly evidenced by the consistent, strong opposition from nuclear-armed and dependent states at every stage. A notable example is the October 2016 US admonition, before the UNGA vote on ban treaty negotiations, to its NATO allies to vote ‘no’, and if negotiations started, not to join them. Their stated reasons bear no resemblance to their public pronouncements that the ban would be ineffective, divisive and counterproductive. They recognise that a ban treaty ‘aims primarily to stigmatize nuclear weapons and ... delegitimize the concept of nuclear deterrence’, that it ‘could impact non-parties as well as parties, and could even have an impact prior to its entry into force’, and interfere with NATO preparations to use nuclear weapons (United States Mission to the North Atlantic Treaty Organization, 2016). That is, the treaty would work as intended.

Other examples are the immediate dismissive angry response from France, the United Kingdom and the United States when the treaty was adopted: ‘We do not intend to sign, ratify or ever become party to it. ... Accession to the ban treaty

is incompatible with the policy of nuclear deterrence' (United States Mission to the United Nations, 2017); and admonitions like that of US Secretary of Defense James Mattis to Sweden not to sign the treaty. Many other countries are copping similar pressure. Clearly, the treaty is not something the nuclear-armed states can ignore, and has put them on the defensive.

Once weapons prohibition treaties enter into force and become international law, become reflected in domestic law, and more and more states join, their normative, moral and political force can only grow. Civil society has a crucial role to play in promoting the treaty and its implementation. Military personnel of integrity in nuclear-armed states, mindful of international law and the principle affirmed by the 1946 Nuremberg Trials that superior orders are no defence when it comes to complicity in war crimes and crimes against humanity, should become less likely to consider, recommend or carry out an order to launch nuclear weapons.

### **Taking heart and getting on with the job**

Evidence of the urgent and extreme threat posed by nuclear weapons is stark and frightening. A common and understandable response is to put it aside, ignore it and get on with more manageable, less confronting everyday matters. However, denying or ignoring the problem is no solution, and the existential danger is not simply going to go away.

In JRR Tolkien's epic tale *The Lord of the Rings*, Frodo laments to Gandalf in the Mines of Moria: 'I wish the ring had never come to me. I wish none of this had happened.'

Gandalf replies: 'So do all who live to see such times, but that is not for them to decide. All we have to decide is what to do with the time that is given to us.'

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Those of us who happened to be alive since 1945 when nuclear weapons were first exploded, and more recently since evidence of human climate disruption became unequivocal, are in all human evolutionary history the first generations to face such existential threats of our own collective making. While the unprecedented responsibility we bear is a daunting burden, it is also a precious gift. In all human history, people have never had as great an opportunity as we do to avert harm and do good for humanity and for all the current and potential future denizens of planet Earth. We have the opportunity, quite literally, to save our world.

Those who have the privilege to know have the duty to act.

Albert Einstein

The founding of ICAN in Melbourne by a handful of us in 2005 in response to an inspired call by a Malaysian colleague, distinguished obstetrician Datu Dr Ron McCoy, has burgeoned into a global campaign of 500 organisations in over a hundred countries. ICAN was key to getting the first ever treaty banning and providing for the elimination of nuclear weapons adopted by an overwhelming majority of governments in the General Assembly of the United Nations, recognised by the first Nobel Peace Prize for an organisation founded in Australia. Who would have thought? It is living proof of the difference that a few people can make. That is usually how things happen. The landmark Treaty on the Prohibition of Nuclear Weapons is a necessary but insufficient step towards their abolition. It is a triumph of the interests of common humanity. It provides a moment of truth: if states are really committed to disarmament they will sign. If they do not join, whatever they say, they are still part of the problem rather than the solution. We are in the race of our lives: a race to eradicate nuclear weapons before

they are otherwise inevitably used. In a dark time, the treaty lights a path to a world freed from nuclear weapons. We should take that path. We need all hands on deck. For what must be done, and quickly; for the best we can be; for all the things of value, that matter, that we love.

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