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Nuclear Weapons at 65: Time for Retirement?

Presentation to APS Conference, Anaheim CA (by powerpoint and skype)
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I want to start by thanking my good friends Patricia Lewis and Peter Zimmerman for inviting me to speak, and to apologise to all of you for not being able to be in Anaheim in person, due to an ear infection that makes flying very painful. I'm going to try something unusual with this presentation, which I hope works. On your screens you will see my powerpoint presentation, which considers the current situation following the 2010 NPT Review Conference and through pictures and bullet points invites you to question the assumptions and mechanisms of arms control, non-proliferation and how to achieve the world free of nuclear weapons that President Obama and many other leaders now advocate. My talk, however, will not directly explain the slides, but is intended to provide a complementary input. What comes through your eyes and ears will be different but I hope that the fusion will challenge and stimulate creative thinking about how to abolish and eliminate nuclear dangers. If I run out of time and have to cut my narrative, both the text and the powerpoint will be available for you to read in full.

Instead of flying to California on Wednesday, I found myself being driven by the BBC to Greenham Common in Berkshire to be interviewed with a poet, Michael Symmons Roberts, who grew up in the nearby town, Newbury. His poems were haunted with a child's fears of nuclear annihilation, of seeing American soldiers drive huge transporter-launchers through his town, carrying 150 kt nuclear-armed cruise missiles that were supposed to 'melt into the countryside' – or so the government propaganda said; and he wondered about the unkempt peacewomen camped day in, day out around the perimeter fence, who opened up the fences and danced defiantly on top of the silos. I was one of

those Greenham women, and as he interviewed me by those silos on Wednesday, I couldn't stop smiling. There they stood, empty and gaping, still ready if the Russians wanted to inspect them, as allowed under the 1987 Intermediate-Range Nuclear Forces (INF) Treaty. But everywhere else the nuclear base was turned back into the Common Land that it had been before the Royal Air Force took it over during the Second World War, and then handed it to the USAF in the mid 1950s as part of a Anglo-American nuclear cooperation deal. Skylarks soared above gorse and ponds full of wildlife; cows grazed where once C130 heavy lifters had landed a new generation of nuclear weapons over the heads of hundreds of thousands of protesters. Now families were walking with dogs and children past a small herd of Exmoor ponies, picnicking close to the boarded-up air traffic control tower where two days after Christmas 1983 two friends and I climbed up and draped a bedsheet banner proclaiming "Peace on Earth', while armed soldiers worked on the base's fire engines in a pool of light below (and never saw us).

When I first started living at Greenham in 1982, the Cold War was 37 years old. So was the 'nuclear age', if measured from the use of nuclear weapons against the cities of Hiroshima and Nagasaki in August 1945. Camping at Greenham was an act of hope and desperation, an attempt by women without access to the decision-makers to say no to the deployment of the latest generation of nuclear technology – ground-launched cruise missiles – at the height of the cold war.[1] We were patronised and derided, accused of being Communist stooges – though we travelled to the Soviet Union and protested against the SS20s and Russian nuclear tests as well. We were told that the Cruise and Pershing missiles were necessary, and though deterrence was far too complicated for us to understand, such weapons had kept us safe for howevermany years. Media filmed us,

[1] RAF/USAF Greenham Common was designated by NATO in 1979 to be the first US base in Europe to take a

reporting that we had failed. Yet five years after we were told that the weapons were indispensable and that disarmament would be dangerous and unverifiable, Presidents Reagan and Gorbachev were signing the INF Treaty. Soon the Cruise, Pershing and SS20 missiles were on their way to dismantlement, and in less than a decade, the Cold War was over.

This week I was struck by a different aspect of the nuclear age, as I watched a compelling documentary – *Into Eternity* – about the Onkalo nuclear waste repository being built in Finland to keep the radioactive products of the past 65 years 'safe' for 100,000 years. This got me thinking about the nature of Nuclear Time.

Ballistic missiles take minutes rather than 1945's slow hours of airplane time to deliver nuclear warheads that destroy cities full of people. When the high explosives packed around a plutonium pit are detonated they compress the fissile material and set off a chain reaction that accelerates so fast that a child on the ground would not have time to cry out before being vaporised. White flash, searing heat, and the great boom of percussive sound a moment later: mass death in an instant. Radiation works more calmly and can take days, weeks, months, even years to seep into your body and cause their damage to your cells and DNA. It's a lottery, depending on how close you were to the epicentre, whether you ate or breathed in the deadly fallout, and how old you were when the nuclear bomb exploded – a grown adult, a child, a baby… a bundle of embryonic tissue in your mother's womb, just embarking on the nine month journey to life.

Wars are terrible, ugly killing times wherever they occur. From the cluster bombs in Iraq to the Agent Orange devastation of Viet Nam, on down to the skulls of bright young scientists and poets that are still being unearthed from the mud of Passchendaele, the consequences of war stretch into the future. But no

other weapons effects stretch as far in time and space as nuclear armaments. With a half life of 24,200 plutonium 239 can change the very fabric of our genetic coding. After Hiroshima and Chernobyl, children have been born with genetic abnormalities caused when their mothers or even grandmothers were in the wombs of women caught in contaminating plumes that they could not see, feel or taste.

An image from the Finnish film about Onkalo reminded me of another strangeness of Nuclear Time. A long line is shown on screen, appearing to disappear into the tunnels of the underground waste repository. A couple of inches from the dawn of human history and a mark is made for 1945, denoting the start of the nuclear age. Another mark – a fingernail's width – marks today, 65 years on. The rest of the line, leading miles into the tunnel shows how long the repository will need to keep nuclear waste safely stored and hidden from our curious descendants… if we manage to leave this planet capable of sustaining future generations. Scientists speculate about how to communicate with an unknown future generation to make sure they keep away from this dangerous secret. The voiceover comments that Onkalo would only be able to take a small fraction of the nuclear waste being produced by today's nuclear weapons and power programmes.

Let us now bring the zoom lens back to the fingernail between 1945 and 2011. Nuclear weapons were not built by evil men to destroy the world. They were imagined, calculated, designed, machined, constructed and tested by scientists – people like us – essentially good, intelligent, thoughtful people who loved their families and believed that someone else – someone as capable of evil as the Nazi racists – would make the terrible Doomsday atomic bombs first. And if they did, they would use them on "us", which at the time might have meant London.

Nuclear weapons were born out of fear, mixed in with the heady excitement of pushing new frontiers of scientific discovery. They were used in August 1945, however, not because of fear, but because of politics: the first weapons of a new Cold War with our World War II ally, the Soviet Union. Germany was defeated, Japan was on its knees and had no weapons that could threaten the United States. In bombing Hiroshima and Nagasaki, the United States achieved two objectives: testing and warning. By testing both their plutonium and uranium designs (Fat Man and Little Boy) on inhabited cities in two different kinds of terrain, they were able to gather far more significant data about these terrible new weapons than they could from the Trinity bomb test in the New Mexico Desert. Most importantly, the bombs sent "Don't mess with us" messages to the Soviet leadership, while also ensuring that the Japanese surrender was finalised before Russia could invade from the North. Perhaps, to give President Truman the benefit of the doubt, they were a deterrent shot across Stalin's bow, meant to prevent World War III before it could start.

After 1945, why were nuclear weapons kept? Hubris and the belief that the brilliant maths and physics that came together at Los Alamos could not be replicated by Communist scientists? The first UN General Assembly resolution and the detailed Baruch Plan offered the United States a way to put the atomic genie back in its bottle. But Cold War rivalries, suspicions and hostility were already taking root. In 1949, a mere four years later, the Soviet Union had mastered enough of the technology to test an atomic bomb. Thermonuclear designs took the destructive yield from a few thousand tons of TNT equivalent to massive Megaton bombs, as Soviet and American mushroom clouds turned the Nuclear Age into a Nuclear Arms Race. Britain exploded its first nuclear test on October 3rd 1952, not at home in our green and pleasant land. Still behaving like arrogant colonialists, the UK sent an atomic column of fire spiralling above Monte Bello Island, Australia. The French followed, conducting

their first tests in the Algerian sands before being evicted. From then on, France's nuclear bomb tests took place above, below and inside a couple of fragile coral atolls in the South Pacific. By the time China joined the nuclear club in 1964, the Cuban Missile Crisis had given the world a glimpse of the nuclear abyss when deterrence calculations and the psycho-political poker of Cold War relations went badly wrong. Trying to close the stable door before more horses bolted, the United States, Soviet Union and Britain picked up on Irish and Swedish initiatives for a treaty to halt the spread of nuclear weapons, and on July 1 1968 the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) was signed in London, Moscow and Washington.

Did nuclear weapons work? Technically yes, as demonstrated on Hiroshima and Nagasaki and by over 2,000 nuclear tests. Politically, to some extent, as nuclear weapons came to be associated with great power status: the P-5 permanent members of the UN Security Council were the first five to acquire nuclear arsenals. What about security and defence – the sales pitch used by governments to justify the financial, human and environmental costs. Did nuclear weapons keep us safe?

We can't ever know for certain what role, if any, nuclear weapons played in security during the cold war. Their contribution to insecurity was evidenced in near-misses, accidents and the nightmares of admirals, government ministers and children practising nuclear drills under their little desks. It is also true that nuclear armaments haven't prevented nuclear-armed nations losing wars, from the US in Viet Nam to the Soviet Union in Afghanistan; or being embroiled in other kinds of bitter conflicts, chosen or unchosen: Britain over the Falklands/Malvinas; Israel from the Yom Kippur War onwards; terrorist attacks on the Pentagon and World Trade Centers, and the recent wars in Afghanistan and Iraq. A few years before former US Defense Secretary Robert McNamara

died I asked him if nuclear weapons had kept the peace. Obviously not for most of the world, he replied, but that's the wrong question: ask me if they deterred the Soviets. And when I asked him that question he gave his clear "no", explaining that to claim a deterrent effect there has to be an intent to attack that is deterred. Soviet files released at the end of the Cold War bore out what McNamara had long suspected: Russia's nuclear arms build-up was mainly driven by fear that if they didn't match the United States missile for missile, range for range, they would be vulnerable to US attack.

Moscow had neither the desire nor the intent to invade Europe or threaten the United States, though the Soviet leadership was determined to maintain its sphere of influence over Eastern Europe, not least as a buffer against future invasion. From their perspective, it's been the West that since 1945 has shown the greatest tendency to take military action against less-armed countries than their own, and who are less likely to risk military action if we think the other side could hurt us back. From that perspective, many Russians believe that Soviet nuclear weapons deterred the US and NATO. Pointing to the fact that from 1945 to 1991 there was no major war in Europe does not constitute evidence that nuclear weapons deterred either side from attacking the other. As any statistician will confirm, a correlation does not necessarily denote a causal relationship. What about the European Union, NATO (as alliance rather than a function of any particular weapon that was deployed), growing prosperity and the diffusion East and West of the images and ideas of peace and democracy movements through pop, television and protest? While academics constructed complex game theories to try to explain nuclear deterrence, two generations of children grew up with nuclear war nightmares, and nuclear-armed economies were distorted to pay for an uncontrollable arms race. That changed when the Soviet Union disintegrated in 1989-91. The cost of maintaining the nuclear arms race undoubtedly contributed to the end of the Cold War, but anyone who thinks

that the "very survival of the state" justifies the use of nuclear weapons needs to reflect that in the late 1980s President Gorbachev and the rest of the Soviet leadership were more willing to let their Empire break apart than to risk a major war, nuclear or otherwise. At a meeting in London some years ago, President Gorbachev credited the Greenham Women and European peace movements with giving him a measure of confidence to accept the zero option in Reykjavik and propose fundamental nuclear disarmament; in taking that risk in 1986 he partly relied on the belief and analysis that European and US citizens would not let the Reagan administration renege on the commitments or seize on any perceived vulnerability.

Twenty years after the Cold War ended and 65 years after the first UN General Assembly resolution called for "the elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction", what can we say about nuclear weapons now?

Today there are still over 20,000 nuclear weapons and 9 nuclear-armed states, whose nuclear weapons production facilities and laboratories continue to refine and modernise nuclear weapons, despite the NPT, despite the Comprehensive Test Ban Treaty (CTBT), and despite chronic levels of poverty and deprivation among their own people. To persuade two-thirds of the Senate to support ratification of the New-START Treaty last year, the Obama Administration felt that it had to commit $85 billion extra dollars for the nuclear labs, giving them a boost far greater than anything they got from President Bush. Nuclear energy programmes are spreading around the world – though it remains to be seen if the so-called 'nuclear renaissance' is affected by the Fukushima disaster as happened after Chernobyl, 25 years ago. Yet despite promoting nuclear power, there is a suspicion difficult to allay that behind every national uranium

enrichment or reprocessing programme lies the (usually denied) option or intent to possess nuclear weapons.

If we cannot say for sure if nuclear weapons played a useful role in deterrence and security for the 45 Cold War years, we *can* calculate with a high degree of certainty that they cannot do that job now. In their first *Wall Street Journal* op-ed in January 2007, George Shultz, Henry Kissinger, William Perry and Sam Nunn argued that reliance on nuclear weapons for deterrence was "becoming increasingly hazardous and decreasingly effective". Twenty years on from the Reykjavik summit, they advocated that the goal of a world free of nuclear weapons shared by Presidents Reagan and Gorbachev in 1986 needed to be re-established and action "energetically taken" on "a series of agreed and urgent steps that would lay the groundwork for a world free of the nuclear threat". In Prague in April 2009, President Obama warned, "if we believe that the spread of nuclear weapons is inevitable, then we are admitting to ourselves that the use of nuclear weapons is inevitable." Obama's response, ringingly endorsed by many other leaders and in UN resolutions and editorials round the world was "to seek the peace and security of a world without nuclear weapons."

For the most part, such sentiments are sincere. Nuclear weapons have lost much of their cachet. They can't deter terrorists or desperate leaders prepared to risk national destruction. And despite their attraction for weak leaders, nuclear weapons are no longer the magical power projector of yesteryear. Non-nuclear-weapon states Brazil and Germany, for example, are more influential powers where it matters than France or Britain. China's nuclear status has been completely irrelevant to that emerging superpower's rise and rise. The high cost of keeping up with the US-driven arms race undoubtedly contributed to the Soviet Union's demise rather than its security. Military leaders in many of the

nuclear-armed countries are sceptical about the utility, role and usefulness of nuclear armaments, but too many politicians are still bedazzled.

Despite having lost much of their political and military utility in the eyes of much of the world, nuclear weapons still appear to be objects of desire and value to some, particularly weak leaders or those seeking to punch above their economic or political weight. Russia is happy to engage with the US in complicated arms control negotiations, because this reinforces Moscow's illusion that it is still Washington's indispensable partner. Britain and France are washed up ex-colonisers who can no longer afford their nuclear modernisation programmes, but are afraid that without nuclear weapons they will cease to be of any real importance in the changing world. So these long-time European rivals are now clinging together, hoping that the Teutates Treaty will enable them to hold on to their nuclear weapons. They would be better advised to reinvent themselves as sophisticated industrial innovators in new technologies to deal with our changing planet, environmentally and politically, and think through how to avoid and/or manage the new century's security threats and challenges. Instead their desperation to retain nuclear power status no matter what seems on a par with the fears and ambitions that drive the weapons programmes of Pakistan and North Korea (and Iran). India, like Brazil and China, would be a modern power with or without its 1998 nuclear tests and subsequent arsenal.

Having recognised the necessity of pursuing the goal of nuclear abolition, Barack Obama – like Ronald Reagan -- backed away from prioritising the task, adding the caveat "perhaps not in my lifetime". Who put that into the speech, and for whom? Obama's political instincts in committing to the "peace and security of a world free of nuclear weapons" were sound in terms of US and global security: the caveat betrayed the commitment, paving the way for arms

control as business as usual. In the cold war, the nuclear policy elites – as with many professions -- constantly reinforced themselves with rituals, secrets and a passed-on approach with its self-fulfilling assumptions and theories and obfuscating linguistic and mystical codes. Obama is surrounded by securicrats whose lives were spent working the cold war arms control and nonproliferation desks, steeped in the technical minutiae and geared towards worst case scenarios that threw up difficulties and obstacles based on the assumption that everyone would have and use nuclear weapons if they were able to do so. Almost every step forward in terms of reductions or treaties had be offset with a compensatory reassurance for 'strategic stability' or to 'maintain the nuclear infrastructure'. For every treaty ratification billions of dollars have had to be poured into the nuclear laboratories. That's how arms control has worked in the past. But it isn't the way to achieve disarmament.

The slides near the end of the powerpoint derive from discussions with Patricia and others about the differences between the traditional approach and assumptions of arms control and humanitarian-centred processes to prohibit and abolish certain kinds of weapons. The key to achieving nuclear abolition in our lifetimes is to devalue and delegitimise the nuclear weapons – to make them pariah as biological and chemical weapons have been made pariah. That doesn't solve all the technical and political problems, but once nuclear weapons have lost their value for civilised nations the nuclear-armed states (which should perhaps be renamed the nuclear-problem states) can cooperate and put their best brains together to try and sort out the safest, least dangerous ways of getting rid of current arsenals, preventing new ones arising, and dealing with the nuclear legacy. There are important lessons to be learned from the prohibition of chemical weapons. Once nuclear weapons are rendered politically, legally and morally unusable, governments and scientists will vie with each other to solve the technical, verification and security challenges of disarmament. The legal and

treaty regime needs to be constructed to deny any hold-outs or cheats any of the political or security benefits that are currently attributed to these weapons. Unlike other treaties, there could be no legal withdrawal provision, and once the treaty is in force it has to apply to non-state actors as well as states: anyone who seeks to acquire, modernise or retain nuclear weapons in violation of the objectives and provisions of a nuclear abolition treaty would be met with the full force of national and international law, with heavy, lifelong penalties if found guilty.

Nuclear abolition is possible in my lifetime, and I'm older than President Obama. But it will take determined political will to overcome the hurdles thrown up by those who keep saying it can't be done. The Manhattan Project solved the scientific and technical challenges of making atomic weapons so quickly because the urgency of not letting the Nazis get there first resulted in high level government commitment and resources, bringing together the best nuclear physicists, chemists and technicians of their generation. If, instead of coming together with the belief that they *must* find a way to make an atomic bomb before Hitler, the Manhattan scientists and their political and military backers had limited their horizons like today's arms controllers and if they had had to justify every small forward to politicians and laboratory overseers with rival and contradictory commercial and political objectives, it is doubtful they would have produced anything in four years.

The problems of nuclear disarmament should be neither underestimated nor exaggerated. To overcome the vested interests in nuclear proliferation as usual (vertical as well as horizontal), getting rid of nuclear weapons and dangers may take an international crucible no less determined and courageous than those that conceived, resourced and put their best brains and skills into making the first nuclear weapons, 65 years ago. For our human security, nuclear weapons ought

now to be retired. If this security objective is given a sense of urgency, determined commitment and the best efforts of scientists, politicians, civil society pressure and diplomatic skills, then the first step is to take all nuclear weapons off alert and out of deployment. This would provide the 'prenegotiations pause' equivalent to the nuclear test moratoria, allowing a multilateral treaty process to be undertaken to work out the necessary legal, technical, security and verification requirements. With this, the basic transformation to achieve nuclear abolition will be achieved quickly. Dealing with the nuclear legacy of the past 65 years, as the Onkalo builders recognise, will take a lot longer. But the longer we delay, the worse the legacy problems will become, so we must not accept that as an excuse for failing to undertake the challenges of nuclear abolition now.

Dr Rebecca E. Johnson is the founder-director of the Acronym Institute for Disarmament Diplomacy, and has analysed international security and multilateral diplomacy from the 1980s to the present. With a background in physics and then international relations, she holds a PhD in multilateral diplomacy from the University of London School of Economics (LSE) and is currently Vice Chair of the International Campaign to Abolish Nuclear Weapons (ICAN) and a member of the International Panel on Fissile Materials (IPFM), as well as participating in various other organisations. Her book on civil society and government strategies to achieve the CTBT, titled *Unfinished Business,* was published in May 2009 by UNIDIR. She is also co-editor of *Trident and International Law,* published in February 2011 (Luath Press).