

Life, the Universe and (Avoiding) the End of Everything: Why is nuclear apocalypse *still* on the agenda?

John Hallam

(johnhallam2001@yahoo.com.au
foesyd4@ihug.com.au)

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Author: John Hallam

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A Note on the Author

John Hallam was born in the UK in 1953, educated in Perth and holds a BA in History and Philosophy. He worked on the nuclear fuel cycle and nuclear power issues with Friends of the Earth from 1977-1999, and is now with People for Nuclear Disarmament Nuclear Flashpoints Project in Sydney.

He originated the texts of over 20 resolutions on nuclear disarmament in the Australian Senate from 1998-2008, plus resolutions on India-Pakistan nuclear testing in 1998 and 2003 in the UK and Brazilian parliaments. In 1999 he worked on a global campaign to lower the operating status of nuclear weapons over the Y2K rollover, resulting in: resolutions in the Australian Senate; a unanimous resolution in the European Parliament, and a letter signed by over 600 NGOs and parliamentarians to presidents Yeltsin and Clinton.

In 2004/5, together with Doug Mattern of the Association of World Citizens, he put together an appeal on nuclear weapons operating status that was signed by 44 Nobel Prize winners and endorsed by the European Parliament and led to the adoption of resolutions in the General Assembly in 2007 and 2008.

John has written widely supported letters signed by hundreds of organisations and parliamentarians on nuclear weapons policy to the Indian government, notably in 2003 when nuclear war with Pakistan was a real possibility. This letter resulted in wide media coverage and an 'early day motion' in the UK parliament calling for a peaceful resolution of the Indo-Pak conflict that became the most widely supported EDM ever.

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First, let's have a cheery look at the End of the World.

Just why is it still even worth talking about? What 'End of the World'? Didn't all that nightmare disappear for good at the end of the 1980's?

Nuclear weapons are still, and have been ever since their large-scale deployments in the 1960's, about the end of pretty much everyone and everything, or at least of all that we, as distinct from an anaerobic bacterium, might consider to be useful, interesting, and valuable.

The end not only of civilisation but of humans, as well as many other complex land-based living things, which in 1982 was a shocking seemingly new possibility when Jonathan Schell wrote his classic *The Fate of the Earth*, is – astonishingly, bizarrely – still on the agenda, as the US and Russia continue to maintain thousands of warheads on high alert status. As the 2010 NPR (the US Nuclear Posture Review) acknowledges squarely, the two ex-superpowers have declined to lower their level of nuclear operational readiness¹, and progress toward the elimination of these instruments of global omnicide remains glacial.

Nuclear weapons are not *literally* about the 'end of the world' as, after their use, the world – this planet that is – will still *be* here and rotating on its axis, notwithstanding some Hollywood disaster movies and the end of the Mayan calendar next year, which may signify the end of an aeon or maybe nothing at all. Even the solar coronal mass ejections predicted for 2012 will at worst (hopefully anyway) destroy no more than all global telecommunication and the internet –or perhaps (with luck) only the global financial system.

The same result could be achieved by half a dozen or so megaton-sized nuclear weapons exploding in outer space. The electromagnetic pulse (EMP), just like a coronal mass ejection, would destroy satellite-based communication systems and black out electrical systems on earth (EMP apparently affects not only delicate electronics but right up to high-tension switchyards), taking us back to a pre-electrical age.

This is still a great deal less than the end of everything, and some might even find the change attractive. (Though I have become addicted to the net, and, if we reverted to medieval conditions, would miss it.)

¹ Department of Defense, *US Nuclear Posture Review Report*, April 2010, p25

The mere replacement, at least for a few centuries, of technological civilisation by pre-1850 conditions, while it would ruin lives and would be the end of *some* people's world, still does not –quite – qualify for 'the end of the world', though it does qualify as much more than a minor apocalypse. However the explosion of a dozen or so nuclear weapons in space would be almost certainly the mere opening salvo in a far more comprehensive and real apocalypse, which remains to this day squarely *on* the global agenda.

The awareness of this apocalypse has diminished since 1990, but the apocalypse potential itself remains, with an occasional timely report such as that of the ICNND (International Commission on Nuclear Nonproliferation and Disarmament) last year to bring it once more to our attention until we turn to more important things such as the sex – lives of footballers.

The ICNND observes that: "The problem of nuclear weapons is at least equal to that of climate change in terms of gravity – and much more immediate in its potential impact."²

Jonathan Schell notes that nuclear weapons have been associated with the 'end of the world', or at least with some kind of 'apocalypse', for many decades. Writing back in 1983, he said that:

"The widespread belief that a nuclear holocaust would in some sense bring about the end of the world has been reflected in the pronouncements of both American and Soviet leaders in the years since the invention of nuclear weapons."³

And:

"The destruction of human civilisation, even without the biological destruction of the human species, may perhaps rightly be called the end of the world, since it would be the end of that sum of cultural achievements and human relationships which constitutes what many people mean when they speak of 'the world'. The biological destruction of mankind would of course be the end of the world in a stricter sense."⁴

Schell concludes: "As for the destruction of all life on the planet, it would be not merely a human but a planetary end--the death of the earth"⁵

² *Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers*, International Commission on Nuclear Non-proliferation and Disarmament Report, Canberra/Tokyo, November 2009, Synopsis, xvii

³ Jonathan Schell, *The Fate of the Earth*, Picador, 1982, p6

⁴ *Ibid*, pp6-7

⁵ *Ibid*, p7

However, I am forced to say that my good friend and colleague Steven Starr of the University of Missouri and PSR (Physicians for Social Responsibility) hauled me over the coals some years ago for talk about 'the end of life' in an e-mail which I can reproduce only from fallible memory, thus:

“John, don't talk about the end of all life. It is complex life forms at the top of the food chain which are at risk, including most humans and large animals. Simpler forms of life will likely survive.”

I stand corrected.⁶

It has long been recognised that the large-scale use of nuclear weapons (ie, more than 1000 warheads of 200Kiloton-1Megaton size) for their default function of 'city - busting' would:

- 1) Kill, in 40-90 minutes, between 1 and 3-4 billion people;
- 2) Rapidly convert most large cities, most of them in the Northern Hemisphere, into firestorms that would burn until nothing is left to burn (from whence comes the above body - count);
- 3) Loft roughly 180 million tonnes of very black, sunlight-absorbing soot into the stratosphere, where it is likely to stay for a decade. A stable stratospheric smoke layer would form and heat the upper atmosphere but block warming sunlight from reaching the earth.⁷

The black soot would severely drop global temperatures both in northern and (according to some estimates) in tropical and subtropical regions, the extent of the effect being most marked in the north and gradually dropping in the southern hemisphere. Loss of warming sunlight at the surface of the earth would produce ice-age temperatures within a matter of days. Minimum daily temperatures in the heartlands of North America and Eurasia would fall below freezing for one to three years. Growing seasons would be eliminated for a decade or longer. Almost all food production would cease and most humans would perish from nuclear famine.⁸

Brian Toon of Rutgers University has suggested to me that land areas in the Southern Hemisphere would be affected as much as those in the north, and that the main issue in

⁶ Steven's website is at www.nucleardarkness.org

⁷ For extensive discussion of nuclear winter see Carl Sagan and Richard Turco, *A Path Where No Man Thought: Nuclear Winter and the End of the Arms Race*, Random House, 1990—especially the opening illustration of a burning city.

⁸ Starr, www.nucleardarkness.org

equatorial regions would be a drastic drop in precipitation rather than temperature.⁹ Toon nonetheless believes that the best place to be (there really is no 'best' place) might be in the tropics near the sea. My own gut feeling is that sea is good, but that somewhere the local ecology is used to being snap-frozen might be advantageous. In addition, massive destruction of the ozone layer would take place even in the case of a regional (eg, India-Pakistan) war involving perhaps either 100 x 15 or 50 x 40 Kiloton weapons.

Toon and Alan Robock, also of Rutgers University, as well as Steven Starr, have written extensively about this, with the latest computer simulations, based on the most recent NASA climatic models, being done by the former two in 2006, showing that a possibly accidental use of 2000 warheads by the US and Russia would lead to catastrophic global climatic effects that could last for decades. These scientists have predicted that the detonation of 4000 x 100 kiloton weapons would loft up to 180 million tonnes of smoke into the stratosphere, and that even a 'successful' nuclear first strike would be suicidal for the attacking nation because of the resulting environmental and climatic consequences.

This research has been published in peer-reviewed journals but has attracted miniscule attention, given the momentous, though hardly unprecedented, nature of the conclusions, essentially a re-run and update of the old nuclear winter thesis of the 1980s, which we now see was practically right, even a touch optimistic.¹⁰

Toon and Robock summarise the more recent work thus on their website:

"Nuclear winter is a term that describes the climatic effects of nuclear war. In the 1980's, work conducted jointly by Western and Soviet scientists showed that for a full-scale nuclear war between the United States and the Soviet Union the climatic consequences, and indirect effects of the collapse of society, would be so severe that the ensuing nuclear winter would produce famine for billions of people far from the target zones. This realisation led to the end of the arms race and the end of the Cold War. Since that time, the number of nuclear weapons in the world has now decreased to 1/3 of the peak number of more than 70,000 in the 1980's, and is planned to be only 6% of that level by 2012.

⁹ Brian Toon, Pers. Comm. (on this paper), 22 July 2010

¹⁰ See 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 – Atmospheres*, Vol. 112, No. D13, 2007

There are several wrong impressions that people have about nuclear winter. One is that there was a flaw in the theory – that the large climatic effects were disproved. Another is that the problem, even if it existed, has been solved by the end of the nuclear arms race. But these are both wrong.

What's New

Based on new work published in 2007 and 2008 by some of the pioneers of nuclear winter research, we now can say several new things about this topic.

- Nuclear arsenals with 50 nuclear weapons, such as currently possessed by India and Pakistan and three other nations, threaten more fatalities than in previous wars to any nation attacked. With global delivery systems any such nation is as dangerous as any of the superpowers.
- A nuclear war between any two countries using 50 Hiroshima-sized atom bombs, such as India and Pakistan, could produce climate change unprecedented in recorded human history. This is less than 0.05% of the explosive power of the current global arsenal.
- Nuclear arsenals with 50 nuclear weapons can produce a global pall of smoke leading to global ozone depletion. The smoke, once in the stratosphere, heats the air, which speeds up reactions that destroy ozone, and also lofts reactive chemicals by altering the winds.
- A nuclear war between the United States and Russia today, or even after reductions planned for 2012...could produce nuclear winter, with temperatures plunging below freezing in the summer in major agricultural regions, threatening the food supply for most of the planet.
- The climatic effects of the smoke from burning cities and industrial areas would last for several years, much longer than we previously thought. New climate model simulations, which have the capability of including the entire atmosphere and oceans, show that the smoke would be lofted by solar heating to the upper stratosphere, where it would remain for years.

- The spread of nuclear weapons to newly emerging states threatens not only the people of those countries, but the entire planet.”¹¹

Even a 'mini' nuclear war, say between India and Pakistan, involving a 'mere' 100-150 15-40 kiloton weapons on each side, 0.3% of global nuclear arsenals and 0.03% of megatonnage, would, according to a recent article in *Scientific American* by Toon and Robock and studies by Ira Helfand of IPPNW (International Physicians for the Prevention of Nuclear War):

- Cause the complete destruction of both India and Pakistan as functioning societies;
- Bring about either 50 million ‘prompt’ casualties (according to Toon and Robock) or even up to 300 million such casualties (according to a number of other estimates using more pessimistic assumptions– and more than 50 weapons) depending exactly which horrible scenario you decide to model;
- Cause global climate change capable of killing up to a further one billion people.¹²

A major US-Russian nuclear exchange of the kind that could have resulted between a dozen and half a dozen times—from miscalculation, computer error and/or blind panic- - the ultimate 'bad-hair-day', as it were, at STRATCOM (US Strategic Command) HQ in Omaha, or at the Russian Strategic Rocket Forces alternate command post under Kosvinsky Mountain (or Rock) in the Urals. Such an exchange would certainly terminate what we call civilisation, and would indeed bring our survival as a species in question. And though I say ‘half a dozen to a dozen times’ an actual nuclear exchange on this scale can of course only happen once. There are no second chances.

In addition, the abrupt drop in temperatures resulting from such a large-scale exchange would destroy tropical ecosystems completely, together with 95% of all land-based living species in a manner similar to the impact of a largish asteroid. (There is a figure in a 1985 report by the then Soviet Academy of Sciences, complete with cover illustration by

¹¹ Toon and Robock, Summary of Work, Rutgers University, 2008, <http://climate.envsci.rutgers.edu/nuclear>

¹² See Ira Helfand, *An Assessment of the Extent of Projected Global Famine Resulting from Limited Regional Nuclear War*, Royal Society of Medicine, 2007; Toon and Robock, ‘Local Nuclear War: Global Suffering’, *Scientific American*, January 2010; Toon and Robock, ‘Climatic Effects of Nuclear Conflict’, <http://climate.envsci.rutgers.edu/nuclear>; ‘The Consequences of Nuclear Conflict between India and Pakistan’, Natural Resources Defense Council (NRDC), 2003

Albrecht Durer, of the Four Horsepersons of the Apocalypse which appears to show below-zero temperatures at the equator 90 days after a large nuclear exchange).¹³

To get a feel for this kind of event, see 'The Road' or 'The Testament of Eli', two somewhat realistic post - apocalypse movies, noting that what makes movies such as this interesting – the continued survival of at least some humans – is not to be taken as a given. And without humans there is, of course, no movie.

Schell notes that:

“Up to now, every risk has been contained within the frame of life: Extinction would shatter the frame. It represents not the defeat of some (particular) purpose, but an abyss in which all human purposes would be drowned for all time”¹⁴

To put things in proper perspective there is the article in the October 2008 *Bulletin of the Atomic Scientists* whose title says it all, really: 'How can we reduce the risk of human extinction?'. After noting that humans will anyway be lucky to survive beyond a million or so years, the article gives us a rather important 'to do' list for maximising our chances in the next century or so. Apart from urging us to keep watching briefs on large incoming asteroids; on experiments at LHC (the Large Hadron Collider) that might possibly cause the entire solar system to disappear in a flash of gamma rays and exotic particles; on nanotechnology, especially self-replicating 'grey goo'; on biotechnology– and of course on climate change, this article places at the very top of its 'to do' list the lowering of the operational status of nuclear weapons systems (number one) and the elimination of nuclear weapons (number two).¹⁵

UN and NPT Alphabet Soup

I've done the really cheery and mentally arresting bits, so now for a mind-glazing leap into alphabet soup, most of it UN-derived. Attention to this may be what gets humans off the nuclear hook, at least for the moment. The efforts of governments and NGOs worldwide

¹³ *The Night After*, Mir Publishers, 1985, Fig 16 on p70; Steven Starr, 'Catastrophic Consequences of Nuclear Conflict,' INESAP, April 2008, and 'Deadly Climate Change From Nuclear War: A threat to human existence', <http://ru.nucleardarkness.org>

¹⁴ Schell, *The Fate of the Earth*, p95

¹⁵ Anders Sandberg, Jason G. Matheny, and Milan M. Cirkovic, 'How can we reduce the risk of human extinction?' *Bulletin of the Atomic Scientists*, 9 September 2008

through the UN and the Nuclear Non Proliferation Treaty (NPT) framework to maximise the chances of human survival seem inevitably to spawn more and more arcane acronyms. Yet success in this arena of *acronymia* (Peter King's coinage) could achieve vital human survival-related goals.

We've just had a series of high - level meetings on nuclear weapons, and of these the most consequential, surely, has been the NPT Review Conference of May 2010 which this author attended for week two of its four weeks, holding a workshop at the UN on operating status of nuclear weapon systems on 13 May which was addressed by the New Zealand and Swiss Ambassadors, Commander Robert Green (RN, ret'd), Nancy Gallagher of the University of Michigan and Steven Starr of PSR (Physicians for Social Responsibility) as well as myself

Way back around 1996, an NGO representative asked by media during an important nuclear weapons negotiation at the UN 'how it felt to be making history' gave a classic 'Schellian' reply: 'I am not making history. I am making history possible'.¹⁶ This quote, even if it were to prove apocryphal (and I am not clever enough to have made it up) shows beautifully what is at stake. Working for specific goals is making history. Making history possible is what makes the pursuit of any and every goal not only meaningful but *possible*. People who no longer exist cannot pursue any goals at all.

The stakes for which nuclear weapons are rightly objects of concern truly can't get any higher. While largely forgotten by the wider public since 1990, this has not been true of governments, and receives regular, if ritualistic, repetition at nuclear weapons-related conferences. At one point in the proceedings of the 2010 NPT Review Conference, I realised that in the space of about 15 minutes I'd heard three governments say that, in one way or another, the fate of humans depended on the elimination of nuclear weapons, or that they are the number one short term threat to civilisation and survival. Such statements have become routine.¹⁷

¹⁶ I first saw this brilliant comment in an email from a UN negotiation on the Abolition 2000 list back in 1996, when the CTBT (Comprehensive Test Ban Treaty) was being negotiated. I cannot remember who actually said it.

¹⁷ See the Reaching Critical Will website (www.reachingcriticalwill.org) for all statements made by governments during the 2010 NPT Review Conference. Statements that either civilisation or human survival are threatened in some immediate sense by nuclear weapons are common especially amongst members of the NAM (Non-Aligned Movement) Group, and are made regularly by a number of governments. The arcane goings on at UN conferences are regularly ignored by mainstream media, especially when they involve such unimportant matters as the continuance of civilisation and the species.

The Final Declaration of the NPT 2010 Review Conference registered its concern – that is, the concern of every government in the world with the exceptions of India, Israel, Pakistan and the Democratic People’s Republic of Korea – thus:

“80. The Conference, while welcoming achievements in bilateral and unilateral reductions by some nuclear-weapon States, notes with concern that the total estimated number of nuclear weapons deployed and stockpiled still amounts to several (sic) thousands. 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.”¹⁸

This Declaration was, in the words of George Perkovitch and Deepti Choubey, 'An incremental success'. Some early comments by ICAN (the International Campaign Against Nuclear Weapons) and others including myself were much more critical. On reflection I don't think this was warranted.¹⁹ (I particularly reject the view that the 2010 Final Declaration does not advance *at all* from the year 2000 final dec and is merely 'treading water'. This really is unfair and also unhelpful by failing to register progress in an area in which the stakes are as high as they could possibly be.)

I note that in fact my 'Slightly Heretical' evaluation of the 2010 NPT Review Conference seems to be not far out of line with the bulk of comment made once the diplomatic dust had, as it were, settled in New York.²⁰ In a (mild) defence of the 2010 NPT Review Conference Final Declaration I would point to:

¹⁸ NPT/CONF.2010/50 (Vol. I) Final Document of the 2010 NPT Review Conference, p18. The nuclear weapons states tried hard to remove this language from the final declaration, ,but it is still there (ie, they failed). A massive diplomatic effort by, amongst many other governments, the Swiss, is partly responsible. Dr Schoenberger of the Swiss Delegation deserves full credit.

¹⁹ There is little daylight after all between reports on the NPT Revcon put together by myself, Deepti Choubey, George Perkovitch, Rebecca Johnston and Susi Snyder. There was much disappointment, I think, once the final declaration hit the deck, because so many of the early drafts had benchmarks, timings, etc – all of which disappeared from the final version. And it is even more unfortunate that much of the final version is a hymn of praise to nuclear *power*, a fact which badly mars an otherwise very useful document.

²⁰ See my 'A Slightly Heretical Report On the NPT Review Conference', www.pndnsw.org.au. See also other comment by ICAN (International Campaign Against Nuclear Weapons), the ACF (Australian Conservation Foundation) and PND (People for Nuclear Disarmament) on their websites.

- The language already quoted on the catastrophic humanitarian consequences of nuclear weapons use. This language goes far toward de-legitimising the possession of nuclear weapons. The nuclear weapons states tried hard to remove it but failed.
- There is much more detailed language than in the Year 2000 final declaration, on operational status/operational readiness, albeit watered down (partly at the behest of Russia) from earlier drafts.
- There are two clear mentions of a Nuclear Weapons Convention, both on its own and as an 'interlocking framework of agreements', and as part of UN Secretary General Ban Ki Moon's Five Point Plan on nuclear disarmament.
- There is a much clearer, less ambiguous commitment to going to global nuclear zero than in the Year 2000 Final Declaration – in spite of watering-down from earlier drafts.

These are all significant advances on the Year 2000 Final Declaration and the Thirteen Points adopted that year. Rebecca Johnson evaluates the May 2010 NPT Review Conference thus:

“That any substantive agreements were adopted at all is no small victory. The last successful review conference was in 2000. Taking place two years after the nuclear tests conducted by India and Pakistan shocked the nonproliferation regime, the 2000 NPT Review Conference agreed on a final document that contained a 13-paragraph program of action on nuclear disarmament—the result of tough negotiations between the permanent five (P-5) nuclear weapon states and the New Agenda Coalition (NAC), which included Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa, and Sweden. Five years later, in an adversarial political environment compounded by the Bush administration's rejection of previous U.S. commitments, including the Comprehensive Test Ban Treaty (CTBT) and the “13 Steps” agreed by NPT governments in 2000, the 2005 NPT Review Conference was an abject failure, with no agreements on implementing the treaty more effectively.

Much was therefore riding on the 2010 NPT Review Conference.

Almost all of the 190 NPT parties wanted this conference to be a success, but the debates demonstrated deep differences in their views about what is required to prevent the spread and use of nuclear weapons and carry forward an effective non-proliferation regime for the future.”²¹

²¹ Rebecca Johnson, 'Assessing the 2010 NPT Review Conference', *Bulletin of the Atomic Scientists*, July/August 2010, p18

My own assessment of the Review Conference, based on having attended one week of its four weeks as well as previous such conferences, was that:

“The final declaration is not a backward step, not a regression, but a modest (some will say a too modest) step in a vaguely positive direction.As the Nigerian Ambassador said to me: 'It's half a loaf of bread. We'd prefer the full loaf but it's not starvation.' ”²²

And:

“Many commentators have been highly critical of the adequacy of the document that was finally adopted. Those who criticise it most strongly from the disarmament side should perhaps, see what is being said about it from the side of the neocons. One gains a slightly different perspective by seeing how it is regarded (very unfavourably) by the Heritage Foundation and by Dr Chris Ford, former Bush administration disarmament ambassador, who both damn it as somehow hazardous to US security interests and who excoriate its mention of a nuclear weapons convention. Both also critique its 'unbalanced overemphasis' on disarmament as against nonproliferation. One could make the perverse case that if the Right finds so much wrong with it there must be something right with it!”

And further:

“Unobservant people such as myself, who may at times miss the subtler nuances, might conclude that it does indeed support in some less definite way, both a nuclear weapons convention and the five-point plan. If an unsubtle observer such as myself can conclude after five or six readings of the final dec that it does indeed look quite kindly on a nuclear weapons convention and the Five Point Plan, what are we to assume of foreign ministers who may not have time to read it at all, or advisers who skim it?”²³

To be sure, many of the action points of the original action plan emanating from the subsidiary bodies of the NPT Review Conference have been in various ways toned down, made 'aspirational' or in some cases deleted or gutted. Often points for concrete action are changed to 'discuss'. Sentences that ask for action to be taken are even rewritten to make it seem at first glance as if the action has already been taken and is being welcomed.²⁴

²² See Hallam, 'A Slightly Heretical Report'; Personal email from Ambassador Lawrence Olufemi Obisakin after the 2010 NPT Review Conference.

²³ Hallam, *ibid*

²⁴ See also the Reaching Critical Will website www.reachingcriticalwill.org, for complete documentation of the revcon, and the Acronym website blog, as well as the UN website for the final declaration.

So...After the modest progress of the NPT Review Conference are we teetering on the brink of a terrible abyss, or sensibly pulling back from it? Who is closest to the crumbling edge? It would seem that the 2010 NPT Review Conference may have gone some way to pull us back.

Unfortunately, here we come across the “activists’ dilemma” which I believe bedevils the nuclear weapons issue in particular. It is this: As long as it looks as if the world really truly might end next Thursday or maybe at best the week after, hundreds of thousands of people will take time out of their lives to march, write letters, lobby and speak out, as they did in the 1980’s when we believed just exactly that.

Once we step back just a millimetre from the brink, as we did about 1990, we stop marching, and nukes are replaced as a ‘hot’ item by a ‘twin’ apocalypse, climate change. Yet the missiles remain, primed to fly and on high alert. The ‘40 minute’ apocalypse is still there and men (and women) in silos and command bunkers rehearse for it every day.

Modest success becomes our enemy and demobilises us. At the same time ,however, if we do *not* experience success we also become demoralised and conclude that nothing works, and that we may as well either jump off the Sydney Harbour bridge or eat, drink and be merry for tomorrow we (may– or may not) die.

Short term desire for a strong or growing nuclear disarmament movement would bid me say that we are as much on the brink as ever. But in the long term, that too would not work. The reality is that, while there has been some modest progress and recent developments are cautiously positive, our successes are hard-won and fragile, and much, much more remains to be done – which if not done may slide us back toward the brink.

So I do *not* want to say ‘Now you can relax’. Nuclear disarmament is an unfinished task and the ‘apocalypse’ is still very much on the agenda. Yet neither do I wish to say that nothing works or that we have not experienced any successes – we have, and those successes are perhaps the very reason we are still here, and must be acknowledged and celebrated. And built on.

There are currently still some 23,000 nuclear warheads, tactical and strategic, in the world, of which 95% are still in the hands of Russia and the US. This is significantly less than the once hyper-insane figure of around 75,000 warheads some 30 years ago. But it is still a lot more than are needed to bring about the ‘end of the world’ in an all too meaningful way.

So who has what?

It is well to note that as of now, Iran still currently has *no* warheads (and says it has no intention to obtain them), the DPRKorea possibly has ten and, as it has supplied the Pakistani delivery system (the Ghauri missile is simply a Nodong), I have difficulty believing that it has no delivery system itself. Pakistan has somewhere between 60 and 100 warheads and India roughly the same (with the edge in delivery systems and warheads now belonging to Pakistan); Israel has somewhere between 100 and 300 warheads; China somewhere between 150 and 300; France around 300, trending downwards toward 250, and the UK around 150 these days, entirely in submarines, and (as in the case of France also) with the 'notice to fire' altered in 1998 from 'minutes' to 'days'.²⁵

Of the 22,000 US and Russian warheads there is a considerable 'bounce' in the numbers depending on the answer to the question, 'When is a warhead no longer a warhead?' When it is moved from the 'operational' category to the 'non-operational' category (it can be moved back in days or even hours)? When it is removed from its delivery system (but gravity bombs are routinely kept not attached to aircraft)? When it is in some way 'de-activated' (but a few turns of a screwdriver could activate it once more)? Or when it is made permanently non-operational (a good way is to fill it with molasses, it seems).

Of those 22,000 US and Russian warheads a relatively small fraction (5-8,000) are in the 'operational' category, with all the vagueness and caveats that implies.

Some approximately 2000 warheads each can be said to be on high alert, able to be fired in minutes.²⁶

Russia has a preponderance in total warhead numbers, though the alert numbers on each side are near equal. However Russian command and control systems, though 'harder' than

²⁵ The FAS (Federation of American Scientists), NRDC (National Resources Defense Council), and SIPRI (Stockholm International Peace Research Institute) all provide estimates/guesstimates of warhead numbers.. My feeling is that most guesstimates of Indian and Pakistani warhead numbers are too low, and that the numbers are closer to 100 than to 60, with Pakistan slightly ahead of India in warhead numbers and delivery systems.

²⁶ See estimates by Steven Starr (www.nucleardarkness.org) and Dr Bruce Blair (www.cdi.org/blair/hair-trigger-dangers.cfm)

US ones, are generally in worse shape, and Russia still relies on cold - war era SS-18 and 19 missiles (still entirely capable of lobbing a megaton - sized warhead on Sydney) which it is only slowly replacing with the state of the art Topol-M missile, while replacing its SLBMs with the troublesome Bulava missile. Russia is also home to the cheerily-named 'Perimeter', or 'Dead-Hand doomsday machine', a system that, when activated, essentially monitors the communications of its own general staff or National Command Authority, and, if that communication system goes dead, is supposed to launch everything that flies and goes bang via a couple of communication missiles trailing long aerals.

Presumably there is a human someplace in the loop who can pick up a phone to the General Staff and verify if they have in fact been vaporised or are merely having a coffee - break. And it does seem to be the case. According to Steven Starr's paraphrase of Colonel Valery Yarynich, who helped to design Perimeter, there do seem to be some considerable further precautions in place.²⁷

According to Yarynich, Perimeter's job is to launch all Russian nuclear forces which survive a nuclear attack. It is designed to be triggered after several conditions are met in a short, well-defined, period. First, a pre-authorisation order is given from the Russian National Command Authority when/as a nuclear attack is detected or suspected to be taking place, or about to take place. Second, complete loss of communication with the National Command Authority must occur over many redundant channels of communication, including land lines, satellites and radio. Third, nuclear detonation detection systems must confirm that a nuclear attack has occurred. At this point, communication rockets are launched which will relay a direct launch order to all surviving Russian nuclear forces, which will then launch the weapons without further human involvement.²⁸

We noted that the US and Russia maintain approximately 2000 warheads each on high alert, essentially the land-based ICBM component of their missile forces. The operational procedures that would call for a launch in two minutes of those ICBMs involve lightning-fast (unrealistically so) decision-making by senior officials and presidents, who have as little as eight minutes (or less) to make apocalyptic decisions after a 30 second briefing (in the US case) by the chief of STRATCOM. The recent 2010 US Nuclear Posture Review, while (alas!) not proposing any relaxation in nuclear weapons operating posture *did* concede that a 30 second briefing followed by eight minutes max to decide the fate of the world was not

²⁷ Steve Starr, personal email

²⁸ See Valery E. Yarynich, 'C3: Nuclear Command, Control Cooperation', Center for Defense Information (<http://www.cdi.org/index.cfm>), Washington, DC, June 2003

really satisfactory, and admitted the need for greater presidential decision-making time. And that is kind of progress. But the only way to obtain that is, admitting it or not, to lower operational readiness, even if by another name.

Thus according to the 2010 NPR:

“Maximising decision time for the President can further strengthen strategic stability at lower force levels. Thus, the NPR considered changes to existing nuclear policies and postures that directly affect potential crisis stability, including alert postures and the Nuclear Command, Control, and Communication (NC3) system.”²⁹

And (a bit more hopefully) it also endorsed:

“... the NPR-initiated studies that *may lead to future reductions in alert posture*. For example, in an initial study of possible follow-on systems to the Minuteman III ICBM force, the Department of Defense will explore whether new modes of basing may ensure the survivability of this leg of the Triad [bombers, missile-firing submarines and land-based missiles] *while eliminating or reducing incentives for prompt launch*.”(emphasis mine)³⁰

The NPR also ended the huffing and puffing over whether or not the US does have its ICBMs on high alert, stating that:

“The NPR examined possible adjustments to the current alert posture of U.S. strategic forces. Today, *U.S. nuclear-capable heavy bombers are off full-time alert, nearly all ICBMs remain on alert, and a significant number of SSBNs are at sea at any given time*. The NPR concluded that this posture should be maintained.’ (emphasis mine)³¹

This is particularly significant in view of the outright denials that have come from some quarters over the actual status of US ICBM forces.

Lowering operational readiness has indeed been pushed for by a range of high - level commissions into nuclear weapons and weapons of mass destruction (WMD), most recently by the Blix Commission (recommendation 17) and by the ICNND, which notes that

²⁹ 2010 US Nuclear Posture Review Report, p25

³⁰ Ibid, p26

³¹ Ibid, p25. See also my ‘Taking The Apocalypse off The Agenda: ICNND and NPR’, Paper prepared for 2010 NPT Review Conference, May 2010, on PND website.

: “The prospect that a catastrophic nuclear exchange could be triggered by a false alarm is fearful and not fanciful.”³²

The ICNND gives a great deal of attention to the issue of operating status of nuclear weapon systems:

“...the U.S. and Russia each have over 2,000 weapons on dangerously high alert, ready to be launched immediately – within a decision window of just 4-8 minutes for each president - in the event of perceived attack. The command and control systems of the Cold War years were repeatedly strained by mistakes and false alarms. With more nuclear-armed states now, and more system vulnerabilities, the near miracle of no nuclear exchange cannot continue in perpetuity.”³³

“-Force Deployment and Alert Status. Changes should be made as soon as possible to ensure that, while remaining demonstrably survivable to a disarming first strike, nuclear forces are not instantly useable. Stability should be maximised by deployments and launch alert status being transparent.”³⁴

-The decision-making fuse for the launch of any nuclear weapons must be lengthened, and weapons taken off launch-on-warning alert as soon as possible.”³⁵

The ICNND continues:

“...most extraordinarily of all, over 2000 of the US and Russian weapons remain on dangerously high alert, ready to be launched on warning in the event of a perceived attack, within a decision window for each country’s President, of four to eight minutes. We know that there were many occasions when the very sophisticated command and control systems of the Cold War years were strained by mistakes and false alarms. We know how destructive cyber attacks on defence systems could be with today’s sophisticated technology– and can guess how much more so such attacks might be in the future. It is hard to believe that the luck of the Cold War – the near miracle of no nuclear exchange – can continue in perpetuity.”³⁶

And still more seriously and in detail:

³² ICNND Report, p27

³³ Ibid, Section 2, pp26-29

³⁴ Ibid, 7.12-15; 17.40-50

³⁵ Ibid, 17.43

³⁶ Ibid, 1.4, p3

'2.39 - Strategists and operation planners usually make a distinction between short-notice alert and launch-on-warning (LOW) or Launch Under Attack (LUA) policy (also popularly if inaccurately described as 'hair-trigger-alert'.) The former relates to all combat-ready weapons that may be launched quickly (in a few minutes) after receiving the order, primarily ICBMs and SLBMs at sea. The latter is associated with weapons that *must* be launched quickly upon receiving information about an opponent's attack in order to avoid destruction on the ground. With ICBM flight time being about 30 minutes and SLBM fifteen to twenty minutes, LOW provides political leaders with decision - making time of only four to eight minutes (after deducting time for missile attack detection and confirmation, and the time for the response launch sequence and fly-away.) And this time would be available only if the leaders are safe and ready, and everything works perfectly according to planned procedures. Russian strategic doctrine relies on LOW; the US, while not relying on it, maintains the policy. It places a premium on the quality of warning systems, which have not always been reliable in the past. Former US Defense Secretary William Perry, a member of this commission, directly recalls three major such experiences, one of them involving NORAD [North American Air Defense Command] computers indicating that 200 ICBMs were on their way from the USSR to the US. *The prospect that a catastrophic nuclear exchange could be triggered by a false alarm is fearful and not fanciful.*³⁷ (emphasis mine—JH)

The ICNND's stand on operational readiness of nuclear weapons systems owes much to efforts by Steven Starr and myself, who emailed and faxed masses of material to them, and by Peter King, without whose efforts and internal contacts we'd still have gotten nowhere. However all this would have been for nothing if we didn't have a strong case, and if people within the Commission had not been convinced by it. The attention the ICNND pays to this truly apocalyptic issue (and the independent investigation they clearly did) finally underlines just how important this issue really is.

Peter King's own summary takes us right back to the language of the NPR:

“Together with checking further weapon proliferation, a life and death imperative of the nuclear age is to ensure that the ability to withhold nuclear use under and after nuclear attack is always available to *les grandes responsables* (both civilian and military) in the nuclear fraternity. We know, however, that *les grands deux* of the Cold War (for de Gaulle, *les deux monstres froids*) are not only still over-armed, over-alert and doctrinally primed to fling thousands of megatons at each other on almost a moment's notice, but have entrenched routines of nuclear command and control virtually

³⁷ Ibid, p27

designed to deny a serious withholding option to civilian leaders. In its obsession with deterrence and a supposedly “delicate” (!) balance of terror mainstream strategic analysis has helped legitimate a hair-trigger strategic posture. If so-called “existential deterrence”—fear of losing one or a few big cities—is largely responsible for keeping the nuclear peace, such as it is, the first priority for strategic theorists and policy makers must be to ensure a usable nuclear withholding option and explore in serious depth the case for exercising it.³⁸

Peter emailed Gareth Evans as follows:

“If the dire threat of needless Armageddon and nuclear winter and the implausible foundations of nuclear deterrence theory were better understood, the way would be open to a consensual move towards a much tougher anti-proliferation regime and drastic reduction and de-alerting of super and ex-super power arsenals.”³⁹

Lowering operating status/operational readiness has been the subject of four resolutions on a regular basis in the UN General Assembly, including, in 2007 and 2008, the Operational Readiness of Nuclear Weapons Systems resolution that came about as a result of lobbying by this author and others and which is sponsored by Chile, Malaysia, New Zealand, Nigeria, and Switzerland. I understand it will again be submitted in 2010 from personal conversations with Swiss, Chilean and NZ ambassadors, having been suspended in 2009 to facilitate a favourable outcome for the US Nuclear Policy Review process. When adopted in 2008 the vote was 141-3 (with Australia voting yes). The other resolutions that refer to Operating Status are the Reducing Nuclear Dangers resolution sponsored by India, the Renewed Determination resolution sponsored by Japan and Australia and the NAM (Non-Aligned Movement) resolution.⁴⁰

The other truly consequential recent nuclear weapons-related event was of course the signature (with ratification now mired in the US Congress and quite unfactual comments being made by some Republicans there) of the New START Treaty between the US and

³⁸ Peter King, *Undermining Proliferation: Nuclear Winter and Nuclear Renunciation*, CPACS Working Paper No. 09/1, Centre for Peace and Conflict Studies, University of Sydney, October 2009

³⁹ Cited in *ibid*, p22

⁴⁰ See Reaching Critical Will website for texts and voting records for all UNGA resolutions on nuclear disarmament.

Russia in April 2010. (The former Big Two held a very good briefing about it at the NPT Review Conference.)

New START is a follow-on to the START I treaty of 1991, which expired in December 2009, and to START II and the 2002 Treaty of Moscow (SORT), which was due to expire in December 2012. The treaty and its voluminous annexes are soporific reading, several hundred pages in all, but it has been hailed as a breakthrough after the George W Bush years of hostility to arms control.

Neither New START nor the 2010 NPT Review Conference's final declaration are exactly radical. Both are modest (if rather too modest) moves in more or less the right direction. Both have been greeted with poisonous venom by the US hard right, who seem unfortunately to set the terms of strategic and disarmament debate in the US, especially in Congress which has to ratify New START. This very venom should suggest to those of a more rational mindset that perhaps the NPT Review Final Declaration and New START have some merit even if they do not go as far as we'd like.

Yet all that New START really does is to lower US and Russian land-based ICBM, Bomber, and SLBM warhead numbers from around 2000 to 1500. (Tactical nukes are not counted, and the limits apply to operational warheads only). There is a curious counting rule whereby bombers are counted as only one warhead, in spite of the fact that a bomber can take up to 24 warheads, though bombers are not normally loaded with nuclear warheads in fact. Still, by attributing warheads to bombers, real warhead numbers could considerably exceed 1500.⁴¹

New START says nothing at all about the operational readiness of nuclear weapon systems in spite of considerable lobbying on that subject by myself and others. The best we get in terms of real strategic stability and confidence building is a promise by Presidents Obama and Medvedev on the margins of the treaty negotiations to again consider setting up of a Joint Data Exchange Centre (JDEC) where US officers are to look at Russian radar screens and Russian officers at US radar screens (at least, this was the original understanding), thereby making less likely miscalculations that could prove terminal.

The White House press release on JDEC reads as follows:

“The United States of America and the Russian Federation intend to continue cooperation to establish a mechanism to exchange data on launches of ballistic missiles

⁴¹ See text of New START Treaty and annexes on the US State Department website.

and space launch vehicles obtained from their national early warning systems. The ultimate goal of such cooperation would be the creation of an international system to monitor, and exchange data on, the launches of ballistic missiles and space launch vehicles. U.S. and Russian experts will meet soon to begin this process.”⁴²

This has now been agreed to four times by both governments: we will see whether or not it will ever be a reality, and believe it when we see it. One might say that both the NPT Final Declaration and the NPR and New START do constitute modest progress toward a world in which, hopefully, the nuclear apocalypse *can* be taken off the global agenda.

But right now it is still *on* the agenda. It is, still, literally a menu item in Presidential nuclear briefcases. As long as the Presidents of the US and Russia are followed by men in dark glasses with industrial strength pieces of baggage protruding aorals (in the US a military officer or CIA agent ; in Russia an FSB—formerly KGB—colonel no less, and wearing a black cape, who must always be in the same or an immediately adjacent room to his President), and as long as plans for the terminal apocalypse are continually refined and rehearsed by rival militaries , the apocalypse itself will indeed remain on the menus in those briefcases. It is we of post-1945 who put it there.

Whatever the path may be up the so-far hard-to-climb ‘mountain’ of global nuclear zero, we have to actually walk it. And to walk and keep walking in an upward direction is more important than to debate forever which is the 'right' path. The NPT final dec, the NPR, New START and the ICNND are all helpful or potentially so. Their promise must be fulfilled.

Otherwise, even if it is not literally the 'end of the world' (which will after all still be there), it might just, if someone has enough of a bad day, be the end of everything humans find to be important; including possibly ourselves.

To recall Jonathan Schell on the fate of the Earth once more: “...if these [nuclear war] effects should lead to human extinction, then all the complexity will give way to the utmost simplicity—the simplicity of nothingness. We—the human race—will have ceased to be.”⁴³

⁴² White House Press Release, 24 June 2010

⁴³ Schell, *The Fate of the Earth*, p96

And those are quite high enough stakes: they must be lowered.