

# GLOBAL ZERO: the new old agenda

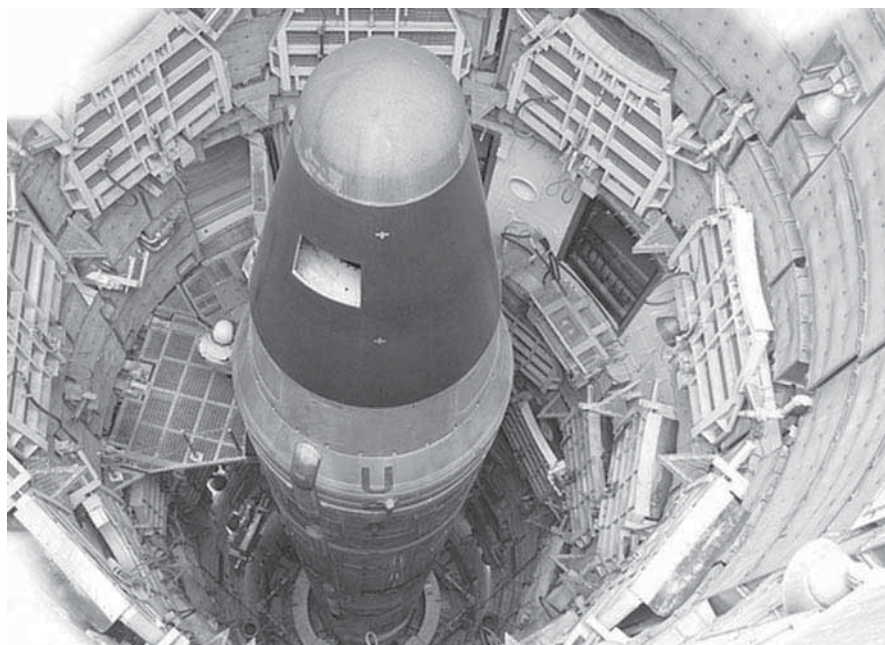
Ron Smith raises questions about the efficacy of efforts to abolish all nuclear weapons.

Would the world be a safer place without nuclear weapons? To many the answer is self-evident: of course it would. Nuclear weapons have the capacity to do enormous damage. This is indisputable. Should we then ban them (abolish them, eliminate them)? Again, to many (including 100 'world leaders' meeting in Paris) and President Obama, speaking in Prague, the answer is 'yes' and the matter one of urgency. Abolition has also been a long-term project of the New Zealand government in company with its 'New Agenda' partners. According to Ivo Daalder of the Brookings Institution, abolition is also favoured by a majority of former US Secretaries of State and Defense.<sup>1</sup>

But is it as simple as this? How feasible, or even desirable, is abolition at this time? There are well-rehearsed reasons to retain at least some of the world's nuclear arsenals on the grounds that, collectively, they contribute to global security, through the operation of deterrence. It also needs to be noted that, at the practical level, abolition is much more difficult (for both technical and political reasons) than its populist proponents acknowledge. Together, these persistent and profound reservations need to be taken seriously.

## Abolition project

In the course of his widely-reported and rapturously received speech to the people of Prague, President Obama committed himself 'to seek the peace and security of a world without nuclear weapons.'<sup>2</sup> The President then went on to 'outline the trajectory we need to be on'. These trajectory steps included 'cuts in nuclear weapon stockpiles' and a 'reduction in the role of nuclear weapons in our national security strategy', a 'global ban on nuclear testing' (for which the US Congress would need to ratify the Comprehensive Test



Ban Treaty) and a fissile materials treaty. The Obama 'trajectory' would also entail strengthening of the Nuclear Non-Proliferation Treaty and renewed efforts to 'ensure that terrorists never acquire a nuclear weapon'. Of course, none of these trajectory specifics would amount to abolition but they are clearly intended to set the pre-conditions for a zero world.

A similar project was announced by *Global Zero* at its formation in early December 2008, following a two-day meeting by '100 political, military, business, faith and civic leaders from across political lines'.<sup>3</sup> Again, 'deep reductions' in US and Russian arsenals are to be followed by a 'phased and verified' process, which takes nuclear arsenals to zero. Both *Global Zero* and President Obama envisage international control of the nuclear fuel cycle to prevent future development of nuclear weapons. Overall, it may be that the only difference between the two projects is that the President is very clear that the United States will not give up its weapons whilst others retain them.

Make no mistake: As long as these weapons exist, the United States will maintain a safe, secure and effective arsenal to deter any adversary and guarantee that defence to our allies....<sup>4</sup>

As noted, some of the projects envisaged in Paris and Prague (such as stockpile reductions and a test ban treaty) clearly fall short of 'Abolition', or 'Zero'. They will thus not be further discussed here. Some-

thing similar applies to many of the so-called '13 Steps' towards the implementation of Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons, although in this case nuclear disarmament is tied (as it is in the NPT Treaty) to the even more implausible requirement of 'general and complete disarmament under effective international control'. The main focus of what follows will be on reasons for retaining some portion of the world's nuclear arsenals (that is, the place of deterrence in global security), on the practical and political problems of verification, and on controlling the nuclear fuel cycle and preventing proliferation.

## Deterrence elements

Nuclear deterrence has two distinct elements to it. At the most fundamental, it provides that a party possessing nuclear weapons will not use them against another party that is similarly armed for fear of unacceptable retaliation. This is sometimes called 'strict deterrence' and if this were all there was to it, it might seem that the problem of unacceptable destruction could be solved by all parties agreeing to give up their nuclear weapons: the 'global zero'.

But as global security has been structured since 1945, nuclear arsenals have functioned in another way. In the hands of major states they have meant that these states could not afford to risk serious conventional conflict (however deeply felt might be the issue between them) for fear

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that nuclear weapons would ultimately be used. This is 'extended deterrence' and it is this inhibition of conflict between the major states (the prevention of a Third World War) that would be lost in the event of nuclear abolition.

Extended deterrence does not guarantee against any nuclear weapon use. As President Obama noted in his Prague speech, there is the possibility that terrorists might get hold of sufficient material to make and detonate a crude weapon and it is less obvious how they might be 'deterred'. Similarly, if there is a period of proliferation in which smaller and, perhaps, less politically stable states acquire nuclear weapons, there may be occasions on which weapons (of whatever degree of sophistication) get used. And this will particularly apply where the states have, on the face of it, little to lose (like North Korea) or (like Iran) may be driven by millenarian aspirations.<sup>5</sup> In the Iran case, the answer is to make a better effort at counter-proliferation, whilst we still can. To focus on nuclear abolition would be to throw out the 'deterrence baby' with the anti-nuclear bathwater.

### Different problem

Preventing terrorists from making or getting nuclear weapons is a different problem, but there are technical reasons for thinking that terrorists are very unlikely to construct an effective nuclear device without help from a nuclear capable state and this should be the focus of counter-proliferation activity. It may also be worth noting that, in the event that the state help was with providing fissile material, any detonation is likely to carry a forensic signature that would point to the state concerned and might thus bring forth retribution: 'extended deterrence' in a further extended sense. As noted earlier, it would be American policy not to give up its nuclear weapons until everybody else did likewise. There would be no unilateral gesture. Insofar as this would apply to most, if not all, of the present nuclear weapon states, it is presumed that the parties would progressively reduce their arsenals until a final renunciation would be made simultaneously. At that point, it would seem that all parties would need to have equally strong reasons for doing so. If this is right, how plausible is it that such a condition would be fulfilled?

Thinking simply of historical relations between the United States and Soviet Union/Russia, it seems clear that the relative importance of nuclear weapons has shifted over time. For most of the Cold War, the

The project of abolishing all nuclear weapons has been given fresh impetus but the old questions remain. Having regard to the manifold problems of definition and verification, is 'Global Zero' realistic in a world in which proliferation seems more likely than abolition? Is it even desirable under present and foreseeable security conditions? Familiar arguments for extended deterrence still seem to underpin security judgments about the possibility of war between the major states and the complexities of the nuclear fuel cycle continue to present a major challenge to international control.

Soviet Union was perceived to have superiority in conventional forces. At this time nuclear weapons were more important to the United States as a strategic counter-balance. After the end of communism, there was a period when the run-down state of Russian conventional forces was such that there was an emphasis by the new Russian regime on (tactical) nuclear weapons to redress the balance. Now the balance may have altered again.

In each of these situations there was a party who would have been advantaged by the bilateral elimination of nuclear weapons and one who would not. There is a general point here. Nuclear weapons are part of a fundamental strategic symmetry dynamic. Between any potential adversary pair (or combination of groupings) there will never be an equality of interest in total nuclear disarmament. Of course, it is possible to imagine global security conditions in which these asymmetries are of relatively small importance. But that is scarcely the world we see today, or the world we might reasonably envisage on the basis of present antagonisms and fundamental conflicts of interest

### First step

In relation to this, Daalder thinks that the United States should not retain nuclear weapons for this kind of strategic purpose but simply keep them 'to prevent the use of nuclear weapons by others' (that is, strict deterrence) and that this should be the 'first step' towards global zero. The rationale for this is that 'US conventional military power is more than sufficient to defeat any other conventional military force'. That assertion may be debatable, even in the case of the United States. More generally, nuclear weapons still have the potential to offset conventional inferiority.

It is beyond the scope of this article to review the totality of security issues that confront the various present nuclear

capable states but it may be worth noting the situation of the state of Israel. In what circumstances can it be imagined that Israel would give up its nuclear weapons? Given the history of the last 60 years, during which its existence has been regularly under threat, and given also the intensity of anti-semitism amongst its neighbours,<sup>6</sup> what guarantees could be given to induce that state to even contemplate nuclear disarmament, especially whilst the most vitriolic of its enemies is actually developing a nuclear capability of its own? At the time of writing, there is a fresh effort to 'solve the Palestinian problem', via a negotiated 'two-state solution'. Even the most optimistic assessment of how this might go does not alter the forgoing assessment, although it might give grounds for some optimism (say) twenty years down the track.

### Abolition problems

Apart from the collective and individual security benefits that might be thought to arise from deterrence, there is a spectrum of practical and conceptual difficulties in the global-zero project. There is a major problem in specifying what a world without nuclear weapons would look like and, particularly, in establishing a verification regime that would, on the one hand, reassure all parties and, on the other, represent (to all parties) an acceptable level of intrusion. In the end, it may be that such a regime is 'impossible'.

For the purposes of the present discussion, it is taken that the term 'nuclear weapon' refers to a nuclear explosive device and does not include radiological dispersal weapons based on chemical explosives. On this understanding, a nuclear weapon is a contrivance for the rapid evolution of the energy produced by bringing together sub-critical masses of fissile material (either uranium-235 or plutonium-239), together with some kind of delivery system. This may be a bomb (and suitable aero-

plane), or missile warhead (with the corresponding missile), or artillery projectile, or a less-sophisticated arrangement which might consist of some sort of sub-critical mass-assembly arrangement, constructed and transported in a shipping container.

The range of possible 'nuclear weapons' may even include a set-up from which (given sufficient weapons-grade uranium and a would-be suicide bomber) a blast of 5–10 kilotons could be achieved by merely dropping one 50-kilogram sub-critical mass onto another from a height of two metres.<sup>7</sup> This notional list does not include thermonuclear weapons (hydrogen bombs) since, with present technology, these require a fission device to initiate them.

### Separation requirement

Abolition of nuclear weapons would have to entail more than merely requiring the separation of made-up bombs, warheads, or projectiles from the corresponding bombers, missiles, or artillery pieces. This might have some security benefit in that it would introduce some element of delay into the process of delivery and thus reduce the possibility of 'accidents' (sometimes called 'de-alerting'), but this would not really amount to abolition, since it would not prevent nuclear weapons being used. Similarly, the separation of the fissile material (the 'pits') from the corresponding assembly mechanism would only introduce an uncertain delay and a clear challenge to weapons technologists. In this connection, it may be worth noting that the very first nuclear weapon was assembled en route.

With these considerations in mind, it would seem that nuclear abolition would at least need to entail a prohibition on the possession of appropriate fissile material, whether or not it was made up into pits. This has sometimes been called a 'fissban' and there have been efforts over many years to get a treaty to this effect.<sup>8</sup> In part, the problem turns on what may be understood as appropriate fissile material from a weapon-making point of view. The arsenals of the major nuclear weapon states are based on uranium or plutonium, which is at an enrichment of over 90 per cent, but experts in the field claim that some kind of weapon can be made with material of lower enrichment (the Hiroshima bomb, itself, probably contained only 80 per cent uranium-235). Again, some experts claim that a nuclear weapon can be made from uranium of only 20 per cent enrichment (the lower limit of the term 'highly-enriched uranium', HEU). In this case, the

critical mass is said to be 800 kilograms, which may raise questions about its practical suitability for weapon production.

### Another complication

There is another complication here and that is that reactors for special purposes may need higher enrichment than the around 5 per cent enrichment of fuel for common commercial light-water reactors. This used to apply particularly to research or isotope-production reactors. Precisely because of the proliferation implications of this technology, there has been a progressive switch to lower enrichments. However, there are other technologies that require very much higher enrichments than ordinary commercial power reactors. An example of this is the Russian development of floating nuclear power plants. The precise level of enrichment in the fuel has not been officially revealed, but scientists involved in the project have indicated that it is 'well above 20%'.<sup>9</sup> For the present, these floating reactors are destined for the Russian Arctic. If they turn out to be tolerably economic, however, they may appeal to other users. It is inherent in the design that the barges are towed back to 'home-base' for refuelling, but, insofar as others build or operate such facilities, they would need highly-enriched uranium.

High fuel enrichments are also typical of submarine propulsion systems. These typically have been in the range 20–45 per cent but some later Soviet vessels operated on fuels of 90 per cent enrichment (that is, weapons-grade uranium). To date this has not been a *proliferation* problem since the operators of nuclear submarines were the nuclear weapon states. This may be changing. Brazil has recently announced plans to build (in co-operation with France) a nuclear-propelled submarine and Australia has also considered it. The point here is that states that make this move would have highly-enriched material under their control and, since we are talking here of military rather than civilian facilities, they are much less likely to accept international scrutiny.

The question that now arises is what sort of verification regime could be established that would encompass the range of situations outlined above? Those who propose abolition must provide a detailed schedule of what needs to be accounted for in the way of plant and material, what sort of inspectorate needs to be established, and with what powers. They may also need to supply some grounds for thinking that states are likely to accept the level of

intrusion that such a verification regime would entail. At a practical level, it may be asked, how would verification proceed in contemporary Pakistan, or North Korea? Unless satisfactory answers to these questions can be produced, the zero project (even if considered desirable) cannot be considered realistic.

### Nuclear potential

Many countries, including those that have no nuclear arsenals and no plans to acquire them, have enrichment facilities that are producing civilian nuclear fuel but which could be adapted to produce weapons-grade material. They may also have plant which is capable of reprocessing spent fuel from their power reactors. Through this they are able to separate the plutonium that is produced in the fuel rods. If this spent fuel is from commercial light-water reactors, operating in their normal mode, the separated plutonium will contain only around 60 per cent of plutonium-239, which is the fissile isotope. Although there is some debate about how usable this material is for making nuclear weapons, there is no doubt at all that the plant could produce weapons-grade material (that is 90 per cent plus plutonium-239) if it were fed with appropriate spent fuel (perhaps from a dedicated reactor).

States that have either or both of these two 'sensitive' technologies will also have 'feedstock' on hand, a sophisticated engineering sector and a community of nuclear experts. They will have all they need to make nuclear weapons and, probably quite sophisticated weapons. It would be simply a question of how long it would take. And it might be supposed that in many countries of this kind, there will be persons in the defence or nuclear hierarchy that have already thought about this and know exactly what they would do and how long it would take. These states are virtual nuclear weapon states. Whatever their present intentions and whatever their record of compliance with the IAEA safeguard regime, they could become nuclear capable if their security situation demanded it.

### Uncertain outcome


The significance of this conclusion is that this state of affairs is what would be the outcome if abolition/global zero were achieved whilst civilian nuclear activity continued. Most former nuclear weapon states would merely have become virtual nuclear weapon states. To go further would require the complete removal of the key technologies of the nuclear fuel cycle

from individual sovereign control, or the abandonment of civilian nuclear technology altogether. It is assumed that this would be neither desirable nor possible at this time and the project will not be considered further here. In the light of this, it may be concluded that the abolition of nuclear weapons, in the (strong) sense that it is guaranteed that such weapons are never used, is also not possible, since the knowledge and the technology will continue to be present. The best that could be done is abolition in the weaker sense that nuclear arsenals are not immediately available. We might then have the worst of both worlds. Nuclear deterrence would be lost but nuclear weapons might get used anyway.

The greatest present danger does not lie in the arsenals of the existing nuclear powers (large though some of these are) but in proliferation. Not only is continuing appeasement of Iran likely to produce a nuclear capable state and a much greater risk that terrorists get fissile material but it is also likely to trigger a proliferation surge in neighbouring Sunni states. Similarly, the late May 2009 failure to prevent North Korea from testing a second nuclear weapon will have emboldened other states that have nuclear ambitions. To return to the main issue, it surely cannot be imagined that there could be any progress towards nuclear disarmament whilst the number of nuclear capable states continues to increase. If the international community cannot prevent proliferation, it cannot hope to make progress towards a nuclear weapon-free world.

## NOTES

1. Ivo Daalder, 'The Logic of Zero', *Foreign Affairs*, vol 87, no 6 (2008), pp.80–95.
2. [www.whitehouse.gov/the\\_press\\_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/](http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/).
3. [www.globalzero.org/press-release](http://www.globalzero.org/press-release).
4. Ibid. (Prague speech, p.4.)
5. Iranian President Ahmadinejad has spoken more than once in apocalyptic terms about the 'return of the Mahdi'. He has also promised to place Iran's nuclear technology 'at the service of those who are determined to confront the bullying powers and aggressors' (that is, the West).
6. Some of whom speak of 'wiping Israel off the map' and promote Holocaust denial conferences (Iran). Other neighbours have television stations that screen Holocaust footage with commentary that regrets that it is not

- Arabs who are doing it (Egypt) or have government officials that assert that 'all Jews are descended from pigs' (Jordan).
7. Charles Ferguson and William Potter *et al*, *The Four Faces of Nuclear Terrorism* (Monterey, 2004), p.107.
  8. As of June 2009, the project to produce a 'verifiable fissile material treaty' has been revived by the UN Conference on Disarmament.
  9. Centre for Nonproliferation Studies, Jun 2002 ([cns.miis.edu./pubs/week/020624-htm](http://cns.miis.edu./pubs/week/020624-htm)). 

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