

## Fractures are widening on nonproliferation treaty **FREE**

*Nonnuclear states' patience with weapons states' inaction on disarmament is wearing thin.*

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“it turns out not to be very good at uncovering the new things that can lead to revolutions in our understanding.” Without the correct balance of pure and applied research, he said, “the revolutionary ideas that empower breakthroughs will dry up, and the government will end up getting far less from its research dollar than it does now.”

“We need a fundamental change in how universities interact with industry. We need a change in culture,” says Schmidt. “The question we are all asking ourselves is, What is the government’s plan to work with industry and develop new industry? You can’t just add a program and expect it to purr.”

## Encouraging signs

Ian Chubb, Australia’s chief scientist since 2011, campaigns tirelessly for science. His recent 44-page document, *Science, Technology, Engineering, and Mathematics: Australia’s Future*, puts forth recommendations as a follow-up to his strategy paper from last year. In the recent document he writes, “The end we aim to achieve is to build a stronger Australia with a competitive economy. We will need to facilitate growth in ways and on a scale that we have never achieved before. It is time to do what so many other countries have already done: take a long-term strategic view of STEM’s pivotal role in securing a stronger Australia.”

Chubb’s efforts may finally be gaining traction. For example, his recommendations are on the agenda of the Commonwealth Science Council, a new advisory body made up of representatives from government, industry, and science. “I’ve gotten signs that the government wants to do more for science,” says Schmidt, an appointee to the council. “We can’t have everything we want, but it would be good to plan sensibly instead of having to stab in the dark about what may be around in the future.” The uncertainty and lack of money are already having an impact, he says. “You can’t have a vacuum for three years and have no impact. People are leaving the country. But if we act quickly, we’ll curb the damage. We hope we can build up capacity and not erode it further.”

Monro, also a council member, says the formation of the new advisory body is promising. “We have to get out the message of the importance of science. We have to alleviate the cultural and structural barriers to scientists getting closer to industry.” If things go well, she says, the new council “could tackle some of the issues.”

**Toni Feder**

# Fractures are widening on nonproliferation treaty

Nonnuclear states’ patience with weapons states’ inaction on disarmament is wearing thin.

When delegates from the 155 signatories of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) convene in Vienna in April, they will have little to point to in the way of progress toward the NPT’s promise, from its entry into force in 1970, of worldwide nuclear disarmament. In the five years since the last NPT review conference, no nation possessing nuclear weapons has given them up. Most, if not all, are updating their arsenals, making it plain that they intend for nuclear weapons to remain a key part of their strategic plans for the foreseeable future.

“The state of nuclear disarmament is not good. The NPT is in serious trouble from a number of sides,” says Alexander Kmentt, director for disarmament, arms control, and nonproliferation in Austria’s foreign ministry. The intransigence of the nuclear weapons states on curtailing their arsenals threatens the continued existence of the treaty, he warns.

Progress is “so painfully slow that it too often feels as if we are moving backwards,” complained Desmond Browne, former UK minister of defense, at the annual meeting of the Arms Control Association (ACA) on 20 October. “It’s difficult to see a path forward when the nuclear weapons states can’t agree on how to proceed and the nonnuclear weapons states are angry about the pace of progress towards disarmament.”

“It’s pretty clear that neither the weapons nor nonweapons states have made particular progress on their NPT commitments,” says James Acton of the Carnegie Endowment for International Peace.

Article 6 of the NPT obligates the declared weapons states—the US, UK, France, China, and Russia, known as the P5 nations—to proceed quickly toward disarmament, although it sets no timetable. With the continued obduracy of P5 members, the quid pro quo that NPT’s 150 non-nuclear-weapons nations gave in agreeing not to seek nuclear weapons capabilities of their own has grown increasingly fragile.

In addition, the fact that India, Pakistan, and Israel remain outside the NPT continues to undermine it. North Korea was a member but has renounced

the treaty and conducted several underground nuclear tests. And the nuclear program of Iran, which is an NPT member, may be in violation of the treaty.

## An action plan

A major agenda item for April’s NPT review conference is the implementation of a 64-point action plan issued at the conclusion of the last review conference, in 2010. The document includes 22 specific steps to be taken toward disarmament; the remaining action items deal with nonproliferation and the peaceful uses of nuclear power. The 2010 declaration was the first such plan ever to be issued unanimously by NPT members and was hailed as a major achievement.

By most measures, though, little has been accomplished for most of those steps. According to a report card issued in February by the disarmament advocacy group Reaching Critical Will, no concrete progress has been made on 11 of the 22 items, limited progress has been made on 6, and substantial progress has been made on just 5. Particularly disappointing, the report said, is that the P5 nations will not meet their commitments to work toward global stockpile reductions by addressing tactical nuclear weapons, diminishing the role of nuclear weapons in their security policies, lowering the operational readiness status of weapons, reducing the risk of accidental use, and increasing transparency and mutual confidence.

Some progress has been made on the plan’s call for negotiations to begin on a treaty to end the production of fissile materials. The ban would affect only the nuclear weapons states, all of which are believed to have ended their production of fissile materials for weapons decades ago. Actual treaty negotiations have yet to begin, though preliminary discussions have been held.

Four of the items in the plan, including the development of a verification regime, concern the Comprehensive Nuclear-Test-Ban Treaty (CTBT), which has not yet entered into force. (See the PHYSICS TODAY articles by Matthias Auer and Mark Prior, September 2014, page 39, and by Pierce Corden and David Hafemeister, April 2014, page 41.) The verification system is nearing

completion. Although President Obama in 2009 pledged to “immediately and aggressively pursue” CTBT ratification, US officials have declined to say when Obama might bring the treaty before the Senate, which rejected it in 1999. When the New START treaty on arms reduction with Russia was brought before the Senate in 2010, the administration had to promise to increase spending on nuclear weapons in order to muster sufficient support. It’s unlikely that there are the 67 votes required for CTBT ratification, Acton says.

### Stalled reductions

Although the Obama administration’s rhetoric on arms reductions has been positive, progress has been slow. According to a recent analysis by Hans Kristensen of the Federation of American Scientists, Obama has reduced warhead numbers by 500, or 10%, through his six years in office. His predecessor, President George W. Bush, eliminated more than 5000, a 50% reduction.

Obama in 2013 offered to negotiate with Russia a one-third cut in each side’s nuclear stockpile below New START levels. Anita Friedt, the US Department of State’s principal deputy assistant secretary for nuclear and strategic policy, told the ACA conference that the offer still stands, even with the chill in Washington–Moscow relations since Russia’s invasion of Ukraine. But the administration will have to face congressional resistance to further reductions, notes Acton. Russia has scant interest in making further reductions to its nuclear stockpile and has been unwilling to even commit to negotiations, he says. Russia is more concerned with the US development of ballistic missile defense and long-range precision conventional strike capability, and it insists that those concerns be resolved in advance of talks on further nuclear weapons reductions.

The 2010 NPT review conference urged the US, UK, and Russia to convene a gathering to discuss prospects for a treaty to establish a weapons-of-mass-destruction-free zone in the Middle East. A conference was scheduled for 2012, but it was postponed at the request of the US. It was called off again in 2013 when it was evident that Israel, the only nuclear armed state in the region, wouldn’t attend. Currently, says Acton, it’s believed that Egypt, which had been the main proponent of the WMD-free proposal, is now blocking it, presumably in the hope of gaining

leverage to make further demands at April’s NPT conference.

Gaukhar Mukhatzhanova, a director of the James Martin Center for Non-proliferation Studies, said that extending the action plan for another five years will be unacceptable to the non-weapons states at the NPT review. Those members have “a bit more urgency in mind” than the P5, she told the ACA conference. But it isn’t clear yet what will be a sufficient outcome. “You’ve heard over the past years a lot more conversation about bringing back the nuclear weapons convention idea, putting forward the nuclear weapons ban idea,” she said.

### Humanitarian impacts

Frustrated by the lack of progress, the nonweapons states last year began holding conferences outside the NPT framework focused on humanitarian impacts of nuclear weapons. The third of those is



**UN secretary general Ban Ki-moon** confers with Austrian foreign minister Sebastian Kurz during a 24 September ministerial meeting on the Comprehensive Nuclear-Test-Ban Treaty. Austria is hosting the third conference on the humanitarian impacts of nuclear weapons on 8–9 December.

scheduled for 8–9 December in Vienna. Kmentt says he anticipates as many as 160 nations will attend, along with 300 or more representatives from non-governmental organizations.

Over the past two years, Kmentt notes, the conferences have concluded that the humanitarian consequences of nuclear weapons are much worse than previously thought. Risks associated with nuclear weapons arise from human error, technical error, political miscalculation, command and control issues, and cybersecurity. The conferences also have reviewed international humanitarian law and norms in the context of nuclear weapons. Kmentt says the humanitarian conferences are not a venue for treaty negotiations. Rather, the hope is that when the P5 nations are confronted with all the evidence, “eventually the equation in favor

of nuclear weapons is going to change.”

During October’s UN General Assembly, 154 nations joined New Zealand in urging greater consideration of the humanitarian impacts of nuclear arms. “Past experience from the use and testing of nuclear weapons has amply demonstrated the unacceptable humanitarian consequences caused by the immense, uncontrollable destructive capability and indiscriminate nature of these weapons,” stated Dell Higgie, New Zealand’s ambassador for disarmament.

None of the P5 nations attended the first two conferences, held in March 2013 and in February of this year. The State Department announced on 7 November that the US will send a delegation to the Vienna session. “Following a careful review of the agenda, as well as discussions with the conference host Austria, the United States concluded there were real prospects for constructive engagement with conference participants,” said a statement issued by the department.

The statement reiterated that the US considers the NPT to be the focus of disarmament efforts and cautioned that its delegates would not engage in such discussions at the humanitarian-impacts conference. It was unclear at press time whether any of the other P5 nations would join the US in Vienna.

The US previously had maintained that the humanitarian-impacts conferences were a distraction from the NPT process. Kmentt calls that argument a smoke screen. “It’s hard to understand how this could be seen as a distraction from the breakneck speed of nuclear disarmament that we are witnessing,” he says sarcastically.

Just as the nonweapons states want disarmament, the P5 nations have a strong interest in curbing nuclear proliferation, Kmentt says. “It is a fallacy to think that it will be possible in the long run to contain the lid on nuclear proliferation without getting serious on nuclear disarmament. That is the flaw in the approach that the nuclear weapons states have followed so far,” he says.

Acton agrees. “Implicitly and occasionally explicitly there is a threat of withdrawal and collapse of the treaty,” he says of the nonweapons states. “The slightly less nuclear option, if you will forgive the pun, is to say, ‘okay, we aren’t going to do anything more on proliferation until you do more on disarmament.’ That tradeoff has been explicit and has permeated every NPT review that’s ever been held.” **David Kramer**

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