

# A global folly

If not a global non-nuclear proliferation regime based on international treaties, then what?

**N**orth Korea's nuclear test this week (see page 610) is alarming for two reasons: the volatile nature of the nation that has just barged its way into the nuclear-weapons club, and the accompanying sense that the international anti-proliferation regime is slowly unravelling before our eyes.

There is precious little that can be done about the former. However, the enfeebled state of the anti-proliferation regime — ultimately, an even greater threat than the existence of a North Korean weapon — is a problem that can at least be addressed, if the will to do so exists.

It must be fervently hoped that the challenge posed by North Korea will provide the political impetus needed to strengthen anti-proliferation agreements. Further erosion would leave us with a nuclear free-for-all and, ultimately, facing the kind of grim apocalypse seldom contemplated since the end of the cold war.

International treaties concerning nuclear weapons are not particularly sexy or exotic; they are complex and arcane. In our 24-hour news cycle, their advocates are liable to be drowned out by those with shriller voices. That has already happened to a troubling degree in the United States. It is so much easier to call for the bombing of Iranian bunkers, for example, than to argue for the Comprehensive Nuclear Test Ban Treaty (CTBT) to be brought back before the US Senate for ratification.

What good would this piece of paper do, the detractors cry, when faced with the ambitions of North Korea or Iran? It would be fanciful to claim that the existence of any non-proliferation treaty would have halted the North Korean test. However, even a regime such as Kim Jong-il's is not entirely beyond the reach of such documents — North Korea withdrew from the nuclear Non-Proliferation Treaty (NPT) in 2003, before conducting its test.

The best that a set of nuclear-weapons treaties could do in the face of North Korea's ardour is provide a moral and legal framework that allows the rest of the world to pinpoint, criticize and punish the tester with unanimity and conviction. But such a framework would not prevent a test, any more than the enactment of common law prevents every murder.

The 1970 non-proliferation treaty — the main foundation of the tattered anti-proliferation regime — was constructed with the direct involvement of weapons scientists in the United States and the former Soviet Union. These individuals saw clearly the unique moral and military danger of nuclear weapons and, noting the lack of the necessary technical knowledge in diplomatic or other official circles, took it upon themselves to confront it.

Even today, expertise in disarmament and anti-proliferation issues lies chiefly with scientists working at the nuclear-weapons laboratories, with think-tanks or in government. They have looked on aghast as disarmament sceptics around the world have scorned the value of international treaties, rubbished the CTBT on specious technical grounds, and even blamed the alleged toothlessness of the NPT for the gradual spread of nuclear weapons to India, Pakistan and now North Korea. Just as worryingly, the issue of what to do with the arsenals of the existing nuclear-weapons states has slipped off the political agenda.

This week's events are the culmination of an appalling decade that has seen India and then Pakistan carry out nuclear tests with scant punishment. The NPT has languished in the absence of agreement on how to modernize it (see *Nature* 435, 132–133; 2005), and the CTBT has been sidelined. These developments serve to undermine the already faint possibility of a coordinated response to the North Korean test by the United States, China (the two big players in this case) and the rest of the world.

It is imperative that scientists and others with relevant knowledge of nuclear weapons redouble their efforts, and rally to repair years of vandalism inflicted on international anti-proliferation efforts. The goal is to build a treaty structure that will help contain the spread of nuclear weapons, eventually laying the groundwork for their international control and subsequent elimination. That must be the way forward — the alternative is despair. ■

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## Forgotten plights

Scientists' human-rights groups deserve stronger backing.

**"F**irst they came for the Socialists, and I didn't speak up, because I wasn't a Socialist... Then they came for the Jews, and I didn't speak up, because I wasn't a Jew. Then they came for me, and there was no one left to speak up for me." Martin Niemöller's poem, criticizing the inaction of German intellectuals in the face of the rise of the Nazis, serves as a powerful analogy for

why scientists should be concerned by abuses of academic freedom, wherever they occur.

Most readers of *Nature* take it for granted that they can travel to work each day, free to enquire, express opinions and criticize government policy, without fear of intimidation or reprisals — let alone imprisonment or torture. Sadly, these freedoms can only be dreamt of in many countries of the world, where academics must live with, and often suffer directly, human-rights abuses. Their plight is our business.

But beyond humanitarian grounds, in this interconnected world we are engaged in a battle of ideas, and the failure to defend any abuse of academic freedom undermines the very principles that guarantee

the rights we currently enjoy. Oppressive regimes typically stifle enquiry, as critical minds will inevitably also scrutinize their leaders. Enquiry is further undermined in such environments by the award of senior academic posts to the politically loyal rather than the competent, and the selection of policies or actions that suit governments' agendas, regardless of the scientific evidence.

That latter characteristic is central to the trial of six medical workers — five Bulgarian nurses and a Palestinian doctor — currently facing the death penalty in Libya on charges of infecting hundreds of children with HIV (see page 612). The real evidence has been purged from the trial. So it is encouraging that several major scientific bodies have now weighed in to demand that the court hears the scientific facts.

Tripoli may seem far away, but knowledge and academic freedom are central planks in many other struggles across the world for more open, democratic societies. Academics and universities are often hotbeds of such reform movements, and every year hundreds of academics worldwide consequently face threats, or worse. It is important that we do not forget them.

Many learned societies, including the American Physical Society

and the American Chemical Society, as well as several scientific academies, have human-rights committees that play an active role in defending individuals at risk. This diverse range, and the mechanism whereby one body takes the lead on a case where it knows the community, is an effective way of dividing up resources. Cases are many, and no one community can give sustained attention to them all.

Most societies' human-rights activities are run on a shoestring by volunteers. The US National Academies' Committee on Human Rights is among the most effective, and has a full-time secretariat. Yet it runs on a budget of just \$0.5 million a year, most of it contributed by philanthropies. Scientists must find the means to better fund and professionalize such activities.

Often these committees use political contacts and letter-writing campaigns to try to influence the outcome of particular cases. At the very least, this serves to remind perpetrators that they are under international scrutiny. Scientists who have been freed testify that, although difficult to pin down, such support is crucial. All scientists can contribute, by making themselves aware of current cases of human-rights abuses and by lending their support to campaigns against them. ■

## Ambassador for Earth

Is it time for SETI to reach out to the stars?

One of the strengths of the community involved in the search for extraterrestrial intelligence — known as SETI — is its imaginative capacity to take seriously things that most people dismiss out of hand.

The idea that the technologies of astronomy might go beyond allowing us new insights into the natural world, and provide us with a means of communion with alien creatures, is not entirely fanciful. Artificial phenomena, such as civilizations, will radiate energy as surely as natural ones do — and may even do so with the intention of communicating. We on Earth send a mish-mash of unnatural-looking radio waves out into the cosmos, not to mention a handful of neutrino beams.

But what if we were to add to that mish-mash some deliberate signals? If beamed tightly enough with the help of a radio-telescope antenna, even a low-power radio transmission can stand out from the general murmur to a star where it is aimed. This is the idea behind so-called 'active SETI', which some enthusiasts think is a way forward for the field. There are others who think that it poses small but real dangers, and thus needs to be discussed more broadly. But at a recent meeting of the International Academy of Astronautics SETI study group in Valencia, Spain, the mood of the gathering was with the enthusiasts.

It is easy to see the appeal of active SETI — it's right there in the adjective. Traditional SETI involves looking at vast amounts of radio data and finding nothing. Active SETI allows you to compose messages, pick target stars, develop new encodings, and so on. It can be used as an outreach tool — the European television channel Arte is currently encouraging people to send it messages specifically to be beamed to the stars as part of the celebrations surrounding the

launch of Corot, a French satellite designed to detect planets around distant stars.

At the same time, though, the risk posed by active SETI is real. It is not obvious that all extraterrestrial civilizations will be benign — or that contact with even a benign one would not have serious repercussions for people here on Earth. There is already an agreement within the SETI community that, should a signal from beyond be picked up, various bodies will discuss what response, if any, should be sent. Yet the Valencia meeting voted against trying to set up any processes for deliberating over the style or content of any spontaneous outgoing messages. In effect, anyone with a big enough dish can appoint themselves ambassador for Earth.

The chances of active SETI causing unpleasant outcomes with today's technology are in fact remote, as this would require us to lift ourselves over the threshold of detectability for an alien civilization that just happened to be orbiting the star at which the message was aimed, or to reveal some peculiar flaw in our psychological make-up that alien 'black-ops' specialists might start working out ways to exploit. Either way, the harm, even if done at the speed of light, would take decades to arrive.

These small risks should nonetheless be taken seriously. When technologies offer radical new possibilities, the people who have the privilege of playing with them also have a duty to consult widely about what those possibilities might mean. The SETI community should assess them in a discussion that is open and transparent enough for outsiders to listen to and, if so moved, to actively participate. Of course, consensus may not always be possible — but the sort of debate out of which consensus has a chance to emerge must now take place. ■

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