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30 Years of the BTWC:
Looking Back,
Looking Forward

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Introduction

On 26 March 2005 the international community commemorated the 30th anniversary of the entry into force of the Biological and Toxin Weapons Convention. This global agreement was the first disarmament treaty in the true sense of the term: states parties commit themselves to the elimination of weapon holdings and not to arm or rearm themselves with biological and toxin weapons. In addition, they commit themselves individually to the convention. A violation or defection from the treaty does not absolve them from their obligations.

While there is much to celebrate, the BTWC is also a troubled treaty. The lack of mechanisms to verify or enforce compliance was already the subject of criticism during its negotiation. The deadly release of anthrax spores from a secret military facility near Sverdlovsk in 1979 and the lack of conclusive evidence to take the allegation of violation to the UN Security Council immediately defined the convention's limits. When the US announced its unilateral renunciation of biological and toxin weapons in 1969–70, the world chose to believe that biological weapons had limited military utility. However, concurrent advances in biology, and particularly in genetics, immediately raised the spectre that future agents could be engineered and thus become controllable on the battlefield and less susceptible to environmental stresses after their release from weapons. The opening for signature of the Chemical Weapons Convention (CWC) in January 1993 and its entry into force just over four years later not only highlighted the lack of institutional support to oversee the implementation of the BTWC, it also institutionalized the debate on the relationship between the so-called non-proliferation obligations in the BTWC and the CWC and the right of access of States Parties to technology and of international cooperation. Notwithstanding, inspired by the CWC, the international community embarked on a massive undertaking to strengthen the BTWC with a verification and compliance regime.

Unfortunately, the optimism produced by the conclusion of the CWC failed to take into account the fundamentally different nature of the technologies the BTWC would have to control and monitor. Furthermore, the speed of the multilateral discussions and negotiations was no match for the dynamically expanding industry and the rapidly progressing biological sciences. At the same time new evidence of major violations of the BTWC, the apparent inability of one of the most intrusive verification regimes to ferret out Iraq's secret biological weapon programme, and the revelations that an extremist religious cult attempted indiscriminate biological attacks against Japanese society (in addition to the nerve agent attacks in 1994 and 1995) unfortunately strengthened the conviction of some that the BTWC is essentially unverifiable. The combination of these developments with the growing polarization over non-proliferation policies versus the right to have access to relevant technologies ground the Ad Hoc Group's negotiation of a protocol to strengthen the BTWC to a halt in August 2001 and sowed the seeds for the failure of the 5th Review Conference in 2001 and 2002. The terrorist attacks against New York and Washington on 11 September 2001 and the resulting wars in Afghanistan and Iraq have made the international security environment less conducive to arms control and disarmament for the time being. Although the current intersessional process of meetings

of experts and states parties continues the exchange of information and expertise and draws attention to certain aspects of treaty implementation and regime building that had been neglected over the previous years, in and of itself it is insufficient to keep the BTWC viable and relevant in the rapidly evolving environments of international security, science and technology.

Meanwhile the perception of the BW threat does not diminish. On the one hand, concerns remain about state-run programmes in clear violation of the BTWC or believed to be on the verge of being so due to the lack of transparency in biodefence programmes. On the other hand, certain forms of terrorism and crime appear to thrive on the fact that they have long passed the boundaries of indiscriminate mass casualties, leading to fears among some that the terrorist use of chemical or biological agents to produce scales of carnage and fear not yet witnessed is a mere matter of time. Irrespective of whether such concerns and fears are justified or exaggerated, they have engineered a reality and logic for policy development and action inconceivable after the end of the cold war. As we can observe in the case of the ongoing war in Iraq, biological weapons do kill indiscriminately and in large numbers even if they are not present.

The anniversaries of 2005 appear to symbolize the current hope and despair of biological weapon disarmament. Besides the 30th anniversary of the BTWC, the world also celebrates the 80th anniversary of the 1925 Geneva Protocol. Both documents are monuments to the commitment to ban biological warfare. In stark contrast, 2005 also remembers man's permanent trend towards self-destruction. Ninety years ago, on 22 April 1915, science and industry were mobilized to initiate large-scale chemical warfare; 60 years ago the first cities perished in the fire and blast of the first nuclear bombs; and 10 years ago religious extremists turned to the nerve agent sarin in a vain attempt to draw the Japanese police's attention away from the cult's criminal activities.

In order to give hope a chance to prevail, the BWPP co-organized or sponsored some anniversary events in Europe between 22 and 24 March. On 22 March the BWPP held a seminar in the European Parliament in Brussels in collaboration with ISIS-Europe and with the assistance of the Pôle Bernheim Peace & Citizenship at the Free University of Brussels to introduce and discuss the current challenges to the BTWC. The next day the BWPP supported a similar seminar in Berlin convened by the Study Group on Biological Arms Control at the University of Hamburg. Finally, on 24 March the BWPP and the Geneva Forum co-organized a seminar in the Palais des Nations in Geneva. In addition, BWPP Network member organizations in the United Kingdom set up a letter campaign to Members of Parliament and Ministers to signal their concerns and civil society interest in the strengthening of the norm against the weaponization of disease. In South Africa, the Institute for Security Studies produced a special edition of *African Security Review* to underscore the relevance of the BTWC to the most under represented continent.¹

This Occasional Paper reproduces the presentations made at the Geneva event. Erhard Geissler reflects on the nature of the BW threat and recalls the first steps towards the strengthening of the BTWC through the processes of the review conferences and meetings of experts. Nicholas Sims analyses the current status of the treaty and offers some small, but concrete and doable steps to continue the slow, but nevertheless ongoing

¹ Available from URL <<http://www.iss.org.za/>>.

process of regime building. The final contribution by John Borrie looks to the future: the opportunities that may be created during the 6th Review Conference in 2006 and the type of agenda the States Parties might adopt to ensure that the BTWC can meet today's and tomorrow's challenges.

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Dr Jean Pascal Zanders
Director BWPP

Erhard Geissler: Reflections on BTWC Negotiations and Early Review Conferences

Since I was an active participant in the Second Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (BTWC) in 1986 and in the Ad Hoc Meeting of Scientific and Technical Experts from States Parties to the BTWC in 1987 and contributed to the Third and Fourth Review Conferences as an observer, the organizers of this seminar commemorating the 30th anniversary of the entry into force of the BTWC have asked me to reflect on my experience of the treaty.¹

I would like to begin with an experience that I had 60 years ago when I directly confronted biological warfare. This was not biological warfare *sensu stricto*, as no such form of combat occurred in Europe during the Second World War. Rather, I faced a substitute of biological warfare: psychological biological warfare.

Psychological biological warfare

The intention of biological and toxin warfare is to weaken the military and economic strength of an enemy through death and disease, caused by the spread of pathogens or toxins.

The objective of psychological biological warfare, meanwhile, is to generate similar effects via psychological means.

In March 1945, I found a small booklet in a Leipzig forest. Apparently, it belonged to a series of small paperbacks known as 'Reclam Heftchen', dealing with various matters of common interest. This particular booklet was entitled 'Krankheit rettet' ('Disease saves'). The heading was ambiguous, but not misleading. The paperback was produced and circulated by the British Division of Psychological Warfare and contained many proposals on how to simulate serious diseases, such as gastric ulcer, jaundice and tuberculosis.

Another activity of the British Division of Psychological Warfare was to disseminate fake instruction, in the name of the German Supreme Health Service, on how physicians can diagnose and should treat plague. It suggested that even harmless symptoms, including fever, headaches and pimples, might be early indicators of the deadly disease and should be thoroughly examined.

¹ This is a revised version of the keynote address to a seminar entitled '30 Years of the Biological and Toxin Weapons Convention: Looking Back, Looking Forward', organized by the BioWeapons Prevention Project and the Geneva Forum, Geneva, Switzerland, 24 March 2005.

The aim of these and other actions was to paralyse the German health system and to cause concern. I refer to these deeds today because I am convinced that present anxiety regarding bio-terrorism reflects a wave of psycho bio-terrorism intended to spawn fear, bring health systems to a standstill and trigger severe economic losses. Apropos this matter, see the global ramifications of some five mailed envelopes containing anthrax spores four years ago, most probably distributed not with the intention of conducting mass murder. Milton Leitenberg concluded that: ‘a limited amount of pathogenic material ineffectively disseminated had produced massive political and *psychological* consequences, and economic expenditures in the billions of dollars’² (emphasis added).

Moreover, the events of 11 September 2001, and the anthrax letters posted immediately afterwards, induced governments to overreact to the threat of a bio-terrorism attack at the expense of normal public healthcare. Leitenberg observes that ‘the United States has been suffering shortages since the summer of 2001 of the standard vaccines against basic childhood diseases such as measles, mumps, rubella, meningitis and pneumonia’.³ The Sunshine Project evaluated that the bio-defence boom caused a reduction in funding for the fight against, for example, acquired immune deficiency syndrome (AIDS), malaria and tuberculosis.⁴ Likewise, Germany now enjoys full protection against the spread of smallpox virus through terrorism—which is extremely unlikely, and not just in my opinion. The same is not true, however, of a possible future influenza epidemic.

Unjustified allegations

Situated not far from psychological biological warfare are false allegations. These, too, have a long and destructive history.

False allegations regarding German biological warfare preparations accompanied the development and implementation of the 1925 Geneva Protocol.⁵ During the First World War, Germany coordinated bio-sabotage activities in several countries, involving agents that cause anthrax and glanders. Since these activities were unsuccessful, they ended in 1917; both the *Reichswehr* and the *Wehrmacht* (national defence force) were not interested in biological and toxin warfare preparations in the post-war years.

Nevertheless, false allegations made by dissidents and erroneous intelligence reports raised suspicions abroad about secret German biological and toxin warfare preparations. A biological arms race began,⁶ involving at least France (1922), the Soviet Union (1926), Italy (1934), the United Kingdom (1936), Hungary (1936) and Canada (1938). Germany followed only in 1940, after the discovery of a French biological warfare facility. In addition, Japan started to prepare for biological warfare in 1932, not so much impressed

² Leitenberg, M., *The Problem of Biological Weapons* (Swedish National Defence College: Stockholm, 2004), p. 147.

³ Leitenberg, note 2, p. 149.

⁴ Sunshine Project, *Biowaffen-Telegramm*, no. 37, 31 March 2005; see also <www.sunshine-project.org>.

⁵ Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 19 June 1925.

⁶ Geissler, E., *Anthrax und das Versagen der Geheimdienste* [Anthrax and the failure of the intelligence services] (Kai Homilius Verlag: Berlin, 2003), pp. 46 ff.

by Germany's First World War bio-sabotage activities but by the perception that, if the great Western nations believed it necessary to prohibit biological warfare by means of an international agreement (the Geneva Protocol), then the biological weapon must have significant military utility.

In the late 1960s, at about the same time as the first steps were taken to elaborate a ban on the development and production of biological and toxin weapons, the German Democratic Republic (GDR) accused the Federal Republic of Germany of engaging in biological warfare preparations. These claims were again based on false reports forwarded by a dissident who was later found to have been an East German spy. He was deliberately placed in the Institute for Aerobiology in Grafschaft (Sauerland), which was officially run by the Fraunhofer-Gesellschaft but completely funded by the West German Ministry of Defence.⁷

The authors of a book edited by the Stockholm International Peace Research Institute (SIPRI)—SIPRI's contribution to the Second Review Conference—underscore their regret that the BTWC lacks guidelines to deal with such allegations.⁸ This is because 'they could create such an atmosphere of distrust as to threaten the future not only of the Biological Weapons Convention but of the Geneva Protocol and even of other arms control and disarmament activities. Furthermore, such allegations, if not dealt with in a proper manner, could be used (and in fact are used) as a justification for increasing BW research capabilities, ostensibly only for defensive purposes'.⁹ We proposed, therefore, that an additional protocol should be agreed to deal, *inter alia*, with these assertions: 'Procedures are needed to distinguish between irresponsible allegations that are being made for purposes of hostile propaganda and responsible allegations that arise out of suspicious activities or events for which no satisfactory explanation is readily forthcoming'.¹⁰

The most serious set of false allegations was levelled in 2002–03, when the UK and the United States accused then Iraqi President Saddam Hussein of being ready to use chemical and biological weapons and to supply them to terrorists. Saddam's weapons of mass destruction turned out to be, as *Time* magazine mocked, 'weapons of mass disappearance'.¹¹ Not least for that reason, international sanctions to prevent false allegations and to punish those who make them are desirable.¹²

Of course, the effects of false allegations might be less consequential if verification of compliance with the BTWC was possible.

⁷ Geissler, E., 'Dr. Ehrenfried Petras und "die Entlarvung der westdeutschen B-Waffen-Rüstung" durch das Ministerium für Staatssicherheit' [Dr Ehrenfried Petras and "the exposure of the West German biological weapon armament" by the Ministry of State Security], *Zeitschrift des Forschungsverbundes SED-Staat* (André Gursky Verlag: Halle/Saale, 2005), forthcoming.

⁸ Geissler, E. (ed.), *Biological and Toxin Weapons Today* (Oxford University Press: Oxford, 1986).

⁹ Geissler, E., et al., 'Conclusions and recommendations', in Geissler, E. (ed.), note 8, p. 125.

¹⁰ Geissler et al. (note 9), p. 127.

¹¹ Duffy, M., 'Weapons of Mass Disappearance', *Time*, 9 June 2003, pp. 18–23.

¹² Leitenberg, M., 'The desirability of international sanctions against false allegations of use of biological weapons', *The Monitor. Nonproliferation, Demilitarization and Arms Control* (vol. 3/4, no. 4/1, 1998), pp. 39–46.

Verification of compliance

The BTWC negotiators did not simply ignore or even forget about verification. The US calculated that a lack of verification measures would not weaken the treaty. The Joint Chiefs of Staff, for instance, recognized in 1974 ‘that any realistic verification system for [...] this Convention would require highly intrusive, technical, on-site inspection of a great number of facilities. In view of the US unilateral decision [in 1969 and 1970] to renounce BW in any form and the unproven utility of such weapons to a potential aggressor, verification was not a principal issue as to this Convention’.¹³ In addition, the Arms Control and Disarmament Agency concluded the same year that ‘verification of compliance with this convention [...] is difficult. [...] Nevertheless, in our judgment it is in the net interest of the United States to enter this convention’.¹⁴

Many experts, though, have been convinced for a long time that the lack of provisions for effective verification is one of the treaty’s major loopholes. Thus, in *Biological and Toxin Weapons Today*, we called for an additional protocol to the BTWC, which would deal not only with allegations but would also specify verification measures.¹⁵

In mid-1986, the East German Foreign Ministry urged me not to call for verification measures at the Second Review Conference, since the Soviet Union and its allies vehemently opposed them. On numerous occasions, the Soviet Union ‘continued to stress that, in applying verification, it was necessary to maintain conditions in which that activity would not infringe the sovereign rights of States Parties to the Convention and would not lead to the disclosure of State or military secrets’.¹⁶ Consequently, it was a complete surprise¹⁷ when, on the seventh day of the Second Review Conference, Soviet Ambassador Victor Israelyan announced that: ‘the Soviet Union initiates a formal proposal to work out and adopt a supplement Protocol to the Convention [...] which would contain measures of strengthening control system of the compliance with the Convention’.¹⁸

Unfortunately, the Western Group did not pin the Soviet delegation down on its unexpected declaration and did not try to evaluate the seriousness of the proposal and its extent. I wonder whether the offer was serious. Perhaps its aim was to divert the attention

¹³ Brown, G. S., ‘The Joint Chiefs of Staff, To Hon. J. W. Fulbright, Chairman, Committee on Foreign Relations, United States Senate, 6 December’, in *Prohibition of Chemical and Biological Weapons*, Hearing before the Committee on Foreign Relations, US Senate (US Government Printing Office: Washington, DC, 1974), pp. 62–63.

¹⁴ Iklé, F. C., ‘Statement’, in *Prohibition of Chemical and Biological Weapons* (note 13), pp. 11–30 (in particular, p. 15).

¹⁵ Geissler et al., (note 9), p. 126.

¹⁶ Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *Background paper relating to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction Final*, BWC/CONF.I/4, 20 February 1980, p. 43.

¹⁷ It came as a complete surprise even to the Eastern Group delegations, which were informed of the Soviet diplomatic U-turn the previous evening.

¹⁸ Issraelyan, V. L., ‘Statement’, 15 September 1986 (unpublished manuscript distributed by the Soviet delegation). Summarized in Second Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *Final Document*, Summary Record of the 7th Meeting, BWC/CONF.II/SR.7, 22 September 1986, pp. 13–14.

of the audience away from the 1979 Sverdlovsk anthrax outbreak and its cause, namely the accidental release of anthrax spores from a secret military biological warfare facility, which was a major item on the agenda of the Second Review Conference.

The Soviet delegation also organized a hearing at which Professor N. S. Antonov—the ‘principal expert of the Soviet Ministry of Health on the subject’¹⁹—tried to convince the conference that the claim that the Sverdlovsk outbreak was the result of secret biological warfare activities was false. Antonov’s presentation and other Soviet explanations were unsatisfactory, however.

Nevertheless, even in 1989—that is, ten years after the Sverdlovsk outbreak—the US did not have hard facts on the cause of the epidemic. Senator John Glenn, Chairman of the Committee on Governmental Affairs, in a Hearing on Biological Weapons Proliferation asked Ambassador H. Allen Holmes, Assistant Secretary for Politico-Military Affairs, Department of State, why the US did not lodge an official complaint with the United Nations (UN) Security Council about the Sverdlovsk outbreak and potential Soviet violation of the BTWC:

Holmes: ‘Our basic approach is to try to get the facts before we go public with accusations of violations’.

Glenn: ‘Have we lacked the facts?’

Holmes: ‘Yes’.

Glenn: ‘Have we lacked sufficient evidence in these cases that we could not file an official complaint’.

Holmes: ‘To my understanding, we have never been able to get sufficient information to establish the facts on these violations’.²⁰

We have known only since the early 1990s that this allegation was not false.

The Sverdlovsk outbreak, though, also led to a positive outcome at the Second Review Conference. The conference agreed to exchanges of BTWC-related information as confidence-building measures (CBMs), including reports on unusual outbreaks.²¹

¹⁹ Issraelyan, V. L., ‘Statement’, 10 September 1986, summarised in Second Review Conference (note 18), Summary Record of the 5th Meeting, BWC/CONF.II/SR.5, 19 September 1986, p. 2.

²⁰ Holmes, H. A., ‘Testimony’, in *Global Spread of Chemical and Biological Weapons*, Hearings before the Committee on Governmental Affairs and its Permanent Subcommittee on Investigations, US Senate (US Government Printing Office: Washington, DC, 1989), pp. 190–191.

²¹ It should be noted that, unfortunately, the CBMs are not sufficient to strengthen the BTWC significantly—they might even generate distrust for several reasons discussed elsewhere.

Suspicious permitted defence activities

The CBMs were also intended to prevent abuse of the permission concerning prophylactic, protective ‘and other peaceful’ activities. This permission constitutes another serious loophole in the treaty. Protection from biological and toxin warfare requires thorough knowledge of the offensive capabilities of such weapons. The Chairman of the US Biological Warfare Committee, George W. Merck, pointed out in 1945 that the ‘development of defensive measures against BW necessitates thorough knowledge and investigation of offensive possibilities’.²² Hence, defence activities inevitably create offensive know-how. Besides, permission for defence activities might be misused with offensive intent.

One cannot but agree with the view of the US Permanent Select Committee on Intelligence that ‘it would be hard to name a biological agent that could not be produced under the rationale of “prophylactic, protective or other peaceful purposes”. Even the production of quantities of anthrax might not necessarily be a breach of the Convention’.²³ This is especially true of the development and production of vaccines to counter putative biological and toxin warfare agents (because of their very nature). They are not specifically designed as weapon agents but are intrinsic components of our environment. They are naturally occurring pathogens, pests and toxins that endanger humans, animals and plants independent of any aggressive action. However, they can also serve as weapon agents and be employed for hostile purposes. They are ‘dual-threat agents’ (DTAs).²⁴

The development, production and employment of vaccines to combat DTAs can generate suspicion, particularly if the military is involved, since they have a ‘quadruple capability’.²⁵ They can be used to protect: against infection and ‘intoxination’ in peacetime; soldiers in non-biological wars; and against biological attack (if applied well in advance of an assault with a known agent). Vaccines to combat DTAs can also be used, though, to prepare for biological and toxin warfare and to provide a biological first-strike capability. Hence, it was proposed in *Biological and Toxin Weapons Today* that vaccine activities should be completely transparent.²⁶

After the 1986 Review Conference, the East German Foreign Ministry requested that I establish a small working group to draft instructions for its delegation participating in the 1987 Ad Hoc Meeting of Scientific and Technical Experts from States Parties to the BTWC, convened to finalize the modalities for the information exchanges. Because of the

²² Merck, G. W., et al., ‘Summary and estimate of enemy intentions and capabilities in biological warfare’, *Memorandum to Members of the USBWC* (secret), 19 May 1945, US National Archives, College Park, Maryland, Record Group 112, Boxes 4, 5 and 11.

²³ Permanent Select Committee on Intelligence, US House of Representatives, *Soviet Biological Warfare Activities*, June 1980, p. 2, quoted in Leitenberg, M., ‘Soviet activities related to biological weapons’, *Arms Control*, vol. 12, no. 2 (1991), pp. 161–190 (see in particular, p. 168).

²⁴ Geissler, E., ‘Vaccines for Peace: an international program of development and use of vaccines against dual-threat agents’, *Politics and the Life Sciences*, vol. 11, no. 2 (1992), pp. 231–243.

²⁵ Geissler, E., ‘Contribution of confidence-building measures to greater transparency in activities directly related to the Biological Weapons Convention’, in Lundin, S. J. (ed.), *Views on Possible Verification Measures for the Biological Weapons Convention* (Oxford University Press: Oxford, 1991), pp. 10–25 (see in particular, p. 12).

²⁶ Geissler et al. (note 9), p. 128.

importance of information on vaccine activities, we included a request for reports on such action in the draft instructions. When assessed by the government, however, the Ministry of Defence raised objections about the proposal and requested its deletion. Thus, the GDR delegation was not permitted to table such a proposal during the 1987 Ad Hoc Meeting of Experts.

Fortunately, other delegations, including those of Austria, Finland, France and the Republic of Ireland, made similar proposals during that meeting and on other occasions. However, they were rejected out of hand, not only by the Soviet Union and its allies, but also by the US and other Western delegations.

A minor step taken was an additional ‘Declaration of vaccine production facilities’, one of a handful of new CBMs agreed by the Third Review Conference in 1991. Since such information can be easily obtained in any chemist, this measure is not sufficient to alleviate doubts concerning military vaccine activities.

Genetic engineering and biological and toxin weapon development

Another key topic on the agenda of the Second Review Conference was the successful introduction of genetic engineering. Ironically, the introduction of genetic engineering and other molecular biotechnology methods paralleled the development of the BTWC:

- In 1968, when a British working paper stimulated the development of the BTWC,²⁷ so-called restriction enzymes were discovered that subsequently proved to be indispensable ‘molecular scalpels’ in genetic engineering experiments.²⁸
- In 1972, when the BTWC was signed, the results of the first gene fusion experiments were published.
- In 1975, when the BTWC entered into force, an international meeting—at the Asilomar Conference Center in Monterey, California—discussed the risks of gene technology.

Initially, there was disagreement on whether the introduction of these techniques might impact on the topics covered by the treaty. While several authors suspected that genetic engineering might contribute to the development of efficient biological and toxin weapons,²⁹ others doubted that this was the case. Martin Kaplan, for example, then Secretary-General of the Pugwash Conferences and one of the pioneers of a ban on biological and chemical weapons, said that: ‘Recombinant DNA technology would not

²⁷ Government of the United Kingdom, ‘Disarmament Conference Document’, ENDC/231, 6 August 1968, reprinted in SIPRI, *The Problem of Chemical and Biological Warfare. CB Disarmament Negotiations, 1920–1970*, Vol. IV (Almqvist and Wiksell: Stockholm, 1971), pp. 255–57.

²⁸ On the early history of genetic engineering, see Watson, J. and Tooze, J., *The DNA Story. A Documentary History of Gene Cloning* (W. H. Freeman and Company: San Francisco, 1981).

²⁹ See Wright, S. and Sinsheimer, R. L., ‘Recombinant DNA and biological warfare’, *Bulletin of the Atomic Scientists*, vol. 39, no. 9 (1983), pp. 20–26; Geissler, E., ‘Implications of genetic engineering for chemical and biological warfare’, *World Armaments and Disarmament: SIPRI Yearbook 1984* (Taylor & Francis: London, 1984), pp. 421–454.

change the military inutility of such weapons'.³⁰ The Pentagon stated in 1986, however, that the introduction of that technology was 'perhaps the most significant event in the history of biological weapons development. [...] By applying biotechnology it is possible to produce very potent substances in quantities large enough to be militarily significant'.³¹

In a 1980 background paper submitted to the First Review Conference, though, the Depository States, the Soviet Union, the UK and the US, emphasized that 'now and for the foreseeable future, development and production of *fundamentally new* agents or toxins would present a problem or insurmountable complexity' (emphasis added).³² Sweden, by contrast, said that '[i]t cannot be excluded that new BW-agents (e.g. combinations between existing viruses or combinations between viruses and other genes) could be constructed with this technique'.³³

Only three years later, in 1983, it was alleged that the virus that causes AIDS had been created through genetic engineering at Fort Detrick, the US biological defence facility. This false claim—levelled especially by East German Professor Jakob Segal³⁴—was made so vigorously that it is still believed in some quarters today. Wangari Maathai, Kenyan Assistant Minister for Environment and Natural Resources, and the 2004 winner of the Nobel Peace Prize, claimed in August 2004 that the AIDS virus was developed by scientists in developed countries to 'wipe out the Black race'.³⁵ The possibility that the AIDS allegation was fabricated in the headquarters of the KGB to detract attention from the then rapidly expanding Soviet biological warfare programme cannot be discounted.

Nevertheless, the introduction of molecular biotechnology seemed to increase the likelihood of biological warfare. In 1986, the Pentagon determined that it makes 'biological warfare much more feasible and effective for countries which either are not bound by the Convention or which choose to violate it'.³⁶ A Department of State expert panel judged that genetic engineering allows for 'better vaccine potential. An increased protection capability may be an inducement to use biological warfare [...] since the instigator has a decreased risk of being harmed by his own actions'.³⁷

³⁰ Kaplan, M., 'Another view', *Bulletin of the Atomic Scientists*, vol. 39, no. 9 (1983), p. 27.

³¹ US Department of Defense, *Biological Defense Program*, Report to the Committee on Appropriations, House of Representatives, Washington, DC, May 1986, pp. I-7 and I-13.

³² Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *New scientific and technological developments relevant to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction*, BWC/CONF.I/5, 8 February 1980, p. 7.

³³ Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *Views of States Parties on new scientific and technological developments relevant to the Convention (paragraph 13 of the report of the Preparatory Committee)*, BWC/CONF.I/6, 29 February 1980, pp. 2–3.

³⁴ Segal, J., 'Where does AIDS come from?', *Moscow News*, no. 17, 1987, p. 10.

³⁵ *CBW Conventions Bulletin*, no. 66 (2004), pp. 38 and 52.

³⁶ US Department of Defense (note 31), p. IX-1.

³⁷ Brill, W., et al., 'Summary of the Genetic Engineering Expert Panel' (5 May 1981), unpublished, quoted in part in *Genetic Engineering Letter*, vol. 1, no. 10 (24 May 1981), p. 4.

Victims of biological and toxin weapon agents since the introduction of gene technology				
<i>Year</i>	<i>Actor/event</i>	<i>Agent</i>	<i>Victims</i>	<i>Remarks</i>
1978	Bulgarian secret service	Ricin	Dissident Georgi Markov	Deliberate use
1979	Leakage at Sverdlovsk biological warfare facility	Bacillus anthracis	Around 100 human cases; 66 human deaths	Inadvertent spread
1980	Bulgarian secret service	Ricin	Dissident Boris Korczak	Deliberate use
1981	British protester	Bacillus anthracis	None	Deliberate use
1984	US cult	Salmonella typhimurium	More than 741 human cases	Deliberate use of incapacitating agent
1990–94	Japanese cult	Bacillus anthracis	None	Deliberate use of an agent that turned out to be avirulent
2001	Letters mailed by unknown sender(s)	Bacillus anthracis	23 human cases; five deaths	Bio-psycho terror?

I agreed with such assessments, and drew on them in several publications. To my complete surprise, however, it transpires that biological and toxin weapon agents have killed fewer than 100 persons since the introduction of genetic engineering—most not by deliberate release, and not by engineered agents. In comparison, approximately 100 persons die every other minute of AIDS-related ailments.

Even if an outbreak of anthrax in Zimbabwe in 1978–80, which affected more than 10,000 people and led to 182 human deaths, was man-made,³⁸ in total, only around 270 people have been killed by biological or toxin weapon agents over the past 25 years. That is, since the BTWC entered into force and following the introduction of molecular biotechnology.

Incorporation of research

The possibility of improving biological and toxin weapon agents through molecular biotechnology demands that we reconsider strengthening the convention by including research. Lack of integration of research is another major loophole in the treaty. This is despite the fact that a British working paper dated 6 August 1968 recommended that research be incorporated into the BTWC and called for transparency in this field: ‘The Convention would also need to deal with research work aimed at production’ of

³⁸ Nass, M., ‘Anthrax epizootic in Zimbabwe, 1978–1980: Due to deliberate spread?’, *PSR Quarterly*, vol. 2 (1992), pp. 198–209.

biological agents and ancillary equipment.³⁹ Accordingly, research was explicitly mentioned in the provisional treaty draft presented by the UK on 10 July 1969 and submitted to the UN Security Council on 18 August 1969: states parties are requested ‘not to conduct, assist or permit research aimed at [the] production’ of forbidden agents or weapons.⁴⁰

A draft convention submitted by the Soviet Union and other Eastern bloc countries on 19 September 1969 to the twenty-fourth session of the UN General Assembly, however, did not mention research but called on states parties ‘not to develop, produce, stockpile or otherwise acquire chemical and bacteriological (biological) weapons’.⁴¹ Consequently, the American and Soviet diplomats who drafted the final treaty text omitted the word ‘research’.⁴² Many delegations, though, expressed the view that a ban on research work would considerably strengthen the accord.⁴³ This still holds true today.

Codes of conduct

Increasing awareness of the fact that the introduction of gene technology could heighten the biological warfare threat led more and more scientists (but still not enough) to engage in action to strengthen the norm against biological and toxin weapons. Whereas not even a handful of scientists participated in the Second Review Conference, more than ten different non-governmental organizations (NGOs) actively participate now. Nevertheless, the judgment of Barbara Rosenberg—one of the few scientists to take part in the Second Review Conference—that there is ‘endemic antipathy’ towards politics among scientists still prevails with too few exceptions. Rosenberg quoted Australian Ambassador Richard Butler, Chair of the Drafting Committee of the Second Review Conference, himself educated as a scientist, who asked: ‘why [is] opposition to weapons by scientists [...] considered "political", but work on the development of weapons [...] “patriotic”?’⁴⁴

I sincerely hope, therefore, that the forthcoming consultations on codes of conduct⁴⁵ will be at least helpful in creating awareness among those involved directly or indirectly with BTWC-related activities. I am sceptical, however, whether such measures will strengthen the convention significantly. Remember, The Hippocratic Oath did not prevent Nazi

³⁹ Government of the United Kingdom (note 27).

⁴⁰ Government of the United Kingdom, ‘Revised UK draft convention for the prohibition of biological methods of warfare and accompanying draft Security Council resolution, of 18 August 1969’, Disarmament Conference Document, CCD/255/Rev. 2; reprinted in SIPRI (note 27), pp. 322–24.

⁴¹ Union of Soviet Socialist Republics (USSR) et al., ‘Draft Convention on the Prohibition of the Development, Production, and Stockpiling of Chemical and Bacteriological (Biological) Weapons and on their destruction’, *Official Records of the General Assembly, Twenty-fourth Session, Annexes*, agenda item 104, document A/7655.

⁴² Leitenberg (note 2), p. 156.

⁴³ Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *Final Document*, BWC/CONF.I/10, 21 March 1980, p. 7.

⁴⁴ Rosenberg, B., ‘Updating the biological weapons ban’, *Bulletin of the Atomic Scientists*, vol. 43, no. 1 (1987), pp. 40–43.

⁴⁵ Rappert, B., ‘Biological weapons and the life sciences: the potential for professional codes’, *Disarmament Forum*, no. 1 (2005), pp. 53–61.

geneticist Joseph Mengele from performing cruel human experiments at the Auschwitz concentration camp.

Even so, activities centring on the responsibilities of scientists have been continuing since the Pugwash movement became involved in the campaign to ban biological warfare in 1964.⁴⁶ Carsten Bresch, for example, then Chair of the West German Genetical Society, requested in 1970 that scientists applying for membership of the association should take some kind of Hippocratic Oath. That is, to swear never to utilize knowledge and skills pertaining to genetics and microbiology in the development of biological weapons.⁴⁷

In the late 1980s, in advance of the Third Review Conference, the Council for Responsible Genetics distributed a 'Pledge against the military use of biological research', which was signed by more than 1,600 scientists, including 18 Nobel Laureates. They opposed 'the use of our research for military purposes' and promised 'not to engage knowingly in research and teaching that will further the development of chemical and biological warfare agents'.⁴⁸

Together with two fellow scientists, I had the honour of presenting these signatures to the President of the Third Review Conference in 1991. The conference took note of the action and appealed to the 'scientific communities to continue to support only activities that have justification under the Convention [...] and refrain from activities which are in breach of obligations deriving from provisions of the Convention'.⁴⁹

Such pledges, codes of conduct and appeals, though, are certainly not sufficient to prevent completely the hostile spread of biological agents and toxins.

Therefore, action should be taken:

- to integrate BTWC-related research into the treaty-this should occur now, regardless of whether negotiations on an additional protocol resume;
- to agree on sanctions to curb false allegations regarding research on, and the development, production and use of, biological and toxin weapon agents;
- to ensure that all BTWC-related activities are performed under entirely transparent conditions;
- to conclude a CBM requesting full reports on BTWC-related vaccine activities; and
- to determine whether a majority of states parties should adopt an additional protocol to the BTWC even if not all of them agree in a way similar to other international treaties.

⁴⁶ Robinson, J. P. P., 'The impact of Pugwash on the debates over chemical and biological weapons', *Annals of the New York Academy of Sciences*, vol. 866 (1998), pp. 224–52.

⁴⁷ Melchers, G., 'Letter to Ambassador H. Roth, Auswärtiges Amt. Bonn, 19 January' (1970), Politisches Archiv des Auswärtigen Amtes, Berlin, Zwischenarchiv, file no. 107 321.

⁴⁸ Committee against Military Misuse of Genetics, 'Pledge against the military use of biological research'. Reprinted in Geissler, E., 'Biological and toxin weapons and the responsibility of scientists—twenty years later', in E. Geissler and R. H. Haynes (eds.), *Prevention of a Biological and Toxin Arms Race and the Responsibility of Scientists* (Akademie-Verlag Berlin: Berlin, 1991), pp. 3–28 (see p. 19).

⁴⁹ Third Review Conference of the Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *Final Document*, BWC/CONF.III/23, 27 September 1991.

Nicholas A. Sims: Thirtieth anniversary of entry into force of the BTWC

It is a privilege to be here among the faithful ‘friends of the convention’—that unofficial support group to which the 1972 Biological and Toxin Weapons Convention (BTWC)—owes so much—as we celebrate the treaty’s first 30 years in force. Indeed, there are achievements to honour:

- the accord still exists;
- no state has ever withdrawn from it; and
- in fact, the number of states parties has increased from 46 at entry into force (22 were required), to 87 at the time of the First Review Conference, to 154 today.

Of those 154 states parties, sadly, a few have sometimes been accused of failing to respect their obligations under the BTWC, a subject that I will return to later. Nonetheless, we should rejoice in the fact that most states parties have made a solemn renunciation of the activities prohibited by the convention—one that has never been called into question. It is an absolute renunciation. Let us remember those words in Article I: ‘never in any circumstances’.

The first disarmament treaty: the vicissitudes of regime building

The ceremony in London, and surely those in Moscow and Washington, DC, too, emphasized the historic nature of the occasion. I was there and had no doubt that the governments represented at the entry into force ceremony recognized its absolute significance. They thought they were inaugurating a permanent regime of biological disarmament. Indeed, after we moved upstairs at Lancaster House for the reception organized by the United Kingdom government, yet another ambassador arrived hotfoot, bringing evidence of ratification. He was anxious that his country should be among the original parties to the convention—as it was, and is.

It was a moment of optimism. As we all know, though, optimism has often been hard to sustain through the vicissitudes to which the BTWC has been subjected. Notoriously, in the eyes of many, it still lacks that ‘flexible, objective and non-discriminatory procedure to deal with issues concerning compliance with the Convention’, which the United Nations (UN) General Assembly recommended that BTWC states parties establish as long ago as 13 December 1982.¹

The Article V contingency mechanism of consultative meetings goes some way in this direction, and should certainly be further developed. However, it falls short of meeting the convention’s compliance assurance requirements in full. The same is even truer of

¹ United Nations General Assembly Resolution 37/98C of 13 December 1982. The ‘Swedish resolution’ was adopted by a vote of 106–14–2. The quotation is from the second operative paragraph of the resolution.

Article VI.

The challenge of the criteria in that 1982 resolution confronts states parties today, as they still need to establish a 'flexible, objective and non-discriminatory procedure to deal with issues concerning compliance'. It confronts them all the more starkly since the 2001 collapse of the negotiations on a legally binding instrument to strengthen the BTWC.

I mentioned just now the First Review Conference, which ended 25 years ago this week. I am particularly conscious of the achievements of 21 March 1980 and how much of what we now value in this treaty regime has its origins in the Final Declaration that the First Review Conference adopted in this building. Furthermore, this was concluded despite much discouragement, in the icy political climate of the second Cold War.

The Final Declaration was not allowed to strengthen the convention: the word was forbidden. Nevertheless, it could, and did, clarify what was already in the BTWC and began to draw out the possibilities latent in its text, as foundations for subsequent review conferences to build on.

Not the least of its achievements was to endow the convention-in-force with a review conference process. Article XII provided only for one review, and, when states parties gathered in March 1980, there was no guarantee of a second. It had to be carefully negotiated. And it was, as part of a delicately balanced compromise.

This may explain why I am all the more insistent on using the cumulative review conference process, especially now that we are busy preparing for 2006, and using it more creatively and constructively than ever before, to steer the evolution of our convention and the treaty regime that flows from it.

2006: An opportunity for a fresh start

The Sixth Review Conference is our best opportunity to get this historic enterprise of biological disarmament back on track.

As I see it, the Sixth Review Conference should mark the confluence of two streams of BTWC development. One is the older-established stream of accumulated agreements, carrying forward all the reaffirmations, extended understandings, definitions and procedures elaborated by consensus at successive review conferences between 1980 and 1996. The other is the newer stream deriving from the Meetings of Experts and Meetings of States Parties of 2003–05, held within the framework of the Inter Review Conference process mandated by the Fifth Review Conference.

My disappointment with the Fifth Review Conference is public knowledge. Indeed, two years ago I wrote my 'reflections after the Fifth Review Conference' article under the title 'Biological disarmament diplomacy in the doldrums'.² I will not rehearse those ruminations this afternoon, but will simply say that I continue to see the convention as

² Sims, N. A., 'Biological disarmament diplomacy in the doldrums: reflections after the Fifth Review Conference', *Disarmament Diplomacy*, no. 70 (April–May 2003), pp. 11–18.

suffering badly due to the débâcle of 2001–02.

Yet, some good things are coming out of the Inter Review Conference process as a process. Two factors are particularly valuable.

First, it keeps the multilateral mode of BTWC diplomacy alive, through 2003–05, when it might have been sent away to hibernate, or put into suspended animation, for four years—and very nearly was. We have suffered a ‘crisis of multilateralism’ before, 20 years ago, and survived it. It affected the convention severely then too, although its scope was much more extensive than the BTWC alone. In the mid-1980s, as now, the important thing was to keep our nerve, stay calm and get the BTWC back on course as soon as conditions improved.

Sometimes our perseverance, our stubborn commitment as ‘friends of the convention’, finds itself vindicated. That, and not just the failures, is part of the stocktaking exercise in which we have been engaged this week (here and in other cities), as we have reaf-firmed and publicized our commitment to this necessarily multilateral agreement.

Second, the process gets states parties into the habit of meeting every year in Geneva, albeit in 2003–05 with restrictions on the agenda and on the permitted outcomes. From this, an implicit pattern of Annual Meetings of States Parties may, after the Sixth Review Conference, be made explicit, with an agenda ranging over the convention in its entirety. Much of my recent research and writing has been devoted to this possibility, and various alternative forms of it, as the best mechanism for remedying the institutional deficit in the years immediately ahead.³

Let me make it clear: this does not mean I am giving up on an Organization for the Prohibition of Bacteriological (Biological) and Toxin Weapons (OPBW).

Remedying the institutional deficit

Past suggestions for addressing the BTWC’s institutional deficit led to the proposed OPBW, which was in prospect from 1997–2001 in the context of the legally binding instrument under negotiation. Because of what happened to that negotiation, an OPBW remains a longer-term necessity but not an immediate possibility.

Therefore, the gap must be filled in the short term by less ambitious remedies. I propose three: an Annual Meeting of States Parties, supported by a Scientific Advisory Panel and a Secretariat. Because they would take their authorization from the Sixth Review Conference, the BTWC’s Article XI amendment process does not have to be invoked in order to set them up. The Sixth Review Conference has the power to establish these mechanisms. What is needed between now and then is careful preparation of proposals so that the Sixth Review Conference can agree their scope and mandate.

³ See Sims, N. A., ‘Remedies for the institutional deficit of the BTWC: proposals for the Sixth Review Conference’, Review Conference Paper, No. 12. In Pearson, G. S. and Dando, M. R. (eds.), *Strengthening the Biological Weapons Convention* (Department of Peace Studies, University of Bradford: Bradford, 2005).

High on the agenda of the Annual Meeting should be the report of the Scientific Advisory Panel. The pace of development in the areas of science and technology relevant to the convention does not allow states parties the luxury of pooling their assessments only once every five years. Collective assessment of the threat, and joint consideration of how best to protect us all against it, must be more frequent.

I have also proposed a 'consolidation agenda' for the Annual Meeting. This might be linked to Action Plans, such as the states parties to the 1993 Chemical Weapons Convention adopted in 2003, on universality and national implementation.

These Action Plans, on universality and national implementation, are needed here too. However, for BTWC states parties, accession to the 1925 Geneva Protocol and withdrawal of Geneva Protocol reservations might well also be the subjects of Action Plans. The two treaties are so closely related, by the complementarity of their subject matter, that adherence to both is essential to the logic of renunciation of biological weapons. Under Article VIII of the BTWC, the First Review Conference called on all BTWC states parties to join the Geneva Protocol at the earliest possible date. That was 25 years ago. Yet 33 BTWC states parties remain outside the Geneva Protocol, and some 20 others are inside but with retaliatory reservations that are wholly incompatible with their absolute renunciation of biological and toxin weapons under the BTWC. All 53 or so need help, and sustained encouragement, to rectify their Geneva Protocol status.⁴

And there is much else that the Annual Meeting, supported by the Scientific Advisory Panel and the Secretariat, could usefully do within a sufficiently flexible mandate defined by the Sixth Review Conference.

Of course, institutions are not enough on their own. A shift in perspective by states parties on the delicate subject of compliance is also needed.

Demonstrating compliance

Whatever view we may individually take of the verifiability of the BTWC, in part or in whole, I hope we can all agree that the continuing absence of explicit verification provisions means that states parties need constantly to ask themselves how they can best demonstrate their own compliance. That is, full compliance with all of the obligations flowing from the convention. Only then, I suggest, is a state party morally entitled to call into question the compliance of others with *their* obligations.

This goes to the heart of the good-faith principle—treaties are to be performed in good faith—and also emphasizes the reciprocity of obligation, which is at the core of the treaty relationship. The BTWC is a basic framework for generating treaty relationships among all 154 states parties. But it ought to be more than that: it ought to be the developed

⁴ See Sims, N. A., 'A proposal for putting the 26 March 2005 anniversary to best use for the BWC', *CBW Conventions Bulletin*, no. 62 (December 2003), pp. 1–6; Sims, N. A., 'Towards the BTWC Sixth Review Conference: making best use of the 26 March 2005 anniversary', Briefing Paper (Second Series), No. 10. In Pearson, G. S. and Dando, M. R. (eds.), *Strengthening the Biological Weapons Convention* (Department of Peace Studies, University of Bradford: Bradford), 2003.

structure within which those treaty relationships are organized for the greater good.

Just how compliance is demonstrated presents a challenge to the ingenuity and imagination of each state party, each with its own particular set of circumstances. Each state party must find ways of demonstrating its compliance to reassure everyone else. In turn, each state party expects to be reassured by everyone else demonstrating their compliance with BTWC obligations. This is reciprocity in practice.

Otherwise, clouds of suspicion linger, with nothing done to dispel them. This can damage the credibility of the convention as much today as in the past. Ambiguities, suspicions and unresolved allegations produce a climate of uncertainty and distrust. This calls into question the integrity of the treaty regime of biological disarmament and the willingness of its states parties, which are both its masters and its beneficiaries, to come to its rescue when that is what is needed.

An enduring convention

In 1985, I wrote of the convention:

After ten years in force it remains the cornerstone of international commitment to the principle that microbiology is to be devoted exclusively to peaceful purposes.⁵

After 30 years in force? Yes, it remains the cornerstone of international commitment to that principle. However, as a fragile structure, it desperately needs reinforcement. Remedying the institutional deficit should be one part of that, and a renewed determination by states parties to find ways of demonstrating their compliance should be another—that ‘shift in perspective’ that I was advocating just now.

Let us do all we can to ensure that the Sixth Review Conference lives up to its historic responsibilities and puts the convention on course for the next 30 years.

⁵ Sims, N. A., *The Diplomacy of Biological Disarmament: Vicissitudes of a Treaty in Force, 1975–85* (Macmillan and St Martin’s Press: London and New York, 1988), p. 271.

John Borrie: Thirty Years of the BTWC: ‘Back to the Future’?

I have been asked to offer some remarks on the future of the 1972 Biological and Toxin Weapons Convention (BTWC) regime. This is a difficult task, and I have two tough acts to follow.

Moreover, alarm bells sound in my mind when it comes to making predictions about the BTWC process. I am reminded of the difficulties meteorologists face in anticipating the weather more than a few days in advance. They can gauge with a fairly high degree of accuracy whether it will rain or the sun will shine tomorrow, and they can forecast with a reasonable amount of confidence what will happen next week. However, when it comes to weather conditions in a given place a month or year from now, they are basically guessing—beyond the broadest seasonal pointers. So many variables can affect the weather. The international security environment is no different.

‘Futurology’ rather than ‘crystal-ball gazing’ might be more apt, therefore, in describing the ideas that I will be putting forward today. My remarks concern two aspects of the future of the BTWC.

First, I will outline using the broadest of brushstrokes what I see as the changing nature of the challenges that the BTWC regime is going to confront over the coming years and decades. These technological challenges can be summed up by the word *heterogeneity*, and they are imminent. Looking back to arms control history is not necessarily going to help the international community to address these new issues, hence the title of the paper, ‘back to the future’. Fresh thinking is going to be required, and this in turn will necessitate that the BTWC political regime is more forward-looking than it has sometimes been. Indeed, the political regime currently finds itself in a weakened and vulnerable state.

The second aspect pertains to the overall strategic direction that I believe the BTWC needs to take in order to remain vital and relevant as a norm, and in order to put the ghosts of the past, particularly those of 2001, to rest.

Because I only have 15 minutes or so to present these ideas, I am not going to be able to talk in much detail. For this reason, I suggest that, if interested, you consult my recent article examining some of these matters available on the website of the United Nations Institute for Disarmament Research (UNIDIR).¹ In addition, I have drawn heavily from two papers available on the website of the Weapons of Mass Destruction Commission. One is by Jez Littlewood, and the other, on a modular approach to enhancing BTWC implementation, is by Trevor Findlay and Angela Woodward.² In addition, the

¹ Borrie, J., ‘The dual-use dilemma in life science research: the approach of the International Committee of the Red Cross’, *UNIDIR ‘for comment’ paper*, <www.unidir.ch/pdf/BorrieAmaldiForWebFeb05-E.pdf>.

² Littlewood, J., *Managing the Biological Weapons Problem: From the Individual to the International*, Paper no. 14 (Weapons of Mass Destruction Commission: Stockholm, 2004); Findlay, T. and Woodward, A., *Enhancing BWC Implementation: A Modular Approach*, Paper no. 23 (Weapons of Mass Destruction

BioWeapons Prevention Project (BWPP)'s *BioWeapons Report 2004* goes into much more depth than I can today.³

Aspect I

The basic threat posed by biological weapons (BW) is, I expect, fairly well known to this audience. Without going into detail, the traditional BW threat was perceived as centring on 'classical' bio-warfare agents such as anthrax, plague and smallpox, especially in the context of clandestine state BW programmes.

Make no mistake, clandestine state programmes are a problem that has not gone away. It has long been recognized, though, that advances in legitimate science are broadening the range of possibilities for creating and using new hostile agents.⁴ Indeed, concrete signs from the scientific literature are now beginning to materialize of the much vaunted 'bio-tech revolution'. In due course, its consequences will make hostile use of the life sciences potentially far more varied in terms of effects, more difficult to detect, and thus more attractive to those with aggressive intent.⁵

In particular, I want to pick out three trends that I think are likely to make efforts to prevent the misuse of new advances for hostile purposes more complex.

The first relates to growing understanding of biological structures. The discovery of DNA in 1953 by James Watson, Francis Crick and others brought with it the realization that genetic sequences are, at root, strings of information written in code. This provided the basis for the further development of molecular biology and related disciplines, including the capacity to recombine information in genetic sequences to modify organisms and, ultimately, the ability to create those genetic sequences.

Although such synthesis is in its infancy, it is developing rapidly. Certain viruses, for instance, have recently been created without original samples, using instead mail-order materials and recipes from the internet.⁶ Bacteria may follow.⁷ The ease with which this kind of information can be spread, virtually and irrespective of national borders, will make traditional methods of regulation, such as physical controls on dangerous pathogens or permits for their transfer, less relevant if those pathogens can be produced to requirement using common equipment, materials and knowledge. Thus, the intangibility of advances in the life sciences is on the rise.

Commission: Stockholm, 2004). Both texts are available from <www.wmdcommission.org>.

³ BioWeapons Prevention Project, *BioWeapons Report 2004* (BWPP: Geneva, 2004), 175p, available from URL <www.bwpp.org/publications.html>.

⁴ A useful, and brief, introduction to these issues is Wheelis, M. and Dando, M., 'New Technology and Future Developments in Biological Warfare', *Disarmament Forum*, no. 4 (2000), pp. 43–50.

⁵ For background, Dando, M., 'Biotechnology, Weapons and Humanity', statement to the Conference Commission of the 28th International Conference of the Red Cross and Red Crescent, Geneva, 4 December 2003, URL <www.icrc.org/web/eng/siteeng0.nsf/iwpList515/3E56B5C2E41BC67FC1256DFD003ECAAB>.

⁶ See, for instance, Cello, J., Pail, A. V. and Wimmer, E., 'Chemical Synthesis of Poliovirus cDNA: Generation of Infectious Virus in the Absence of Natural Template', *Science*, vol. 297 (9 August 2002), pp. 1016–1018, available from <<http://info.med.yale.edu/therarad/summers/cello.pdf>>.

⁷ 'The Journey of the Sorcerer', *The Economist: Technology Quarterly* (4–10 December 2004), pp. 27–28.

If this sounds far-fetched, then consider the record industry. This well-established sector signally failed to anticipate the effects of the transformation from the tangible to the intangible on information, combined with the wider spread of more advanced technologies within society. The record industry is in trouble because demand has fallen for music purchased on compact disc, tape and in other physical (or tangible) formats. Instead, music is increasingly downloaded from the internet in the form of compressed computer files—a situation to which the big music companies have been slow to adapt.⁸

Legal downloads of music, for which the consumer pays (and which usually contain built-in restrictions on copying and further distribution), are now increasingly common. However, peer-to-peer file-sharing networks, including BitTorrent, Kazaa, Limewire and Napster (in its first iteration), have provided the means for unauthorized and largely anonymous transfers of music, as well as many other types of proprietary data files.⁹

Of course, bootlegging or pirating music is nothing new. File sharing, though, allows for the illicit transfer of information on a massive scale. How long before dangerous viral sequences or biological warfare ‘cookbooks’ are exchanged over the internet? Perhaps this is occurring already. Scientific researchers have historically been at the forefront of new technologies, including the internet, and tend to respond sceptically to restrictions on their efforts to collaborate unless the reasons are clearly and adequately explained.¹⁰

This points to the second trend: the potential for further diffusion or democratization of technologies within society that have ‘dual-use’ application. Certainly, the potential for physical—or tangible—proliferation will continue to exist, and require appropriate safeguards. However, potential for the proliferation of digitally encoded, transmitted and duplicated complex information (like genetic sequences, or instructions for combining viral or bacterial organisms) is increasing, in principle, to anyone with a personal computer and an internet connection.

Such risks may seem fantastic. Yet, as the world has discovered with computer viruses, it only takes a few people with malicious intent, among many millions of legitimate users of information, to create havoc. Furthermore, raises the possibility that the perpetrators of a future BW attack may not be terrorists, despite current preoccupations. A 2003 BBC news article reported that, while at least a few virus-writing computer hackers, for instance, *are* genuinely malicious, psychological profiling shows that the majority is simply curious, or unaware of the potential consequences of their action.¹¹ If the information needed to synthesize a dangerous biological agent is available to the public, not to mention the off-the-shelf or mail-order equipment and materials that may facilitate the procedure, with a modest amount of biological knowledge, then equivalent scenarios are conceivable. ‘Getting a computer virus’ may take on an entirely new meaning.

⁸ For background, see ‘Music’s Brighter Future’, *The Economist: Technology Quarterly* (30 October–5 November 2004), pp. 79–81.

⁹ See ‘In Praise of P2P’, *The Economist: Technology Quarterly* (4–10 December 2004), pp. 25–26.

¹⁰ For instance, Tim Berners-Lee and other researchers at the European Organization for Nuclear Research’s high-energy particle physics laboratory (CERN), near Geneva, originally pioneered many of the protocols governing the ‘world-wide web’.

¹¹ BBC News, ‘A Glimpse Inside the Virus Writer’, 5 November 2003, URL <<http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/3240901.stm>>.

The third trend concerns ‘non-lethal’ bio-chemical weapons, which have the potential to undermine seriously the BTWC. Their development in several countries—most notably in the Russian Federation and the United States—is troubling in this regard.¹² Such weapons are sometimes rationalized on the basis that they are more humane than conventional ‘lethal’ weapons.¹³ Nonetheless, the BTWC and the 1993 Chemical Weapons Conventions (CWC) unambiguously ban the use of biological or chemical agents as weapons. There is no threshold for lethality within the prohibitions of these treaties—nor should there be. This is because the lethality of a given weapon is denoted by context, not just by its technical characteristics. ‘Non-lethal’ or ‘less-lethal’ agents, in other words, are marketing terms, as the tragic consequences of the 2002 Moscow theatre siege underlined.¹⁴

These trends, deriving not only from technological invention itself, but also from its wide-scale distribution and penetration of society, will necessitate a shift in thinking about traditional relationships between proliferation and prevention. Such fresh thinking is required because traditional approaches of government policymakers to regulate or stop the spread of ‘dual-use’ or ‘dual-capable’ technologies are going to be increasingly ineffective on their own in the face of such developments.

Evidence of this fresh thinking among governments involved in the BTWC process is currently rather limited. Most of the international disarmament and arms control community’s experience of nonproliferation and accompanying verification comes from the nuclear and chemical fields. In these domains, it is possible to verify ‘stuff’, whether fissile materials or chemicals. The physical signature for making biological weapons is significantly smaller and thus potentially much harder to detect. However, this does not mean that detection is impossible. Rather, it means that different tools and, just as crucially, different assumptions are needed.¹⁵

Aspect II

Where will this leave the BTWC regime? The first point to note is that it is clear that the problems posed by biological weapons are very complex. There are no easy answers, and attempts to fashion solutions based *only* on international treaties and other legislation will fail. The problem is *not* biological weapons and states, or biological weapons and terrorists. Rather, the problem comprises myriad challenges involving states, non-state actors and individuals, which, as just mentioned, requires that one focus on human

¹² For general background on some ‘non-lethal’ weapons, see Wheelis, M., ‘“Non-Lethal” Chemical Weapons: A Faustian Bargain’, *Issues in Science and Technology* (Spring 2003), pp. 74–78. For more information on the US ‘non-lethal’ weapons programme, see Davison, N. and Lewer, N., *Bradford Non-Lethal Weapons Research Project (BNLWRP) Research Report*, no. 5 (Centre for Conflict Resolution, Department of Peace Studies, University of Bradford: Bradford), May 2004.

¹³ For a brief survey of some of these debates, see ‘The Future of Crowd Control’, *The Economist*, 4–10 December 2004, available from <www.economist.com>.

¹⁴ See Coupland, R., ‘Incapacitating Chemical Weapons: A Year after the Moscow Theatre Siege’, *The Lancet*, vol. 362, no. 9393 (25 October 2003), p. 1346.

¹⁵ For a useful guide, see *Coming to Terms With Security: A Handbook on Verification and Compliance*, UNIDIR/2003/10 (United Nations: Geneva, 2003). This handbook can be downloaded from the websites of VERTIC (www.vertic.org) or UNIDIR (www.unidir.ch).

behaviour and *intentions*, not only on restricting the spread of technological *capabilities*.

It is also important to distinguish between the unequivocal norm prohibiting biological weapons that the convention helps to establish, and the process of political stewardship accompanying it.¹⁶ The BTWC is more critical than ever in light of contemporary developments. Yet, it is not been well served by its political process, which, at times, has been characterized by shabby dealings and acrimony.

The past is behind us, though, and the BTWC political process has had three-and-a-half years to rehabilitate itself since the crises of 2001—when the US rejected the draft compliance protocol and the Fifth Review Conference was plunged into turmoil.¹⁷ Nevertheless, that process, through the useful (but only deliberative) expert discussions agreed in late 2002, has come at a cost: the BTWC process is being sidelined at a key juncture in its history. This is a period in which preoccupation with terrorism, including threat of attack by nuclear, chemical or biological weapons, and the issue of alleged Iraqi possession of these weapons, dominate the news headlines. Instead, alternative arrangements—such as the United Nations Security Council, via resolution 1540, for instance, and the US-led Proliferation Security Initiative—have come to the fore.¹⁸ Even Interpol has proclaimed its commitment to building capacity to fight ‘bio-terror’.¹⁹

Littlewood has set out six elements that, in his view, are essential to tackle the threat posed by hostile misuse of the life sciences:

- a real understanding of the problem that biological weapons pose;
- a willingness to go well beyond the traditional arms control paradigm;
- a short-term strategy to overcome the political difficulties in the BTWC;
- a medium-term strategy to strengthen the convention;
- a willingness actually to enforce existing laws and norms; and
- recognition that there are no permanent solutions to this problem: it requires ongoing and unceasing vigilance and risk management.²⁰

My view is that, at present, the international community would be hard-pressed to tick many of the boxes on this checklist.

¹⁶ It should be noted that the BTWC is only one component (albeit an important one) of norms against poisoning and the deliberate spread of disease. There is also the 1925 (Geneva) Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare. Additionally, the 1993 Chemical Weapons Convention bans toxin weapons. Moreover, there is a strong basis in customary international law for the illegality of biological weapons, the use of which throughout history has generally been considered abhorrent.

¹⁷ Documents from these meetings are available at www.opbw.org. For a useful summary of this period and of the BTWC process that resulted, see Sims, N. A., ‘Biological Disarmament Diplomacy in the Doldrums: Reflections after the BTWC Fifth Review Conference’, *Disarmament Diplomacy*, no. 70 (April–May 2003), pp. 11–18. Also available at URL <www.acronym.org.uk>.

¹⁸ United Nations Security Council Resolution 1540 of 28 April 2004. For analysis of the Proliferation Security Initiative, see Prosser, A. and Schoville, H., Jr., *The Proliferation Security Initiative in Perspective* (Center for Defense Information: Washington, DC, 2004), URL <www.cdi.org>.

¹⁹ BBC News, ‘Interpol sounds bio-terror alarm’, 23 February 2005, URL <<http://news.bbc.co.uk/go/pr/fr/-/2/hi/europe/4289485.stm>>.

²⁰ Littlewood (note 2), p. 2.

With regard to the thinking of states on the future of the BTWC regime, much of it has centred on the 2006 Sixth Review Conference and what is likely to emerge from the current meetings of experts. It is entirely possible that, cobbled together to keep the BTWC political process alive, they will produce *nothing*. The success of the Sixth Review Conference will depend on political consensus and the proactive support of countries in positions of international leadership, such as the US. I can discern no clear signs that such commitment exists to bolster the multilateral regime in the current environment.

What is clear, however, is that there is no prospect of Ad Hoc Group (AHG) negotiations on the rejected BTWC protocol making a successful return. The US has been unswerving in its insistence on this point since 2001. Those few nations not intellectually reconciled to this need to get real: if a viable international front determined to proceed with the AHG negotiations was going to emerge, it would have done so by now. It has not. Not least, this is because some of the countries protesting loudest about the rejection by the US of the draft compliance protocol and the AHG negotiating process were secretly pleased that an inspection regime was not agreed.

Those that are still insisting on the resurrection of the AHG as a political excuse for point scoring or obfuscation need to move on. With notes of displeasure at perceived US unilateralism now sounded, those states emphasising their commitment to the BTWC norm need to turn to restoring the credibility of the BTWC political process as a platform for improving its effectiveness. Failure to do so will not only harm their security interests in the longer term, but will also hamper the efforts of others working to restore this credibility.

Moreover, failure to agree to engage in meaningful action to strengthen compliance with the BTWC would certainly overdraw on the limited political credibility the political process has painstakingly rebuilt since the failure of the AHG negotiations. It would also say to proliferators or others with hostile intentions that, despite its tough talk on nonproliferation and terrorism, the international community does not really mean business. This would be disastrous.

It is therefore incumbent on those concerned with combatting biological threats—and I am not just talking about bio-terrorism—that the BTWC consensus banning biological weapons is not undermined by its members due to poor or lacklustre management of the BTWC's political process.

This is easier said than done. Fortunately, some useful ideas have already been put forward. Nicholas Sims outlined his views today, for instance.²¹ In addition, Jonathan Tucker and (separately) Trevor Findlay and Angela Woodward have also proposed ideas. Both of these latter approaches focus on *building blocks* or *modules*. Tucker's ideas concentrate on achieving agreement to negotiate freestanding protocols on bio-security and investigations, as well as setting up a BTWC inspectorate.²² These proposals are worthy of serious consideration and would help take the BTWC regime forward. However, they were set out before the US presidential election of November 2004. I fear

²¹ See Sims's contribution in this volume.

²² See Tucker, J., 'Strengthening the Biological Weapons Convention: a Way Forward', *Disarmament Diplomacy*, no. 78 (July–August 2004), URL <www.acronym.org.uk>.

that, in the current international climate, they are unlikely to fly.

Findlay and Woodward's ideas appear more doable. They propose reaffirmation through robust Sixth Review Conference Final Declaration language of the BTWC's prohibitions, especially Article I—essential, and conspicuously lacking from the timid effort of 2002. They also propose the following elements, which could stand alone or be combined:²³

- an interim BTWC secretariat;
- an enhanced BW use investigation mechanism;
- a confidence-building measures unit;
- a legal advisors' unit;
- a BTWC national authorities network; and
- a BTWC technical implementation support unit.²⁴

This set of proposals, which would all be of tangible value to strengthening implementation of the BTWC, has additional political value in my opinion. This is because those countries that support the strengthening of norms against poison and the deliberate spread of disease are going to need to be united and robust in their commitment. If nations like China, the Russian Federation and the US refuse to lead such efforts from the front, this should not be allowed to prevent the bolstering of the BTWC norm. Willingness on the part of enough governments to engage with some of these largely non-controversial measures—even if they are denied formal consensus for political reasons at the Sixth Review Conference—is, paradoxically, likely to enhance the chances of success by indicating that the progressive majority is serious vis-à-vis strengthening implementation of the convention. At least some of their preferences need to be taken into account.

Furthermore, implementation of such measures by some BTWC states parties would be entirely consistent with the convention itself, whether or not they attract consensus at the Sixth Review Conference. Such 'like-minded' approaches are not without precedent, as participants in the Proliferation Security Initiative or the Ottawa Treaty's valuable Geneva-based Implementation Support Unit (funded by voluntary contributions) can attest.

My final word is on the need to 'think differently' about these issues. The international community is not helpless, nor is it omnipotent. It is time to recognize the need for synergy here, for example in the public health, bio-safety and environmental fields, to name but a few, as well as among the usual suspects, such as intelligence, law enforcement and 'bio-defence' initiatives, which are receiving the money and the

²³ See 'Fifth Review Conference Of The States Parties To The Convention On The Prohibition Of The Development, Production And Stockpiling Of Bacteriological (Biological) And Toxin Weapons And On Their Destruction (Geneva, 19 November–7 December 2001 and 11–22 November 2002)', *Final Report*, BWC/CONF.V/17. Download from URL <www.opbw.org>.

Article I of the BTWC states that: 'Each State Party to this Convention undertakes never in any circumstances to develop, produce, stockpile or otherwise acquire or retain:

(1) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;

(2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict'.

²⁴ Findlay and Woodward (note 2).

attention at present. In particular, the risks of the latter in terms of proliferation—through, for instance, the construction of more high-containment laboratories and ‘Big Science’ work with dangerous pathogens—may outweigh the overall returns to bio-defence that they generate, unless integrated into a strong ‘web of prevention’ (in terms of ethical and legal awareness and commitment) at the individual and institutional level.²⁵

BTWC states parties often overlook an important element in prevention: the contribution made by transnational civil society. Examples include the International Committee of the Red Cross (ICRC)’s *Biotechnology, Weapons and Humanity* appeal, as well as complementary work by national academies of science and medical associations and non-governmental organizations (NGOs) to raise awareness of risks, rules and responsibilities with respect to hostile use of the life sciences.²⁶ Hitherto, this work has largely gone unnoticed or been marginalized in the BTWC context because states traditionally consider these issues to belong in the realm of state security.

Yet, civil society is where the best ideas often emerge, and where useful reality checks take place on the assumptions of governments when these are myopic. For instance, a group of industry scientists in the US recently took a fresh look at on-site compliance activities, and concluded that a system of checks would be feasible without compromising proprietary information.²⁷

The value of this kind of civil society input and experience is sure to become apparent in BTWC expert discussions on codes of conduct (to be chaired by the United Kingdom) in mid-2005. Embracing these new partners is important. As outlined earlier, the changing profile of advances in the life sciences that could be turned to hostile use requires increased attention to checking hostile *intent*. A sole focus on the concerns of states and on regulating the diffusion of technologies is analogous to King Canute trying to hold back the ocean tide. To be successful, the ban on biological weapons also depends on increased awareness among, and support from, individuals and institutions. The best way to ensure this is to involve those trying to help governments spread the message.

New circumstances will not let the BTWC process continue the way it has without damaging the norm against biological weapons that it is supposed to safeguard and consolidate. The convention has been through a difficult period, and, since 2001, the attention of participating governments has been on not tripping up. It is now time for participants to look up and point the BTWC in the direction in which it should be going. Is it going to go forward, in order to tackle the sorts of challenges that I have outlined, or will it have its back to the future?

²⁵ For background, see Tucker, J. B., ‘Biological Threat Assessment: Is the Cure Worse Than the Disease?’ *Arms Control Today* (October 2004), URL <www.armscontrol.org/act/2004_10/Tucker.asp>.

²⁶ Information on the ICRC’s work is available at URL <www.scienceforhumanity.org>. For examples of the work of national academies of science in this area, see the Royal Society, *Making the UK Safer: detecting and decontaminating chemical and biological agents*, Policy document 06/04 (April 2004), and *The individual and collective roles scientists can play in strengthening international treaties*, Policy document 05/04 (April 2004). Both are available at URL <www.royalsoc.ac.uk>. As for the US, the so-called Fink Report (after its Chair, Professor Gerald Fink) is a useful introduction. See National Research Council of the National Academies, *Biotechnology Research in an Age of Terrorism*, National Academies Press: Washington DC, 2004).

²⁷ See *Resuscitating the BioWeapons Ban: US Industry Experts’ Plans for Treaty Monitoring: A Collaborative Research Report of Experts from the US Pharmaceutical and Biotechnology Industries* (Center for Strategic and International Studies Washington, DC, 2004).

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