Near-Term Development of the Governance Regime for Biological and Chemical Weapons

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This is one of a series of project papers on relationships between non-state actors and technology applicable in chemical/biological weapons (CBW). In presenting a synopsis of CBW, of ways in which these weapons threaten our security, and of international efforts to suppress them, it pays particular regard to one category of non-state actor -- elements of civil society active in CBW arms control -- and there is also attention to other categories, including terrorists.

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The paper starts with an account of what sets CBW apart from other weapons. It then explains the concept of “CBW governance regime” it uses to frame the policy issues, with the main elements of this regime being described one by one in the Appendix. Challenges to the regime are then characterized: the emergence of new utilities for CBW; proliferation; and the “creeping legitimization” of certain CBW. Finally, having regard to the imminence of the next review conferences for the 1972 Biological and Toxin Weapons Convention (BWC) and the 1993 Chemical Weapons Convention (CWC), the paper considers possible ways of strengthening the regime, principally measures that would enhance the Organization for the Prohibition of Chemical Weapons (OPCW) and the norm that underpins the two Conventions, such

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1 Item 456, a ‘rolling text’ first circulated for private comment on 14 September 2006. An abbreviated version has since been submitted for publication in Nathan Busch & Daniel H Joyner (editors), Combating Weapons of Mass Destruction: The Future of International Non-Proliferation Policy, University of Georgia Press. Another version has been submitted as a discussion paper for the 25th Workshop of the Pugwash Study Group on Implementation of the Chemical and Biological Weapons Conventions, Geneva, Switzerland, 18-19 November 2006
2 The SPRU project entitled Non-State Actors and the Globalization of CBW Technologies that is funded by Phase 2 of the New Security Challenges programme of the UK Economic & Social Research Council.
3 The texts of these two treaties are available in many places, including the website of the Harvard Sussex Program on Chemical and Biological Weapons, www.sussex.ac.uk/Units/spru/hsp, which is cited here because some of the literature referenced later in this paper is posted on it, including the HSP quarterly journal, The CBW Conventions Bulletin.
measures including an initiative for the use of international criminal law to build sanctions against non-compliance. The paper closes with a listing of topics for work within the policy-research community that could complement governmental and civil-society action.

1 The peculiarities of CBW
Let us be clear, first, about what exactly ‘CBW’ are here being taken to mean. The defining characteristics are toxicity and infectivity: CBW are weapons whose intended means for causing harm is either the toxicity of chemicals, including naturally occurring inanimate substances, or the infectivity of pathogenic micro-organisms, including viruses, prions and other such biological agents that are not, in the strictest meaning of the expression, living organisms. CBW are accordingly being seen as ‘disease weapons’.4 There are other categories of chemical and biological agent that, although highly aggressive in their properties, are not useful in either toxic or infective weapons and which are therefore disregarded in the present paper: napalm, white phosphorus, smoke agents, malodorants, high explosives, propellants, bacteria that can damage inanimate materials, and many more besides. These other categories all lie beyond the scope, too, of the CBW disarmament treaties.5 Article II of the CWC limits the chemicals covered by the treaty to “toxic chemicals and their precursors” qualified by a criterion of general purpose that reads “except when intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes”.6 Article II goes on to define a toxic chemical as “Any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals”. The corresponding provision in Article I of the BWC is worded less tightly but also uses a general purpose criterion: it extends to all “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”. There is nothing in BWC Article I about infective agents; the infectivity criterion that the present paper is using to characterize biological weapons (BW), analogous to the toxicity criterion of the CWC, follows instead from the travaux préparatoires of the BWC and from three authoritative international texts on CBW – the 1969 report of the UN Secretary-General,7 which heralded the BWC negotiation,8 and those of the

4 On the understanding that disease is not synonymous with infectious disease. Toxicity is a cause of non-infectious disease, as are such other (non-weaponizable) factors as genetic disorder and stress. Some infectious diseases, all of which are caused by the infectivity of pathogens, may be contagious in the sense of person-to-person transmissibility.
5 The assertion here that malodorants and white phosphorus lie outside the scope of the CWC, an assertion that rests on the meaning of “chemical action on life processes”, is contentious.
6 The “purposes not prohibited under this Convention” are defined later in Article II: “(a) Industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes; (b) Protective purposes, namely those purposes directly related to protection against toxic chemicals and to protection against chemical weapons; (c) Military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare; (d) Law enforcement including domestic riot control purposes.”
7 Chemical and bacteriological (biological) weapons and the effects of their possible use: report of the Secretary-General. New York: United Nations, 1969.
8 The immediate impetus for the BWC had come from the UK where, in the wake of the NPT negotiation, the Labour government was looking for a disarmament initiative to propose on the international stage. At an August 1968 meeting of the Eighteen Nation Disarmament Committee in Geneva, in the context of an ongoing inter-governmental debate on strengthening the 1925 Geneva Protocol that had been initiated in the UN General Assembly some two years previously under the
World Health Organization initially produced as input into the Secretary-General’s report, later rewritten for the post-Cold-War post-Nine-Eleven situation.

Readers needing detailed descriptive information about CBW that is both reliable and independent of individual governments and sufficiently extensive to go to the heart of the problems that the weapons present for security – international, national and human security -- are well advised to turn first to these three texts. The 2004 WHO volume, especially, allows one to understand what makes CBW so peculiar today and why the security and health impacts of CBW armament could be so heavy. Three features stand out in particular.

First and foremost, CBW may resemble other categories of weapon in that they can attack life, killing their victims no less dead than can bullets or bayonets, but they may also be targeted to disrupt individual processes that contribute to life, which other weapons cannot do save by accident, not design. The nerve gases, for example, target nerve-signal transmission; the blood gases, cellular respiration mediated through the blood. Advances in the life sciences, coupled with those allied technologies that allow the analysis and construction of complex biologically active molecules, could eventually make it possible to design a CBW agent that will interfere with any life process that can be understood in molecular terms, whether it be the process of development, inheritance, reproduction, locomotion, sensation, cognition or indeed any other process that keeps us functioning properly, according to expectations. The potential is there, inasmuch as it has not materialized already, for inducing many different forms of malfunction, maybe even ones that discriminate between ethnic groups of human beings. It is this potential for manipulating at will our very humanity, in pursuit of who-knows-what strategy of adversary subjugation, repression or coercion, that makes CBW especially menacing. Science has a way to go yet before the full horrors can be upon us, but the writing is clearly on the wall. For example, the most obvious motivation that can be imputed to Iraq’s programme in the 1980s to weaponize aflatoxin is a desire to harm through latent liver cancer a subsequent generation of anticipated adversaries. As Dutch UNSCOM commissioner Jack Ooms put it, the objective must have been a weapon of delayed genocide.

stimulus of the Vietnam War, the UK suggested “early conclusion of a new Convention for the Prohibition of Microbiological Methods of Warfare”. A year later – immediately after the UN Secretary-General had published his report on CBW – the UK then tabled what became the initial draft of the BWC, thereby separating BW out of what had hitherto been a CBW debate. Such separation was at first welcomed only within the Western Group, but in March 1971 the USSR unexpectedly accepted the idea of a separate BWC, for which it tabled its own draft. The draft was similar to the UK draft, but lacked the latter’s prohibition of BW research and of BW use, which included provision for investigation of use-allegations by the UN Secretary-General. The USA at that time was keen to improve the international climate by means of an agreement ahead of President Nixon’s visit to Moscow in May 1972. It decided not to push the USSR on the divergences between the UK and Soviet drafts, and in August of that year the USA and the USSR tabled identical drafts for what speedily became the BWC.

13 See the entry for 6 May 1997 in The CBW Conventions Bulletin no 37 (September 1997) p 16.
Artillery shell charged with aflatoxin are said to have been used during the suppression of the Shi’ite uprising in March 1991.\textsuperscript{14} This has not been confirmed.

The second outstanding characteristic is that, as destroyers of life on a large scale, some CBW can rightly be called ‘weapons of mass destruction’ (WMD). When first used, on 22 and 23 April 1915, the device that brought chemical warfare out from its prehistory, namely massed cylinders of liquefied chlorine gas that could simultaneously be opened into the wind, reportedly asphyxiated five thousand French and Canadian troops at Ypres in Belgium and harmed a further 15,000.\textsuperscript{15} Similar numbers of people are said to have fallen victim to Iraqi mustard and nerve gas in the Kurdish town of Halabja after chemical air raids during 16-18 March 1988.\textsuperscript{16} For biological weapons there has been no comparable experience, but during 1964-68 the United States conducted unprecedentedly large field-trials over open sea of aircraft germ weapons, each of which was found capable of laying down a cross-wind line source of pathogenic microbial aerosol tens of kilometres long that was able to infect experimental animals at sea level over a distance of several tens of kilometres downwind.\textsuperscript{17} That could translate into an infective hazard to every person living within an area on the order of thousands, even tens of thousands, of square kilometres. In other words, it appeared from experimental data that some biological weapons would be capable of producing effects comparable in their magnitude to the life-destroying potential of nuclear weapons. Within NATO at that time, defence scientists were also anticipating a new generation of chemical weapons having comparable area-effectiveness.\textsuperscript{18} Yet the actual historical record of CBW employment is not at all dominated by episodes of mass destruction (though in fact for any sort of biological warfare the record is so sparse that adequate definition of the BW threat requires quite other considerations\textsuperscript{19}). Published military doctrine shows that most of the military and other utilities for which user-services once valued possession of CBW depended on aggressive properties other than mass killing – such as ability to deny terrain or materiel through contamination (this creating an overt threat of mass casualties), or ability to terrorize through fear of imperceptible danger, or ability to degrade the combat efficiency of enemy forces by obliging them to assume the encumbrance of anti-CBW protection, or ability to disconcert opposing


\textsuperscript{15}But the records are poor and these commonly and widely quoted numbers have been described as far too large, initially only by German commentators. For a recent account, see Gordon Corrigan, Mud, Blood and Poppymock: Britain and the First World War (London: Cassell, 2004) at pp 164-65, whose view is that, in reality, the chlorine casualties probably numbered around 1500, with 200 deaths.


\textsuperscript{17}Citing the original field-trial report, Ed Regis, in his The Biology of Doom (New York, 1999), writes that in 1964, during Operation Shady Grove off Johnston Atoll in the Pacific, Marine Corps Skyhawks laid down demonstrably infective clouds of tularaemia and Q-fever bacteria over a sea-level area of nearly 5000 square kilometres per aircraft.


\textsuperscript{19}On which see, especially, Caitríona McLeish Accommodating bio-disarmament to bio-technological change: the issue of dual use, D Phil dissertation, University of Sussex, December 2002, pp 72-125.
forces or hostile mobs through a toxicity that inflicts immediate pain or disablement with relatively little risk of death. One may view the available target effects of CBW as lying along spectra that have highly localized, say, or low-casualty effects at one end and large-area or mass-casualty effects at the other. Where along such a spectrum a given chemical or biological weapon would manifest its effects is determined by the characteristics of the toxic/infective agent being used (such as the contagiousness of any disease it can cause) and the manner of its use, and by the vulnerability of the threatened population, this reflecting such factors as the health status of the population and degree of preparedness for protecting itself against disseminated agent. It remains the case today that, in the design of CBW, increasingly severe technological constraint sets in as the mass-destruction end of the spectrum is approached: the greater and more assured the area-effectiveness sought for the weapon, the greater the practical difficulties of achieving it. This is why the notion of mass-destruction terrorism using CBW is less plausible than its portrayals have often suggested. It is one of the reasons why a recent international study of the vulnerability of EU societies to radiological and CBW terrorism has concluded that any such acts of terrorism today or in the immediate future are unlikely to achieve more than localized nuisance. That said, however, risk-assessment in this area remains very poorly developed indeed, at least in public, and much more research is surely merited, given the magnitude of conceivable consequences.

The third outstanding characteristic of CBW is the existence of a uniquely wide array of societal constraints on CBW armament. This array has been building up over time in the law and custom of nations, so that damaging opprobrium is likely to fasten on any future users of CBW. Only nuclear weapons share this feature, but they have not yet attracted anything approaching the proscription of CBW. Some people even speak with pride about their country’s nuclear weapons.

From this third characteristic of CBW there stem elements of state practice and widely accepted law tending to suppress biological and chemical warfare. This is the “CBW governance regime” referred to earlier: an accretion of norms, rules and procedures, both national and international, the whole constituting an entity (‘regime’) that individual states, through their various internal political processes, may judge themselves to be better off inside than outside. Its emergence can be explained in different ways. One of them is in terms of an ancient cross-cultural taboo, evident in different literatures over the millennia, against weapons that exploit disease. One may well imagine this taboo having become transformed into a norm of international behaviour, providing a basis for the further development of international law that is uncommonly strong in this peculiar field of armament. Weapons of any type are designed to harm, and there is no obvious reason for regarding one type of

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22 A powerful impression of the diversity and antiquity of the codes of professional military behaviour that forbid the weaponization of disease, including poison and infectious disease, can be gained from M A Marin, “The evolution and present status of the Laws of War”, Académie de Droit International: Recueil des Cours 92(2):633–749, 1957. His examples are from the Manu laws of India, Roman law and early commentaries on the Koran, as well as from more recent texts.
weaponized harm as more (or less) reprehensible than another. Is it worse to be the victim of unnatural disease than, say, to be shattered by shell fragments? One may ask this and then be surprised that so strong an obloquy should nevertheless have attached to disease weapons and not to other weapons. There is an irrationality here whose very strength and depth is characteristic of taboo. It is surely a phenomenon that people engaged in CBW policy, whether as practitioners or as researchers, should study more systematically than has yet been evident.

| Chief components of today’s CBW governance regime |
|---------------------------------|--------------------------------------------------|
| Since 1928 | The 1925 Geneva Protocol |
| Since 1975 | The 1972 Biological and Toxin Weapons Convention |
| Since 1978 | The 1977 Environmental Modification Convention |
| Since 1985 | The Australia Group |
| Since 1987 | New wave of unilateral renunciations of CW and/or BW (Romania, Iraq, Russia, South Africa and Libya) |
| Since 1987 | Re-empowerment of the UN Secretary-General to investigate reports of CBW use |
| Since 1997 | The 1993 Chemical Weapons Convention |
| Since 2002 | The Global Partnership against the Spread of Weapons and Materials of Mass Destruction |
| Since 2003 | The Proliferation Security Initiative |
| Since 2004 | UN Security Council resolution 1540 on non-proliferation of WMD |

2 Challenges to the CBW governance regime
The formal elements of today’s CBW governance regime comprise multilateral, plurilateral and unilateral instruments. Its ten principal components, identified in the table above, are described in turn in the Appendix to this paper. The underlying international norm is CBW non-armament and, in the case of former CBW possessor states, CBW disarmament. A principle of the regime is that it be non-discriminatory, making no distinction between the ‘haves’ and ‘have-nots’ among its member states.

On the chemical side, a respected international organization, the OPCW, now exists that oversees CWC implementation and compliance procedures -- hampered though it is by some remaining gaps in its legal foundation and by the ever-present possibility of governments (or their voters) losing awareness or appreciation of the universality sometimes ascribed to it, both in space and in time.

23 A biological explanation for the taboo was proposed by Michael Mandelbaum in his The Nuclear Revolution: International Politics Before and After Hiroshima (Cambridge University Press, 1981), at pp 29-40. This explanation has been disputed, notably by Richard Price, The Chemical Weapons Taboo (Cornell University Press, 1997). He and other commentators have looked, for example, to discourse theory in preference to concepts of taboo; see especially Jean Pascal Zanders, “International norms against chemical and biological warfare: an ambiguous legacy”, Journal of Conflict and Security Law vol 8 (2003) pp 391-410. Zanders does not dispute the existence of a taboo but questions the universality sometimes ascribed to it, both in space and in time.
OPCW’s raison d’être. 24 On the biological side, in contrast, there is no such implementing organization to put into effect the terms of the BWC, which on its face is not much more than a statement of the norm plus a few norm-promoting obligations that states parties have not always observed. To say this is not at all to disparage the BWC or to suggest that the biological side of the regime is feeble; on the contrary, the norm has clearly drawn much strength from state practice and the support of internationally organised civil society. 25 As Ambassador Donald Mahley, former chief US CBW negotiator, said in Geneva during his valedictory statement on 28 April 2006, civilization, norm and law are now such that there would be a massive reaction against the use of biological weapons by anyone, whether state or terrorist, in the future. 26 But the BWC regime suffers, as its critics rightly observe, from an ‘institutional deficit’ – the absence of an ‘OPBW’ or anything like it charged with those routine activities of information exchange, assistance networking and shared international procedure that would entrench responsibility for the norm and the obligations within the bureaucracies and legislatures of BWC states parties.

Supranational threats to security, such as these weapons pose, require global solutions involving active international cooperation, as the UK government observed in 2002 in its Green Paper on strengthening the BWC. 27 Nothing less can suffice. Surprisingly successful though the regime has been, it still needs enlightened policy-making for its further development, not least in view of the challenges that are now emerging.

A development or change that causes a state to question its continuing allegiance to the CBW governance regime is by definition, a challenge to that regime. The challenge may be to the regime as a whole or to particular parts of it. If major or many states start such questioning, the challenge is serious, requiring a collective response if the regime is to remain in good order, properly adapted to its ever-changing environment of international relations. For each state party the constant question is whether the benefits flowing from the regime continue to outweigh the attendant costs and also any penalties there may be to the national interest – are we still better off inside the regime than outside it? With that as a framing concept, particular challenges can be identified. Three big ones stand out at present: the emergence of new utilities for CBW; proliferation in a variety of forms; and the creeping legitimization of CBW that are not regarded as WMD.

24 For a detailed account of the formation of the OPCW and of how the first eight years of its existence proceeded, see the quarterly reviews prepared by the HSP Researcher seconded to OPCW Headquarters and published as “Progress in The Hague” from issue 19 (March 1993) of Chemical Weapons Convention Bulletin through issue 67 (March 2005) of The CBW Conventions Bulletin. HSP, in the persons of Ian Kenyon (who, as Chief Executive Officer of the OPCW Provisional Technical Secretariat, was in charge of transforming the CWC treaty text into a functioning intergovernmental organization) and Daniel Feakes, is currently producing an edited volume on the Preparatory Commission and the early years of the OPCW, with contributions from other main actors.


27 Countering the Threat from Biological Weapons, Cm 5484, released 29 April 2002.
2.1 **New utilities for CBW**

Disarmament, especially WMD disarmament, is an objective widely seen as beneficial, but armament also can bring benefit, by preserving security. Under some circumstances that could include CBW armament. Military options forgone through renunciation of CBW capabilities might then be significant on the cost side of remaining within the CBW governance regime. The taboo seemingly associated with disease weapons appears to mean that most states are content with CBW disarmament -- except that circumstances may now be creating utilities for CBW not previously considered.

At least three types of new utility can now be discerned, and examples of all three seem evident in recent conflicts or in preparedness for them. The first is a consequence of wider changes in the nature of warfare, rather as the shift from ‘massive retaliation’ to ‘limited war’ doctrine towards the end of the 1950s elevated the status of CBW in Western military thinking, causing new utilities to be seen for the weapons, especially in Third World settings. Today, a new type of organised violence is taking the place of, for example, those confrontations between highly disciplined and technologically advanced armed forces that characterized the later Cold War. Conflicts these past two decades in the Balkans, the Caucasus, the horn of Africa, Rwanda, Liberia, Sierra Leone, Angola, Afghanistan and Iraq have eroded formerly clear distinctions between war, organized crime and large-scale violation of human rights. These new wars are fought by seeking political control through the displacement or worse of civilian populations and through the sowing of fear and hatred. This is additional reason why the latest CBW-use allegations, emanating from Sudanese, Israeli, Palestinian, Baluchi and Lebanese sources, should not remain uninvestigated.

The CWC, though not the BWC, provides for a compliance-verification system run by an intergovernmental organization including an international inspectorate that ought in principle to countervail the new-utility challenge. But the routines of that system were designed against Cold-War-period conceptions of utility, meaning that the lists of chemicals and types of industrial facility that the OPCW now has under its immediate surveillance are dictated by the types of chemical weapon that fitted old-war, not new-war, requirements. Basically that meant focussing on toxic chemicals that were so intensely aggressive in their effects that weapons disseminating them would be competitive, in casualty-producing terms, with conventional weapons. Not a great many such toxicants exist, so their coverage in the CWC schedules that govern routine OPCW verification allowed people to suppose that the main threats had thereby been brought under control. In the new wars, however, it is not so much relative aggressivity that determines the utility of CW but rather such other factors as accessibility or availability and terrorizing potential. A whole host of toxic industrial chemicals (TICs)

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29 This future seems already to have begun. Instances of ‘new’ chemical warfare include episodes in Iraqi Kurdistan, in southern Africa, in Bosnia and perhaps in Chechnya; see J P Perry Robinson, “The General Purpose Criterion and the new utility of toxicants as weapons”, unpublished paper presented at the 15th workshop of the Pugwash Study Group on Implementation of the CBW Conventions, Oegstgeest, the Netherlands, 23-24 June 2001.

and other chemicals not hitherto regarded as CW agents might thus find application in new-war contexts. The fact that most of these chemicals are not listed in the CWC control schedules does not mean that their use for CW purposes is permitted, nor that the CWC is unavailing against them. It means only that the routine international verification procedures run by the OPCW may not see them. The general purpose criterion that the CWC uses to define its scope obliges the national authorities of states parties to ensure that no toxic chemical is abused.\textsuperscript{31} The challenge to the regime therefore lies in the degree to which such national controls may fail to exert a constraining effect.

A second major source of new utility for CBW is the propensity of knowledge newly gained in the life sciences for suggesting novel modes of attack that could be the basis for militarily or politically attractive new forms of weapon. For example, if a hitherto unknown molecular pathway serving a process of life comes to be identified, chemical or biological agents capable of interfering with that pathway might also become identifiable and thus form the basis for a novel weapon. Of course many considerations other than novelty of effect determine the usefulness of a new weapon, so the new science is not itself the challenge to the regime that is here suggested. But it would be a step towards it; and many such can be envisaged.\textsuperscript{32} This prospect is not necessarily remote. We should not, for example, disregard the recent statement reliably attributed to a “former high-level Defense Department official” commenting on the feasibility of US attack on Iranian underground facilities: “We can do things on the ground, too, but it’s difficult and very dangerous – put bad stuff in ventilator shafts and put them to sleep”\textsuperscript{33}. Again, it is the general purpose criterion as used in the BWC and in the CWC that is the safeguard provided by the CBW governance regime against this challenge. But it is a safeguard only if it can be activated, and this requires continual monitoring of scientific and technological change for any new development that might challenge the regime. This is a task, it should be noted here, that cannot reliably be left to security authorities alone, simply because their surveillance of new science will always be insufficient: the scientific community at large must also contribute.

A third type of novel utility now becoming manifest is the emerging role of CBW, not in the hands of terrorists or other new-war aggressors as in the first novel utility, but for purposes of counter-terrorism. This utility has demonstrably become a stimulus to rich-country questioning of the regime. It is rooted in past counter-insurgency applications of toxic chemicals, which reach back through the Vietnam War to British, French, Italian and Spanish use of toxic chemicals in colonial situations -- a utility that the CWC was intended to suppress. Its re-emergence in counter-terrorist guise is perhaps to be seen in the proliferation of weapons based on

\textsuperscript{31} CWC Article VI.2 opens thus: “Each State Party shall adopt the necessary measures to ensure that toxic chemicals and their precursors are only developed, produced, otherwise acquired, retained, transferred, or used within its territory or in any other place under its jurisdiction or control for purposes not prohibited under this Convention.” Known as the ‘Molander chapeau’, this obligation prefaces the main provisions of the CWC for its industry control regime.

\textsuperscript{32} A particularly rich recent source of information on advances in technology that may be applicable to CBW is the so-called ‘Fink follow-on’ report: Institute of Medicine and National Research Council of the US National Academies, Committee on Advances in Technology and the Prevention of Their Application to Next Generation Biowarfare Threats (Co-Chairs: Stanley M Lemon and David A Relman), Globalization, Biosecurity, and the Future of the Life Sciences, Washington, DC: The National Academies Press, 2006.

\textsuperscript{33} Seymour M Hersh, “The Iran plans: would President Bush go to war to stop Tehran from getting the bomb?”, New Yorker, 17 April 2006. It is not clear whether it was a literal or a euphemistic ‘sleep’ that was meant.
Agent CR, evident each year in that part of the OPCW Annual Report addressing declarations of ‘riot control agents’, for the potency and other properties of CR have caused it to be widely rejected as suited to civil police use. The utility is also evident in the vigorous advocacy to be heard in some quarters for the arming of counterterrorist forces with more advanced types of ‘non lethal’ CBW. The readiness with which the US Marine Corps has taken to toxin weapons of this type – devices disseminating Agent OC\textsuperscript{34} – is further indication. So is the absence of any serious criticism of the Russian government for having authorized use of toxic chemicals other than riot-control agents by the spetznaz forces that, on 26 October 2002, liberated 634 of the theatre-goers taken hostage by Chechen separatists in Moscow. The other 129 hostages were killed by the toxicant used, which is said to have been an agent “based on derivatives of fentanyl” that had been developed by USSR special services.\textsuperscript{35} Comparable in some respects, if very different in others, is a counterterrorist utility for CBW that Israel, for example, has demonstrated in its espousal, following the Munich Olympics outrage in August 1972, of assassination as a major tool in counterterrorism.\textsuperscript{36}

2.2 Proliferation of CBW

Nowadays when people speak of CBW proliferation it is not always clear what they are talking about. The concerns expressed most commonly are probably about clandestine acquisition of CBW by non-state entities, such concerns having supplanted or perhaps augmented earlier concerns about ‘rogue states’. The characteristics that have caused states to be described as rogues include their supposed interest in acquiring CBW, so the concern could have been at root a questioning of the efficacy of the CBW governance regime, in turn becoming stimulus to the various plurilateral initiatives that have since contributed to the regime. Latterly these initiatives have been directed also against non-state entities. Such entities include business corporations heedlessly serving a lucrative marketplace, criminal organizations feeding a black market, and terrorist groups seeking new weapons.

Proliferation of CBW among terrorists is, for the largely technological reasons addressed earlier, probably myth. While it is known that certain terrorist groups have indeed looked at CBW options, such intent as they have had to acquire CBW has not been translated into evident capability. Thus far, other means for terrorist violence have proved more attractive or more accessible to them and, since the aberration of Aum Shinrikyo in the 1990s, only the most footling terrorist attempts to acquire CBW have been observed.\textsuperscript{37} This is not to say that it could not happen: the lesson to draw from the still-unresolved ‘anthrax letters’ affair in the USA during late 2001 is that biological weapons can put potential for great harm into the hands of technically

\textsuperscript{34} See the entry for 22 March 1996 in \textit{The CBW Conventions Bulletin} no 32 (June 1996) p 27.


\textsuperscript{37} For an informed review of the evidence of interest in CBW by actual terrorist groups today, see Milton Leitenberg, \textit{Assessing the Biological Weapons and Bioterrorism Threat}, US Army War College Strategic Studies Institute monograph, December 2005, at pp 21-42.
competent and skilled individuals. A similar lesson can also be drawn from two other instances in which pathogenic microbes were deliberately released for purposes, not of terrorism (as normally understood), but for criminal or other purposes: in the Mato Grosso of Brazil during 1957-63, when smallpox and other diseases were introduced into Indian tribal populations so as to facilitate large-scale takeovers of land; and in a small town in Oregon, USA, in 1984, when Rajneeshee cultists sought to influence local elections by infecting voters with salmonellosis through contamination of salad bars in neighbourhood restaurants. The CWC and BWC in fact place useful tools at the disposal of guardians against such acts, for they oblige states parties to introduce and enforce effective controls on access and use of toxic and infective materials by all persons within their jurisdictions. Whether the CBW governance regime is more or less applicable in counter-terrorism than it is in counter-proliferation is now a matter for particular inquiry by security scholars. Yet it still seems to be at the state level that CBW proliferation is, on the available evidence, a more serious challenge to the regime.

Here it is necessary to differentiate ‘vertical’ and ‘horizontal’ proliferation. Vertical proliferation describes the process whereby states possessing CBW weapons expand or upgrade existing CBW capabilities. It thus refers solely to states that have opted to remain outside the regime and, for those that have done so in order to preserve CBW capability (as opposed to lack of interest or even awareness), the challenge to the regime is serious on several counts. Above all, it strengthens pro-CBW constituencies in both national and bureaucratic politics, thereby increasing the political costs to the country’s leadership if it were to advocate joining the regime. Most probably this process is operating in the treaty-holdout states of Egypt, Israel and Syria, where it has been greatly complicated by nuclear weapons. Syria has been uniquely forthcoming about its avowed CW capability, starting in November 1996 when its ambassador to Egypt told a lecture audience in Alexandria that Syria would retaliate with chemical weapons against Israeli nuclear attack or threat; and President Bashar Assad has spoken recently about Syrian rights to possession of CBW as safeguard against “Israeli aggression”. Nor have Israeli officials been reticent about their view of Syrian CW and, by implication, the counter-CW value of Israeli nuclear weapons.

Horizontal CBW proliferation presents an altogether different kind of challenge to the CBW governance regime, one that is rooted in the otherwise mostly beneficial tendency of industrial and other technologies to diffuse rapidly around the world under the various influences of globalization. The capability of individual states to acquire CBW weapons, if they so choose, is thereby enhanced, and, if they still need specialized assistance, clandestine procurement networks have now gained increasingly dense cover within which to operate. That networks of this type can indeed spring up to meet demand was clearly shown by the UNSCOM/UNMOVIC

39 See Appendix below.
investigation of Iraqi CBW acquisition and by the Libyan CW programme. At the level of know-how and other intangible technology, comparable assistance is increasingly available from another quarter as well. A great proliferation of competence in technological matters relating to CBW is currently underway in the United States as thousands of millions of dollars are dedicated annually to countermeasures against bioterrorism, a competence that may by now surpass whatever still remains available from the Soviet biological-weapons programme. Even states that have no immediate wish to acquire CBW may nevertheless move to take advantage of these various possibilities as a hedge against circumstances changing – by, for example, building what could serve as ‘break-out capacity’ into their industrial infrastructure rather as the USSR created ‘mobilization capability’ for manufacturing BW within its biotech industry during 1973-92. Iran, victim on a terrible scale to Iraqi chemical weapons during 1983-88, very probably falls into this category while at the same time being amongst the most vocal supporters of the CBW governance regime and, especially on the medical side, a proactive participant in its international procedures. Nor is there any clear impropriety in such a position, for all the industrial powers, including ones that menace Iran, have manufacturing industries to which they could turn at short notice for CBW agents (whose full weaponization would, however, be more demanding). The fact nevertheless remains that horizontal proliferation of this type is a threat to confidence in the regime and therefore a serious challenge to it for as long as the problem of ‘dual use’ persists. If this challenge is to be contained, it must first be understood, and this requires a continuing policy-research effort directed at the nature, processes and drivers of the diffusion of ‘dual use’ technologies applicable to CBW.

2.3 Creeping legitimization of certain CBW
In the ability of CBW agents to target themselves on particular life processes, there is growing scope to ‘tailor’ the nature or severity of their effects to a strategic or tactical objective. In that such tailoring could, as has been seen, open the way to weapons suited to hugely malign purpose, CBW present a long-term danger that demands an alert and strong CBW governance regime. That same tailoring can, however, provide weapons of an altogether more acceptable character, including ones having effects gentler than most other means of violence. Examples include the ‘tear gas’ of police


44 For detailed expenditure figures, see Stephanie Chang and Alan Pearson, Federal funding for biological weapons prevention and defense, Fiscal Years 2001 to 2007, Washington, DC: The Center for Arms Control and Non-Proliferation, June 2006.


forces; the psychochemical weapons that, according to past US Army teaching, would cause the enemy to “linger in overpowering reverie”; and the entirely mythical knock-out agents of “war without death” that have figured in science fiction since the Nineteenth Century. Add to these chemicals the various infective agents that can induce highly debilitating diseases of low mortality, and a category of CBW is created whose features seem far distant from those of WMD, whose possession may appear desirable, and whose constraint by the regime may therefore come to seem a liability, notwithstanding the abyss into which the tailoring could also take us.

A rather wide variety of commercial, political and military interests stand to benefit from exclusion of some or all of these non-WMD CBW from the governance regime. Sub rosa campaigning to that end has long been under way, most notably during the last months of the CWC negotiation in mid-1992, when the protagonists of what was then starting to be called ‘Non Lethal Warfare’ (NLW) came up against governmental officials charged with securing consensus on those parts of the CWC text that dealt with ‘riot control agents’ (RCA). The issue turned then on whether RCA fell within the definition of ‘toxic chemicals’, subject, thereby, to the general purpose criterion that would serve to regulate the duality of their application either in warfare (prohibited) or in law-enforcement (permitted). For reasons that remain unclear to this day, the USA favoured exclusion but, finding itself isolated in this position within the Western Group, secured a compromise in which the CWC expressly prohibited use of RCA “as a method of warfare” but remained silent on the toxic character of RCAs, thus perpetuating a semblance of ambiguity on whether the toxicity criterion fundamental to the CWC did or did not capture RCA. The way became open for determined NLW protagonists to argue that, if tear gas was not proscribed by the CWC, then neither should the more modern varieties, for which they coined the category-label ‘Advanced RCA Technology’ (ARCAT). Subsequent ARCAT development projects funded by the US government have included work on the fentanyls and other such intensely supertoxic chemicals. The process that can be seen here is a surreptitious equation of toxicity with lethal toxicity. In this attempt to loosen the CWC constraint on the weaponization of other forms of toxicity we have started to see a creeping legitimization of non-WMD CBW, which is a most serious challenge to the regime. A situation in which some types of toxic weapon are allowed but not others is certain to be unstable.

The instruments of creeping legitimization include, not only ‘public diplomacy’ and other more hidden pressures for exemption, but also national legislation. In the USA the ‘Ensign Amendment’ of the 2006 Defense Authorization Act asserts that “riot control agents are not chemical weapons”. Fortunately no

47 US Army Chemical Center and School, Fort McClellan, “New chemical agents and incapacitating agents”, Lesson Plan LP6075, undated [ca 1965].
48 A close account of these and related events is to be found in J P Perry Robinson, “Solving the problem of ‘law enforcement’”, a paper presented at the 19th Workshop of the Pugwash Study Group on Implementation of the CBW Conventions, Oegstgeest, the Netherlands, 26-27 April 2003, especially in the version currently being revised for publication as “Law enforcement, ‘non lethal’ warfare and the norm against biological and chemical armament”, 10 May 2003.
49 Proposed not in fact by the USA but by a group of eleven Neutral and Non-Aligned States looking also, and in sharp contrast to the USA, for a CWC prohibition of herbicide warfare.
50 In its section 1232, the US National Defense Authorization Act for Fiscal Year 2006 states: “It is the policy of the United States that riot control agents are not chemical weapons and that the President may authorize their use as legitimate, legal, and non-lethal alternatives to the use of force that, as provided in Executive Order 11850 (40 Fed.Reg.16187) and consistent with the resolution of ratification of the Chemical Weapons Convention, may be employed by members of the Armed Forces in war in defensive military modes to save lives, including the illustrative purposes cited in Executive Order
other state party to the CWC has adopted such a position, nor even commented publicly on what the USA has done. It remains to be seen whether the United States can keep the topic off the agenda of the Second CWC Review, which is where it clearly ought to be.

3 Strengthening the CBW governance regime
Two features stand as bulwarks against the challenges to the CBW governance regime. The first is an OPCW that, despite severe budgetary constraint and opaque operating methods but having, in general, constructive US support, is now an effective multilateral institution that is actively suppressing chemical-warfare armament in most of the world. Second, in regard to disease-warfare more generally, modern customary and conventional international law has transformed an ancient taboo into an enforceable norm of international behaviour. Together these are the principal reasons why chemical and biological warfare are rare occurrences even in today’s conflict-ridden world. Because of what CBW could become, they are treasure that must not be frittered away.

Loose talk of CBW “non-proliferation” is a step in that direction, for it carries the implication – no doubt unintended by most of those who use the term -- that dominant powers have a right to possess disease weapons; and there are indeed certain states in which some leadership figures actually seem to believe this to be so, at least in the case of disabling chemical weapons having counterterrorist application. Yet as a step in the wrong direction this one is surely far outpaced by the growing practice of treating CBW as though they are a subset of WMD. For while some CBW can properly be treated as WMD, all CBW are WMD only when eccentric meanings are given to these two technical terms. The original 1947/48 United Nations definition of WMD, for example, some of which is followed in present-day US legislation on the subject, embraces only “lethal” chemical and biological weapons, whereas the CBW disarmament treaties of 1972 and 1993 have no such limitation, lethality being a criterion of scope in neither of them. The hazard here is not only the

11850.” On 27 September 2006, in evidence to the Senate Armed Services Subcommittee on Readiness and Management Support, which is chaired by Senator John Ensign, the Defense Department in the person of Joseph Benkert, Acting Principal Deputy Assistant Secretary of Defense for International Security Policy, testified that the “Administration agrees with [this] statement”.  
51 The Charter of the United Nations, in Article 26, requires the Security Council to formulate plans for a “system for the regulation of armaments”. An early step in this direction was agreement to subdivide the problem into categories of armament that would, because of their inherent character, require categorically different approaches. “Weapons of mass destruction” (WMD), in contradistinction to “conventional weapons”, were seen as one such category, though there was no immediate consensus on what exactly the category should comprise. During the latter part of 1947, the United States proposed in the Security Council that WMD be defined as “atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above”; see UN Security Council document S/C.3/SC.3/7/Rev.1 dated 8 September 1947. It was this definition that the United Nations subsequently adopted and, as it has never formally been changed, is presumably what has been meant in the frequent UN references down the decades to WMD.

52 Section 1403 paragraph (1) of the 1997 Defense Authorization Act defines a WMD as “any weapon or device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination, or impact of (a) toxic or poisonous chemicals or their precursors; (b) a disease organism; or (c) radiation or radioactivity”. See, further, W Seth Carus, “Defining ‘Weapons of Mass Destruction’”, National Defense University Center for the Study of Weapons of Mass Destruction Occasional Paper no 4, January 2006.
suggestion that non-WMD CBW are acceptable – that as long as CBW do not kill us in large numbers they are legitimate instruments of security. Nor is it only the danger that the fuzzy concept of WMD is now supplanting that long-standing precept of the laws of war whereby weapons-employment that does not discriminate between combatant and non-combatant is impermissible, on whatever scale it may occur. No less pernicious is a third implication: that, being in the same category, nuclear weapons are a legitimate, even a necessary, counter to CBW, whether as deterrent instrument of retaliation or as means for destroying CBW capability. We can see this implication displayed in the current pressure in the USA for acquisition of ‘bunker busting’ nuclear weapons and in the entry into the declared national policy of some of the nuclear-weapon states (China is in fact the only clear exception) of stated willingness to use nuclear weapons in response to CBW attack. There is further reason beyond the legitimation it seems to offer for nuclear armament why this last is so dangerous a policy. Any decision on such nuclear release would have to rest on what recent events have shown to be very uncertain ground indeed: intelligence about supposed adversary CBW behaviour. Ambiguities, uncertainties and other peculiarities attach to CBW to such a degree that the methods of intelligence assessment that seem to work adequately outside the CBW field do less well within it. The oddities of CBW, which are rooted mainly in the ‘dual use’ nature of much of their contributing technology, are too obtrusive to be swept under a collective WMD carpet. Professional CBW intelligence analysts of course recognise this; it is at the interface between them and their political masters that the attendant misapprehensions are liable to become dangerously misleading or, if not that, the uncertainties then become subordinated to the political imperatives of the moment. The failure to find CBW in Iraq after the last coalition invasion; the cruise-missile bombardment of Al-Shifa Pharmaceutical Industries in the Sudan before that;\textsuperscript{53} and, from still earlier times, the Yellow Rain fiasco in which President Reagan’s administration mistook beeshit for BW;\textsuperscript{54} all of these and more are cautionary tales.

It is presumably ideas of common cause that have promoted the conflation of CBW and nuclear weapons. Maybe, for example, the current alarms over bioterrorism can be turned to advantage by invigorating the quest for nuclear-weapons non-proliferation, or \textit{vice versa}. Common cause imbues the current policy of the European Union of negotiating a WMD “non-proliferation clause” into the Association Agreements it is concluding with non-EU states and other entities,\textsuperscript{55} a policy that started with Syria.\textsuperscript{56} At another level, the machinery of international security cooperation and shared procedures so laboriously worked out and put into effect by the IAEA and the OPCW may have seemed at first glance also to be applicable \textit{mutatis mutandis} to biosecurity, and therefore good reason for bringing N, C and B together under a single precautionary roof. There may indeed be advantage in such joint approaches, but is it sufficient to risk damaging what exists already? No, one may well think. More scrutiny, including historical research, needs at least to be given to the question of functional links between CBW on the one hand and nuclear

\textsuperscript{54} Julian Robinson, Jeanne Guillemin and Matthew Meselson, “Yellow Rain: the story collapses”, Foreign Policy no 68 (Fall 1987) pp 100-17. 
\textsuperscript{55} Council of the European Union, note from the General Secretariat of the EU to the Delegations, “Fight against the proliferation of weapons of mass destruction: Mainstreaming non-proliferation policies into the EU’s wider relations with third countries”, 14997/03, Brussels, 19 November 2003. 
\textsuperscript{56} See the entry for 19 October 2004 in The CBW Conventions Bulletin no 66 (December 2004) p 56.
weapons on the other -- an area strangely neglected by scholars of international security.

The impending Sixth BWC Review Conference (20 November to 8 December 2006) has stimulated much work on how best to strengthen the biological side of the present CBW governance regime, and the Second CWC Review Conference (7-18 April 2008) has begun to do the same for the chemical side. (Work at the biological-chemical interface, which could well be important for the overall CBW regime, now seems to rest, if only by default, with civil society.) The US government, which has faced criticism for its seemingly hostile attitude towards the BWC since mid-2001, has put forward suggestions, albeit chiefly of a plurilateral rather than multilateral kind. The often contrasting recommendations of the WMD Commission chaired by Hans Blix of Sweden also merit the most careful attention. Ordering principles for these and the many other proposed ways forward are needed and, for this, an attractive logic is to prioritize around the two just-identified bulwarks of the regime: to put most effort into (a) enhancing the OPCW and (b) strengthening the norm. In comparison, the various other sorts of proposal, such as codes of conduct for scientists, seem mere tinkering at the edges, useful though they are as topics for international discourse at times when real progress is politically difficult.

**Enhancing the OPCW** means soliciting maximal support for the Organization in national politics and as much freedom for it to get on with its CWC-assigned tasks as the international system can countenance. Enhancing the OPCW also means ensuring that, in its necessary pursuit of adaptation to changing international relations, it is protected from having to compromise on principles or procedures that lie at its heart. Undoubtedly the best judge of how to do this is the OPCW Technical Secretariat. But its institutional memory is now severely challenged by its having to implement an employment policy that admits only a seven-year job tenure. For this reason, and especially for matters that impinge on political sensitivities and on which the Secretariat may therefore be unable to develop its own recommendations, ‘scapegoat’ study by outside specialists may become essential. A clear case in point is implementation of the primary safeguard that the CWC provides against the emergence of new utilities for CBW and the associated pressures for their legitimization. That safeguard is the comprehensive nature of the CWC’S prohibitions as embodied in the general purpose criterion that is also protection against adverse

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57 Which was when the United States effectively brought the BWC Protocol negotiations (see pages 21-22 below) to a close; see Daniel Feakes and Jez Littlewood, “Hope and ambition turn to dismay and neglect: the Biological and Toxin Weapons Convention in 2001”, *Medicine, Conflict and Survival*, vol 18 (2002) pp 161-74.

58 But in regard to the BWC specifically, the USA has put forward no proposals since five years ago: see the entries for 25 July, 1 November and 19 November 2001 in *The CBW Conventions Bulletin* no 53 (September 2001) pp 48-49 and no 55 (March 2002) pp 12 & 16-17.


technological change and against abuse of dual technology. 61 Especially in regard to NLW, this is an area that civil-society friends of the OPCW will expect the Second CWC Review to examine most carefully. Meanwhile the OPCW’s own projects for strengthening the norm should receive the widest possible outside assistance, including the active support of civil society: the action plans for promoting universality of the CWC and for improving implementation of CWC Article VII on national measures.

**Strengthening the norm** means, first, not weakening the norm and, second, enhancing it — as by promoting mechanisms for ensuring that the norm is not disregarded at the national level and is more enforceable than it is at present at the international level. How is it possible to weaken a norm that seems to rest on so strong a taboo? Perhaps by fragmentation: by treating BW and CW as though they were entirely different from one another instead of variations on the same theme, that of disease weapons; or by trying to differentiate CBW according to bogus criteria of lethality or mass-destructiveness. Sometimes, certainly, different types of CBW will require different practical arrangements from the regime; but, in the interests of norm integrity, the so-to-say default position must surely be common treatment wherever possible. Nor is that an unnatural default. As scientific disciplines, chemistry and biology are converging. And the BWC and the CWC anyway overlap strongly in their scope: toxins, for example, are covered by both treaties; and it is not unreasonable to contemplate the routine international procedures of the OPCW being extended into the domain of toxins and other inanimate biological agents, which is another important and now-pressing topic for policy research.

Beyond that, two different forms of enhancement may now be judged worthwhile. The first is the mechanism noted earlier: machinery for entrenching responsibility for the norm and rules of the BWC within the bureaucracies and legislatures of BWC states parties. For such machinery the CWC has a demonstrably workable model in the obligation it has placed upon its states parties to designate or establish National Authorities for liaising with other states parties, and with the OPCW, empowered by penal legislation to implement the provisions of the treaty within their jurisdictions. A number of OPCW member-states have gone further and created formal lines of communication between their National Authorities, their legislatures, their industries and their civil society. 62 Some of the CWC National Authorities already include BWC cells. The necessary precursor of the mechanism being proposed here is an international campaign to ensure that BWC states parties take Article IV more seriously than many seem to do at present. 63 That article contains the obligation upon each state party to “take any necessary measures to prohibit and prevent” all BWC-violative activity within its jurisdiction. The EU has

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62 As in the UK, which has a formal CWC National Authority Advisory Committee and where the National Authority must report annually to Parliament.

already agreed a Joint Action\textsuperscript{64} to this end and, in regard to non-state entities, further pressure is emanating from UN Security Council resolution 1673 (2006) that has just extended 1540 (2004). There is thus some expectation, at this writing, that the Sixth BWC Review Conference will agree an Article IV action plan similar to the OPCW’s on CWC Article VII. All that would then be lacking to complete the norm-strengthening mechanism would be some form of standing international secretariat for the BWC capable of networking with the ‘BWC national authorities’. Though there has in the past been resistance to creating any such body, times have now changed, and the BWC institutional deficit has become a disgrace to the states that created it. Their affirmations of support for the BWC would no longer be credible were they to persist in that stance. Civil society would then have a ‘naming and shaming’ duty to perform.

The second, and complementary, means for strengthening the norm is machinery for better enforcement. Sovereign states do not readily commit themselves in advance to punitive or other reactive sanctions against one another, so a possible way forward is a mechanism for holding individuals personally accountable for any such violations. Such an individual-responsibility approach is already discernible in international affairs. Individuals, or at least sub-state entities, in their identity as persons involved in WMD proliferation, are the main target of UN Security Council resolution 1540 (2004). The former president of Iraq, Saddam Hussein, is now on trial facing charges of genocide arising out of the CW attacks on Halabja and elsewhere in Iraqi Kurdistan. From among the several categories of stakeholder in the development of biotechnology, individual scientists are being made responsible for impeding access to ‘dual use’ materials judged helpful to bioterrorists. All of this is surely good for the norm. Yet the defining feature of a universal norm is not that it should dictate how particular individuals or groups behave, but rather how everyone should behave, high or low, head of state or simple citizen. All of us are responsible for the continued well-being of the norm against the weaponization of disease, and the onus is therefore upon us all, individually, to uphold it. It is all very well saying (as many people continued to do at the time of the 2005 BWC intersessional meetings) that scientists need to think more about conceivable end-applications of their work and be taught about the international treaty that is meant to suppress BW. That treaty, the BWC, codifies the norm, but like the Geneva Protocol and the CWC, it places its primary constraints on the behaviour of states, not of individuals. If the norm is to be strengthened, the overall regime must be developed so that its relevance to the individual as well as to the state becomes clear to all. And unless this is done in step with the current moves towards codes of conduct and principles of practice for scientists, those moves will merely become empty acts of discrimination, unpopular and ignored. A more compelling way of inserting the sanction of individual accountability into the regime is needed.

Now that international criminal law is emerging from the constraints of the Cold War, just such a mechanism has become possible. It is a very simple one: a new international convention that would confer on national courts jurisdiction over individuals present in their national territory, regardless of their nationality or official position, who order, direct or knowingly lend substantial assistance to the acquisition, production or use of CW anywhere. Such a convention might take various forms. One possible text, prepared with advice from an international group of eminent jurists,\textsuperscript{64}

is the Harvard Sussex Draft Convention. This has already attracted favourable notice from a number of governments and now constitutes the basis for a possible further initiative in the WMD area by the European Union.

If support could indeed be mustered for the several norm-strengthening and organization-enhancing measures just described, the CBW governance regime would surely be better able to resist the challenges that now face it, even the ultimate challenge of emergent CBW that can change the human identity.

4 Conclusion: an agenda for the near-term future
So from this synopsis we now have several pointers to what ought to be done in order to develop the CBW governance regime. Some are recommendations for action by governments, perhaps matters for exploration during the 2006 and 2008 Review Conferences. Others are tasks for civil society. Others still are topics for attention within the scholarly research community: areas of CBW and the CBW governance regime where knowledge still seems insufficient to direct worthwhile policy and in which, therefore, policy-orientated research would be valuable. All three are itemized below.

Governmental action
- Improve national implementation of the ‘Molander chapeau’ in CWC Article VI.2 [see page 8 above]
- Ensure that both the general purpose criterion and the toxicity criterion that together bound the scope of the CWC are adequately addressed during the Second CWC Review [pp 12-13].
- Promote agreement on an action plan to secure proper implementation of BWC Article IV (national measures) by all states parties [pp 16-17].
- Each state party to designate or establish a national authority to ensure that its obligations under the BWC and any associated agreements are fulfilled, and to liaise with other such national authorities, including liaison for assistance purposes [pp 6-7, 16-17].
- Establish a standing international secretariat for the BWC charged with routine activities of information exchange, assistance provision, and other such networking of the national authorities [pp 6-7, 16-17].
- Start exploratory intergovernmental talks on a new international convention that would criminalize acts by any person that the BWC and CWC prohibit to states and would require either prosecution or extradition of such persons [pp 17-18]

Civil-society action
- Campaign actively for each of the six governmental actions outlined above, and be alert to governmental backsliding [passim].
- Both nationally and internationally, promote current awareness and understanding of the OPCW, its purpose and functions, the challenges it faces, and opportunities for advancement [pp 6, 15].

- Provide support where possible for OPCW action plans and research [pp 15-16].
- Watch for allegations of CBW employment (or other BWC/CWC violation) and, if they arise, use media or other contacts to press for investigation [pp 7-8].
- Enter into the research programme outlined below and into the dissemination and communication of its research findings [passim].

**Research questions**

- How should the risks presented by the possibility of terrorist resort to CBW best be assessed? [pp 4-5]
- Can concepts of CBW taboo offer policy guidance? [p 6]
- How should scientific and technological change best be monitored for early warning of any consequent challenges to the CBW governance regime? [p 9]
- Could counter-terrorism applications of the CBW governance regime interfere with the counter-proliferation applications? [p 10]
- How should risks inherent in the diffusion of ‘dual use’ technology applicable to CBW best be understood and assessed? [p 11]
- Why have CWC states parties had such problems with the general purpose criterion, and what does that say about how best to implement it in the future so as to contain the ‘new utility’ and ‘creeping legitimization’ challenges to the CBW governance regime? [pp 8-9, 12]
- What does historical experience of links between nuclear weapons and CBW teach us about possible CBW stimuli to nuclear proliferation or about other CBW-related influences on nuclear-weapons policy today? [pp 14-15]
- How useful and how feasible might it be to extend the routine procedures of the OPCW verification system further into the domain of toxins and other inanimate biological agents? [p 16]

**And finally**

If the norm against the weaponization of disease is to remain strong, it could be a grave mistake to fragment it, so there is argument for always considering chemical and biological weapons together, except when there is unquestionable reason for treating them separately, and for avoiding, wherever possible, equation of CBW with WMD.

To frame the policy issues it raises, this paper has used a concept of CBW governance regime. It is a concept not without drawbacks, most notably the focus it imposes upon states as primary actors. Although the concept does not exclude the increasingly important roles of civil society, other framing concepts might be more accommodating towards them and therefore more worthwhile. One such concept is that of human security.66 How it could be applied to CBW issues is a subject that

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might productively form part of any programme of study that includes the research topics listed above.

APPENDIX

The existing CBW governance regime

The chief components of what this paper has termed the ‘CBW governance regime’ are here identified and described in turn, first the major multilateral elements of the regime, then developments that have not, in contrast, rested on wide international consensus, following instead from ‘plurilateral initiatives’ and from a sequence of unilateral renunciations. Some of these latter elements are not always in harmony with the former, multilateral, elements – not least as regards membership and the coercive roles some of them assign to their leaders. Their legal status in relation to the multilateral elements is therefore contentious. They are all, nonetheless, a reality of current international politics.

The 1925 Geneva Protocol, which is an international treaty whose states parties have agreed among themselves not to use CBW against one another, is the bedrock of the existing CBW governance regime. More properly known as the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, it was negotiated during a League of Nations conference in Geneva on the arms trade and was signed on 17 June 1925. Being drafted as a contract between its parties, it is in effect a no-first-use agreement, which is a characteristic that some states emphasized in reservations they attached to their instruments of ratification. According to a communication in October 2002 from the Ministry of Foreign Affairs of France, which is the depositary of the treaty, the Protocol has 130 states parties (not counting Taiwan) including the five permanent members of the UN Security Council, and one additional signatory state. The Protocol builds upon earlier international agreements, such as ones from the 1899 and 1907 peace conferences in The Hague, and is now widely considered to have entered customary international law, thereby becoming binding upon all states whether they have or have not formally joined the treaty. The fact that the definition of war crimes in the Rome Statute of the International Criminal Court extends to use of chemical but not biological weapons is a reflection less of the state of customary law in 1998 than of a North-South political deal cut during the negotiation then on account of nuclear weapons.

The 1972 Biological Weapons Convention is an international treaty ratified by 155 of the 171 states that have now signed it whereby they renounce germ

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69 See the entry for 30 June 2000 in The CBW Conventions Bulletin no 49 (September 2000) p 38.
70 These numbers reflect the situation as of September 2006.
weapons in order to “exclude completely” the possibility of such weapons being used against human beings, other animals or plants.\textsuperscript{71} It reflects the renunciation of biological weapons by the defeated Axis powers after the Second World War, as in the 1954 Revised Brussels Treaty, as well as the subsequent unilateral renunciations by other states noted below. The BWC extended the regime of CBW no-first-use established by the Geneva Protocol by explicitly outlawing development, production and stockpiling of biological and toxin weapons, but it has rather few of the ancillary provisions that are nowadays often thought essential: means of monitoring, even enforcing, compliance with its prohibitions; and prescriptions of procedure for implementing its other rules, or of international organization for assisting states parties to discharge their obligations. Opportunities for extending the regime during the review conferences for which the Convention provides were, however, soon taken up, as with the institution of a consultative procedure in the event of problems arising, and also a variety of ‘confidence-building measures’ characterized as “politically binding”. But subsequently confirmed reports of gross violation of the BWC by the USSR, as well as intelligence on Iraqi BW, promoted belief that such measures could never in themselves be sufficient. This led, in 1995, to the opening of negotiations for an agreement among the states parties on a legally (as opposed to ‘politically’) binding instrument that would strengthen the treaty by establishing verification or other compliance-promoting procedures. These ‘Compliance Protocol’ negotiations collapsed in 2001.\textsuperscript{72} In their aftermath, an “intersessional process” ran during 2003-2005, the outcome of which is due for assessment during the impending Sixth BWC Review Conference.

The 1977 EnMod Treaty, as the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques is commonly known, among other things prohibits warfare with chemicals toxic to plants “having widespread, long-lasting or severe effects”. This treaty entered into force in 1978, but is at present subscribed to by less than a majority of the world's states, though among the permanent members of the UN Security Council only France is a non-party.\textsuperscript{73}

The 1993 Chemical Weapons Convention, like the BWC, originated in intergovernmental talks on CBW that commenced in 1968. It prohibits development, production and stockpiling of weapons toxic to human beings or other animals, or assistance in acquiring such weapons, and obliges parties to the treaty not only to institute domestic compliance-assuring measures, including penal legislation, but also to participate in a verification system operated by an international agency that the treaty established in The Hague, the Organization for the Prohibition of Chemical Weapons.\textsuperscript{74} The OPCW includes a trained international inspectorate of 150-200 people. The treaty further extends the 1925 Geneva Protocol by including among its provisions an express prohibition of any use of toxic chemical weapons, including the

\textsuperscript{72} For the definitive account of these negotiations, see Jez Littlewood, The Biological Weapons Convention: A Failed Revolution (Aldershot, UK: Ashgate, 2005).
\textsuperscript{74} For an unrivalled description of the CWC, see Walter Krutzsch and Ralf Trapp, A Commentary on the Chemical Weapons Convention (Dordrecht: Nijhoff, 1994).
uses in reprisal and in retaliation-in-kind that the Protocol could not outlaw. Together with the BWC, the CWC is the core of today’s CBW governance regime. Initially inspired by the Vietnam War and heavily marked by the Cold War, both treaties are, in terms of membership, nearing universality, but with important holdouts, most conspicuously North Korea, Egypt, Israel and Syria.75 Both treaties seek to preclude international transfers of prohibited items, these being defined by their purpose because of the general purpose criteria that the two treaties used to set their scope -- principally in order not to interfere with ‘dual use’ goods meant for unprohibited purposes. Such an approach to the governance of ‘dual use’ technology had become more fully developed by the time of the CWC, so much so that the CWC expressly outlaws factories for chemical weapons. The BWC had made no similar provision, its negotiators having been nervous of inhibiting vaccine production and commerce in products of biotechnology.76 Nor, in contrast to the CWC, 77 does the BWC require disclosure of past biological-weapons programmes, though that is a provision of one of the confidence-building measures adopted in 1991.78

**Empowerment of the UN Secretary-General to investigate use-allegations.**

In November 1987 the UN General Assembly reaffirmed the powers of the UN Secretary-General to investigate allegations of CBW use.79 Such investigations took place on several occasions in Asia and Africa during 1981-93.80 Since April 1997, the OPCW has been able, at the request of member states, to investigate allegations of chemical warfare. It has not yet formally done so. What happens if a UN investigation verifies an allegation is left for decision by the processes of international politics. Express provision for sanctions is largely absent from the overall regime.

**The Australia Group,** which began work in May 1985 at the Australian embassy in Brussels after a year of preparatory activity there and in other Western

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75 North Korea is party to the BWC but not the CWC. Both Egypt and Syria have signed but not yet ratified the BWC, while for the CWC they have done neither. Israel has signed but not yet ratified the CWC; for the BWC it has done neither. All four countries are understood to have developed CW and/or BW capability.


77 Of the 180 states parties to the CWC (as of 20 October 2006), 12 have declared post-1945 possession of factories for making chemical weapons. They are Bosnia & Herzegovina, China, France, India, Iran, Japan, Libya, Russia, Serbia & Montenegro, South Korea, the UK and the USA. Of these 12, five plus one other have declared possession of CW stocks that total in all about 70,000 tonnes of CW agent, which are currently being destroyed under strict international verification. These six possessor states are Albania (declaring 16 agent-tonnes to the OPCW), India (1044 agent-tonnes, maybe somewhat more), Libya (24 agent-tonnes), Russia (40,000 agent-tonnes), South Korea (1056 agent-tonnes, maybe somewhat less) and the USA (27,800 agent-tonnes). Like the (China-supplied) Albanian stockpile, the Libyan one appears far too small to have had much military significance, but Libya also declared that it possessed thousands of tons of precursor chemicals – a supply sufficient to provide a stockpile of chemical weapons exceeding those of India and South Korea together. The amount of mustard and nerve gas used by Iraq during its 1980-88 war with Iran is believed to have totalled 2540 agent-tonnes. The UK had destroyed its cold-war stockpile of some 62,000 agent-tonnes well before the CWC had been agreed, as had other erstwhile possessors.

78 On which see, especially, Nicolas Isla, “Transparency in past offensive biological weapon programmes: an analysis of Confidence Building Measure Form F 1992-2003”, Hamburg Centre for Biological Arms Control Occasional Paper no 1, June 2006. The BWC states parties that have used Form F to declare such programmes are Canada, France, Iraq, Russia, the UK and the USA.

79 UN General Assembly resolution 42/37C. On the present status and possible futures of machinery for investigating BW use, see especially Jez Littlewood, “Investigating allegations of use of chemical and biological weapons: the role of the United Nations Secretary-General”, draft of 5 April 2006.

80 For references see page 129 of the 2004 WHO volume, *supra* footnote 10.
capitals, seeks to harmonize supply-side controls on dual-use technology applicable to CBW by promoting common standards for the formation and implementation of national export-control policies. The AG is one of the earlier anti-proliferation plurilateral initiatives. It was inspired by the discovery that the chemical weapons used by Iraq in its war with Iran were not USSR-supplied but home-made, put together from 'dual use' commodities and know-how imported from the global marketplace. Its membership and range of activities have expanded over the years, most notably in the early 1990s, when it took on biological as well as chemical export controls and also agreed controls on specific dual-use equipment applicable to the production and dissemination of CBW agents. As the BWC and the CWC advance closer towards universality of membership, the AG will presumably come to serve mainly as a safety-net against non-compliance with the technology-transfer provisions of the two treaties.

A new wave of unilateral renunciation. Unilateral actions on chemical and/or biological weapons taken since 1987 by Romania, Iraq, Russia, South Africa and Libya represent a different category of regime element, all having occurred outside the contemporary framework of the CBW governance regime. In Russia’s closure of its biological-weapons programme in 1992, and perhaps also for the ending of the South African CBW programme in 1993, the renunciations were made in order to put right actual violation of the BWC. The Iraqi renunciation in 1991 was conjunct with ratification by Iraq of the BWC, as was the Libyan WMD renunciation in 2003 with accession to the CWC. Romania decided against proceeding with production of chemical weapons in 1987, having instituted a development programme in 1968 that it closed down altogether in 1990, after the fall of Ceausescu, subsequently asking the USA to verify the termination of its programme, this happening in 1994. Precedent for the new wave of unilateral actions existed in the US renunciation of

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83 See Chandre Gould and Peter Folb, Project Coast: Apartheid’s Chemical and Biological Warfare Programme (Geneva: UNIDIR, 2002).


biological weapons in 1969 and of toxin weapons in 1970,\textsuperscript{86} which set the way to multilateral agreement on the BWC, and in the renunciation of biological weapons in 1972 by France, which until 1984 did not consider the BWC likely to be worth joining on account of the absence of international procedures for compliance-verification. All of these unilateral actions may in turn be regarded as further steps on the path of CBW deproliferation\textsuperscript{87} that the UK had (unintentionally) set in the late 1950s – a path that later largely disappeared from public sight, though not from actuality, amidst the furors about CBW proliferation on the part of ‘rogue’ states. For the Iraqi renunciation, outside coercion was the primary motor, renunciation being a condition of the ceasefire that ended the Kuwait War, as to a degree was coercion partly responsible for the Libyan renunciation also, although in fact internal Libyan factors seem to have been the primary motivation.\textsuperscript{88} Nevertheless, the intergovernmental agreements, the acts of national legislation, the increasing eschewal of CBW in the custom and behaviour of states, and the political climate associated with the renunciations have made them substantial elements of today’s overall CBW governance regime and one that may yet find resonance in the security policies of Egypt, Israel, North Korea and Syria. At root they reflect assessments that the security benefits of possessing CBW are not worth much when set against the benefits of being inside the regime and against the costs of remaining outside or in violation of it. Possession or non-possession of nuclear weapons has been a prominent part of this calculus,\textsuperscript{89} as when the UK decided, in 1956, not to proceed with large-scale manufacture of nerve gas because nuclear weapons now offered “the major deterrent to war”.\textsuperscript{90}

\textit{The Global Partnership against the Spread of Weapons and Materials of Mass Destruction} is another of the ‘plurilateral initiatives’, this one set going at Kananaskis, Canada, in June 2002 by the G7/P8 Group of Major Industrialized Countries.\textsuperscript{91} It served initially to attract and provide a framework for international financing for the destruction of former Soviet WMD capabilities, but is now broadening its ambition into the development of measures for “international non-proliferation and disarmament assistance”, including biosecurity projects and supportive activities in states that have renounced WMD.

\textit{The Proliferation Security Initiative} of 2003 was not so much a plurilateral initiative as a coalition inspired and led by the USA of states undertaking to interdict, by armed force if they so chose, international shipment of goods thought destined for


\textsuperscript{88} Dafna Hochman, “Rehabilitating a rogue: Libya’s WMD reversal and lessons for US policy”, \textit{Parameters} [US Army War College] vol 36 no 1, April 2006.

\textsuperscript{89} See “Analysis and implications” in Mark Wheelis, Lajos Rózsa and Malcolm Dando, editors, \textit{Deadly Cultures: Biological Weapons Since 1945} (Harvard University Press, 2006).

\textsuperscript{90} Brian Balmer, whose \textit{Britain and Biological Warfare: Expert Advice and Science Policy, 1930-65} (Palgrave, 2001) explores relationships between BW and nuclear weapons as evident in UK state papers, is now engaged in a comparable study of CW.

\textsuperscript{91} On this relatively little known element of the CBW governance regime, see especially the website of the Strengthening the Global Partnership Project, which is an international consortium of Asian, European and North American research institutes led by the Center for Strategic and International Studies in Washington DC: www.sgpproject.org.
WMD programmes considered illegal by the coalition.\textsuperscript{92} Notwithstanding its assertions of legitimacy, the PSI coalition includes states not party to the UN Convention on the Law of the Sea, although in October 2005 states parties to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation agreed on extensions of that treaty which would, in effect, legalize maritime PSI activities directed against materials related to CBW or nuclear weapons.

\textit{UN Security Council resolution 1540 (2004)} and its implementing machinery are elements of the international response to perceptions of impending WMD terrorism.\textsuperscript{93} As regards CBW, this Chapter VII resolution seeks to universalize parts of national BWC and CWC implementing legislation (including transfer provisions) in regard to non-state entities. Even states not parties to the treaties, being bound as all UN member-states are by Security Council resolutions, are now under obligation to enact and enforce such legislation. Its implementation is promoted through the ‘1540 Committee’ that it established, the lifetime of which was extended until 27 April 2008 by resolution 1673 (2006).
