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International Law and the Proliferation of Weapons of Mass Destruction, Chapter 2

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Chapter 2

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The Chemical and Biological Weapons Nonproliferation Regimes

Gas! Gas! Quick, boys!—An ecstasy of fumbling,
Fitting the clumsy helmets just in time;
But someone still was yelling out and stumbling,
And flound'ring like a man in fire or lime…
Dim, through the misty panes and thick green light,
As under a green sea, I saw him drowning.
In all my dreams, before my helpless sight,
He plunges at me, guttering, choking, drowning.

Wilfred Owen

Beginning on September 18, 2001 (only one week following the terrorist attacks of September 11) and lasting for several weeks, the United States was gripped with fear as a number of letters (now believed to have totaled seven), sent to major media outlets and government offices, were found to contain anthrax spores. In the end, more than 22 people, including office workers at the intended target organizations, as well as intermediaries such as postal employees, developed anthrax infections, with eleven suffering the most life-threatening inhalation variety of infection. Five of those suffering inhalation anthrax died as a result.[1]

As had the 1995 sarin gas attack on the Tokyo subway, perpetrated by the apocalyptic religious group Aum Shinrikyo and resulting in the deaths of twelve people, the 2001 anthrax attacks in the United States refocused both public and official attention on the threat of the use of chemical compounds and biological agents and toxins as weapons, potentially inflicting large numbers of casualties upon a target population and causing terror and disruption on a massive scale.

However, the use of chemical and biological weapons (CBW) has not been a feature of the experience of recent decades alone. The use of noxious chemicals and biological pathogens and derivative toxins as weapons is a practice which has been employed literally for millenia.

The use of toxins derived from the venom and other secretions of animals as well as plants has been used to augment the effectiveness of projectile weapons,

[1] See L. Parker and S. Sternberg, "Findings of First Death Reported in Medical Journal," *USA Today*, November 9, 2001.

such as arrowheads, in many parts of the world since the Neolithic era. Poisonous or irritating smoke or gas, such as produced from burning oil, mustard, or sulfur, was used militarily at least from the fifth century B.C. in Greece during the Peloponnesian Wars and from the fourth century B.C. in China. The Byzantine Greeks from the seventh century A.D. made particularly effective use of an incendiary chemical substance, likely petroleum-based, which history has termed "Greek Fire," and which was used particularly injuriously against enemy naval forces, as it burned even on the surface of water.[2]

Poisonous plants and fungi were further used in the ancient world as biological weapons to poison the wells and food supplies of enemy cities under siege. The use of catapults to hurl excrement and the corpses of people who had died of disease over the walls of besieged cities continued throughout the middle ages. In one of the better documented cases of germ warfare, during the French and Indian war (1756–1763) British commander Lord Jeffrey Amherst is reported to have authorized the distribution of smallpox-infected blankets to enemy Native-Americans.[3]

The first large scale battlefield deployment of lethal chemical weapons occurred during the First World War, beginning with the Second Battle of Ypres on April 22, 1915, when the German army attacked French, Canadian, and Algerian forces with chlorine gas. Both the Central Powers and Allied Forces continued to use weaponized chemical agents such as phosgene and mustard throughout the remainder of World War I. It is estimated that approximately 124,000 metric tons of chemicals had been used by all sides by the war's end, resulting in over 90,000 deaths and over a million injuries.[4]

In World War II, although the German army possessed large quantities of chemical weapons, including the nerve agents tabun and sarin which had been invented in Germany during the course of the war, chemical weapons were not used extensively on the battlefield in Europe, due to fears of Allied retaliation. However, the insecticide Zyklon B, which contains hydrogen cyanide, was used in gaseous form at concentration camps including Auschwitz and Majdanek to kill several million people, the vast majority of whom were civilians.

During the decades of the Cold War, both the United States and the Soviet Union stockpiled both chemical and biological weapons. The United States officially ended its offensive biological weapons program in 1969. Russia's deactivation of its biological weapons program is ongoing. Most major military states,

[2] See generally A. Mayor, Greek Fire, Poison Arrows and Scorpion Bombs: Biological and Chemical Warfare in the Ancient World (2003).

[3] M. Wheelis, "Biological Warfare Before 1914," in E. Geissler and J. Ellis van Courtland Moon (eds), Biological and Toxin Weapons: Research, Development and Use from the Middle Ages to 1945, (1999) 8–34; E. Fenn, Pox Americana: The Great Smallpox Epidemic of 1775–82 (2001) 88–91; J. Guillemin, Biological Weapons (2005) 3.

[4] See J. Cirincione et al., Deadly Arsenals, Nuclear, Biological and Chemical Threats (Carnegie Endowment, 2nd edn, 2005) 63; Jonathan Tucker, War of Nerves (2006).

including both the United States and Russia, have committed, under the 1997 Chemical Weapons Convention, to disarm themselves of their chemical weapons stockpiles.

While it is difficult to determine definitively how many states continue to possess chemical and biological weapons stockpiles and programs, as most such remaining programs are largely clandestine, it has been alleged that seven countries (China, Iran, Israel, Egypt, North Korea, Syria, and Russia) may be maintaining biological weapons programs, and that six countries (China, Iran, Israel, Egypt, North Korea, and Syria) may be maintaining undeclared/clandestine chemical weapons programs.[5]

I. CBW

Before entering into an analysis of the international legal regimes regulating the proliferation of CBW, a brief description of chemical and biological weapons is needed. It should be noted that this treatment will seek only to give a basic outline of the various classifications of chemicals and biological agents and toxins regulated by the major nonproliferation legal regimes. For more detailed technical consideration of these materials, and their nature and use, reference should be made to more specialized treatments.[6]

A. Biological Weapons

Biological weapons consist of pathogenic microorganisms or toxins manufactured from living organisms which, when intentionally delivered, have the capacity to cause illness or death among human, animal, or plant populations.[7] The destructive capability of a biological agent as a weapon may be determined by the contours of its character as within four categories: virulence, infectiousness, stability, and ease of production.[8] Biological agents themselves can be grouped into four classes: bacterial agents (e.g. anthrax), viral agents (e.g. smallpox), rickettsial agents (e.g. epidemic typhus), and toxins.

Bacterial agents, viral agents, and rickettsial agents are of varying virulence, stability and ease of production, but primarily derive their destructive capability

[5] See J. Cirincione et al., Deadly Arsenals, Nuclear, Biological and Chemical Threats, (Carnegie Endowment, 2nd edn, 2005) 57.

[6] See, e.g., A. Kelle, K. Nixdorff, and M. Dando, Controlling Biochemical Weapons: adapting multilateral arms control for the 21st century (2006).

[7] See generally Wheelis, Rozsa, and Dando (eds), Deadly Cultures: Biological Weapons since 1945 (2006); B. Kellman, Bioviolence: Preventing Biological Terror and Crime (2007); J. Guillemin, Biological Weapons (2005).

[8] J. Cirincione et al., Deadly Arsenals, Nuclear, Biological and Chemical Threats (Carnegie Endowment, 2nd edn, 2005) 57.

from their infectious nature, both in terms of primary infection of the agent as well as through the contagious effect of secondary diseases which may follow primary infection. Thus, if properly introduced into a target population, these biological agents not only attack the first hosts with which they come into contact, but have the potential through various means of transmission to spread among the population, inflicting illness and death among potentially hundreds of thousands in densely populated urban areas.

Biological toxins differ from bacterial, viral, and rickettsial agents in that toxins are not themselves alive, but are rather nonliving protein or non-protein molecules, and thus are not capable of infectious transmission between hosts. Toxins are poisons either derived from living organisms (e.g. bacteria, fungi, algae, and plants), or more recently, synthetically created. Examples of biological toxins include botulinum toxin and ricin. While in some ways less dangerous than living pathogens due to their inability to spread through infectious transmission, biological toxins are often extremely potent, having toxicity levels several orders of magnitude higher than the most lethal chemical poisons. Both biological pathogens and biological toxins are generally most effectively distributed in inhalable, aerosolized form, though they can also be used to poison food and beverages.[9]

B. Chemical Weapons

As defined in the Chemical Weapons Convention, a chemical weapon is "any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals."[10] Chemical weapons agents are produced by the mixture in specific ratios of more fundamental chemical precursors. Both chemical weapons agents and their precursors have become the subject of legal regulation. Approximately 70 chemical substances have been stockpiled as chemical weapons, having been found to be highly toxic yet stable enough to be stored without deterioration, and able to withstand the forces of heat or conditions of atmospheric water vapor and oxygen encountered during dispersal.[11]

Chemical weapons can be categorized into four groups: blood gases (e.g. hydrogen cyanide), blistering agents (e.g. mustard gas, phosgene oxime and lewisite), choking agents (e.g. chlorine and phosgene), and nerve agents (e.g. tabun, sarin, and V nerve agent (VX)). Chemical weapons are generally disseminated in liquid form, either through liquid droplets or an aerosol, though some can be used in gaseous form.[12]

[9] See ibid. [10] Article 2(2).

[11] See generally J.B. Tucker, War of Nerves: Chemical Warfare from World War I to Al-Qaeda (2006).

[12] See J. Cirincione et al., Deadly Arsenals, Nuclear, Biological and Chemical Threats (Carnegie Endowment, 2nd edn, 2005) 57.

II. CBW = WMD?

The idea of classifying chemical and biological weapons as weapons of mass destruction must also receive some consideration before proceeding. The term "weapons of mass destruction" is of controversial origin in the English language. However, its first use by governments in an official context appears to have been in the first ever resolution of the United Nations General Assembly, passed at its seventeenth plenary meeting on January 24, 1946. In its Resolution 1, entitled "Establishment of a Commission to Deal with the Problems Raised by the Discovery of Atomic Energy," the General Assembly created the Atomic Energy Commission (AEC), and gave the new organization a mandate to "proceed with utmost despatch and inquire into all phases of the problem" of the discovery of atomic energy, and to make specific proposals inter alia "for the elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction."[13]

The reason for the inclusion of this action, and creation of this new classification of weapons technologies and accompanying nomenclature, in the very first General Assembly resolution was of course the fact that the world had only months earlier found out about the development by the United States of nuclear fission weapons, and their use on the cities of Hiroshima and Nagasaki, Japan in August 1945. During the decades of the Cold War which followed, with the threat of mutually assured nuclear destruction looming over the world, the term "weapons of mass destruction" continued to be used, along with other terms including "strategic weapons," most commonly to refer particularly to nuclear fusion or thermonuclear weapons.

It was only after the breakup of the Soviet Union and the ending of the Cold War in the early 1990s that the term "weapons of mass destruction" and its acronym "WMD" came into their own as descriptors of the triumvirate of non-conventional weapons—nuclear, chemical, and biological—particularly in public discourse and by senior government officials. Among specialists, the acronyms "NBC" and particularly "CBRN" have come to be used more commonly in describing this class of non-conventional weapons, in the case of the latter in order to include sub-critical radiological weapons ("dirty bombs").[14]

During the first Gulf War in 1991, extensive reference was made by U.S. officials to Iraq's chemical and biological weapons stockpiles as "weapons of mass destruction." Even more widespread use was made of the term, with the inclusion within its meaning of chemical and biological weapons, by U.S. and U.K. officials in the context of the lead-up to the 2003 invasion of Iraq. The prolific use of

[13] Para. 5.

[14] See C. Ferguson, "WMD Terrorism," in N. Busch and D.H. Joyner (eds), Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy (2009).

the term "weapons of mass destruction" in vernacular during this time led to its acronym form being voted the Word of the Year by the American Dialect Society in 2002.[15]

However, there is a serious argument to be made that including chemical and biological weapons along with nuclear weapons within the term weapons of mass destruction is analytically invalid, or at least sub-optimally descriptive. As the U.N. General Assembly first recognized in its separate categorization of nuclear weapons as a weapon "adaptable to mass destruction," the incomparable physical destructive power of nuclear fission and fusion weapons demands such a separate classification from any other weapon conventionally used by the world's militaries. The effects of a high-yield nuclear weapon detonation, including the massive destructive force of the initial blast, thermal radiation, and electromagnetic pulse, followed by the short, medium, and long-term effects of residual nuclear radiation on an area extending up to hundreds of miles from the epicenter of the detonation, are simply unmatched in their effects upon physical structures and upon human, animal, and plant life within the affected area.[16]

Because of their massive destructive power, and adaptability both as a battlefield weapon, as well as a weapon potentially usable by terrorists and other non-state actors against civilian centers, the independent variable of nuclear weapons possession by states and non-state actors has a highly significant effect upon the interests and behavior of states, and thus plays a deciding role in international politics and the foreign policy of states. The political uses of nuclear weapons range from the explicit threat of aggressive use, to the latent threat of use for the sake of deterrence of aggressive use by a rival state or non-state actor, to possession for simple political leverage to obtain concessions from states or other actors interested in curbing further nuclear proliferation.[17]

Due to both the destructive potential of the direct use of nuclear weapons themselves, as well as their secondary but highly significant effects upon the dynamics of international politics, some have argued that nuclear weapons are deserving of an exclusive, apex categorization under the term weapons of mass destruction.[18]

Bolstering this argument, it has been noted that both the Biological Weapons Convention and the Chemical Weapons Convention, in their attempts to comprehensively ban the use of their subject technologies as weapons, include within their regulation both lethal CBW as well as a wide range of non-lethal CBW. Thus, it is argued, only by rather tortured expansion of the term "weapons of mass destruction" could the full gamut of materials covered under the

[15] <http://www.americandialect.org/index.php/amerdial/2002_words_of_the_y/>.

[16] See E. Koppe, The Use of Nuclear Weapons and the Protection of the Environment During International Armed Conflict (2006).

[17] See J. Bayliss and R. O'Neill (eds), Alternative Nuclear Futures: The Role of Nuclear weapons in the post-Cold war world (2000).

[18] R. Thakur, "Introduction" in R. Thakur (ed.), The Chemical Weapons Convention: Implementation, Challenges and Opportunities (2006) 3.

foundational CBW nonproliferation legal instruments be included within its meaning. Alternatively, however, including only lethal CBW within the WMD classification runs an unacceptable risk of implicitly legitimizing non-lethal CBW which, if less physically destructive than lethal CBW, are yet importantly de-legitimized and made illegal by operation of the BWC and CWC.[19] Developments in the field of non-lethal CBW, as will be discussed later on, pose one of the most difficult challenges for the future strengthening of the CBW nonproliferation regimes, and thus their implicit legitimization through such a discriminatory classification would be particularly unhelpful. More generally, such partial legitimization of CBW would run the further risk of confusing and possibly undercutting the longstanding and pervasive taboo regarding use of CBW which, as will be discussed, is the principle guarantor of the effectiveness of the CBW nonproliferation legal regimes.

Classifying CBW along with nuclear weapons as weapons of mass destruction can pose further problems, both in terms of international nonproliferation policy as well as the foreign policy of states. Lumping CBW in together with nuclear weapons under the umbrella of WMD can lead to treating all WMD technologies similarly in proliferation-related analysis and debate. This practice incorporates a false understanding that the nonproliferation challenges facing the international community with regard to these very different weapons technologies, with very different legal regimes, histories, and records of success, are in fact similar. As Julian Robinson has explained:

> "Nonproliferation" is itself another technical term that is problematic in its application to CBW, for international law is now either approaching or, depending on one's view, has long since reached the point at which any possession of CBW is illegal. To posit nonproliferation of CBW as a policy objective is therefore to imply that this legal regime is failing. There is no evidence whatsoever for this. Nor, in contrast to nuclear weapons, does any state have licence to possess CBW, not even the permanent members of the UN Security Council… The chapter therefore warns that express pursuit of WMD nonproliferation may damage the existing CBW governance regime, which is aimed at suppressing CBW and has proved largely successful in so doing.[20]

With regard to the foreign policy of states, the rather un-nuanced grouping of CBW along with nuclear weapons within the concept of WMD again has a tendency to bundle technologies together which are in most material ways analytically dissimilar, with potentially disastrous effects. For example, a number of states, including the United States, cite as a justification for the maintenance of their nuclear weapons arsenals the threat of WMD attack, including by definition

[19] J. Robinson, "Chemical and Biological Weapons," in N. Busch and D.H. Joyner (eds), Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy (2009) 86.

[20] See ibid. at 74.

an attack exclusively utilizing CBW. As stated in the 2002 United States National Strategy to Combat Weapons of Mass Destruction:

> The United States will continue to make clear that it reserves the right to respond with overwhelming force—including through resort to all of our options—to the use of WMD against the United States, our forces abroad, and friends and allies. In addition to our conventional and nuclear response and defense capabilities, our overall deterrent posture against WMD threats is reinforced by effective intelligence, surveillance, interdiction, and domestic law enforcement capabilities. Such combined capabilities enhance deterrence both by devaluing an adversary's WMD and missiles, and by posing the prospect of an overwhelming response to any use of such weapons.[21]

As the number of states and non-state actors possessing, suspected of possessing, or potentially possessing CBW, with or without additionally possessing nuclear weapons, significantly exceeds the number possessing nuclear weapons alone, the inclusion of CBW within the concept of WMD thus allows for an expansion in the number of threats which may be cited as justifications for continued possession of nuclear weapons. Most strikingly, the foregoing statement must be read to proclaim the right of retaliation with nuclear weapons in response to WMD attack, again inclusive of an exclusively CBW attack.[22] As held by the International Court of Justice in its 1996 *Nuclear Weapons Advisory Opinion*, the proportionality principle contained both in international use of force law and international humanitarian law would likely render all imaginable exercises of this proclaimed right in the context of an exclusively CBW attack violative of international law, as unlike the case of a massive nuclear weapons attack it is difficult to conceive of an exclusively CBW attack upon a state, the result or threatened result of which would produce "an extreme case of self-defense, in which the very survival of a state would be at stake."[23]

Due to these concerns, a persuasive case can be made that CBW are indeed better dissociated terminologically from nuclear weapons and classed in a subsidiary category to WMD. One candidate for the name of this new category might be "weapons of mass casualty," owing to the capacity of CBW, if effectively used, to cause massive loss of human life notwithstanding the inability of CBW themselves (i.e. unless supplemented or delivered by conventional explosive weapons such as artillery shells) to cause massive physical destruction.[24]

Perhaps even more appropriately, however, this new category might be termed "weapons of mass terror." CBW are notoriously difficult to deploy effectively in order to cause large numbers of casualties, though in theory they can be so deployed, and have been so deployed on rare occasions in practice. Reasons for

[21] Available at <http://www.whitehouse.gov/news/releases/2002/12/WMDStrategy.pdf>.

[22] See R. Thakur, "Introduction" in R. Thakur (ed.), The Chemical Weapons Convention: Implementation, Challenges and Opportunities (2006) 3.

[23] Para. 105(2)(E).

[24] "Biological Weapons in the Former Soviet Union: An Interview with Kenneth Alibek," conducted by J.B. Tucker, 6 The Nonproliferation Review 91 (Spring–Summer 1999).

this include technical barriers to weaponization and environmental and other challenges to effective deployment. As Julian Robinson has explained:

> Published military doctrine shows that most of the military and other utilities for which user-services have valued possession of CBW have depended on aggressive properties other than mass killing. 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 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.[25]

However, even a relatively minor deployment, or credible threat of deployment, of CBW is likely to incite widespread fear within either a military or a civilian target population. In the civilian context, this fear could very possibly lead to disruption of transportation and other services and activities necessary to the normal functioning of commerce and society. The effects of this fear and disruption to life particularly in urban centers, and the knock-on effects thereof to economies, are indeed likely the most effective results of which the threat or use of CBW are reasonably capable.

To be clear before proceeding, the questions of categorization and nomenclature regarding chemical and biological weapons under discussion, while important for the reasons described, and possibly indirectly relevant to legal considerations in, e.g., the area of use of force law as described above, have no material bearing on the interpretation, validity, or scope of the sources of international law relevant to CBW to be reviewed in this chapter. The legal terminology used in the provisions of these treaty sources (i.e. the Geneva Protocol, the BWC, and the CWC), which in turn forms the normative locus around which the parallel custom supporting these conventional instruments has developed, is not affected by any uncertainties regarding these categorizations or the semantics of their titles.

III. Scope of the Chapter

Finally, a note on the scope of this chapter, in its inclusion of consideration of both the biological weapons proliferation regime and the chemical weapons

[25] J. Robinson, "Chemical and Biological Weapons," in N. Busch and D.H. Joyner (eds), Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy (2009) 76–77.

proliferation regime. While some treatments maintain an analytical separation between the two regimes, this treatment has chosen to consider these regimes together for a number of reasons.

The first reason for this joint analysis is the profound historical and documentary links between the regulation through international law of biological weapons and chemical weapons. Both legal regimes are direct outgrowths of the same program of work that began in the late 1960s, the CWC simply taking longer to achieve realization due to Cold War politics and tensions. Their legal foundations as well are directly linked to the same legal progenitor—the 1925 Geneva Protocol. The texts of the BWC and the CWC themselves are expressly linked. The BWC's Preamble is explicit in its recognition of the BWC as constituting only the first step in regulating the entire area of chemical and biological weapons, and mentions ongoing efforts to broaden regulation to cover chemical weapons as well. Article IX of the BWC in fact obligates states parties to continue in negotiations toward the conclusion of a treaty on chemical weapons prohibition. This article of the BWC is reciprocally expressly mentioned in the Preamble to the CWC, and the relation of the two treaties is specially addressed in Article XIII of the CWC.

The second reason for a joined up analysis of the BWC and the CWC regimes is that both areas of regulation enjoy a similar, peculiar normative and moral support for their prohibitive efforts. This support stems from a strong historical aversion in international society to the use of chemical and biological weapons, which has translated into a strong communal norm that such use is, in a word, taboo.[26] As the BWC itself states, such use would be "repugnant to the conscience of mankind." The origins of the particular opprobrium attached to the use of chemicals and biological agents in warfare are ancient, descending at least from the Romans, some of whom considered the use of poisons in battle disgraceful, though to be fair adherence to this taboo in the ancient world was spotty at best.[27] The taboo was strengthened in the early twentieth century by observations of the horrific effects of the full-scale battlefield use of these weapons in World War I, as best chronicled in the poem by Wilfred Owen which opened the chapter. This and other chronicles of the use of chemical weapons seared into the mind of future generations poignant images of the strange and horrific suffering caused thereby. As Julian Robinson, one of the foremost authorities on chemical and biological weapons, has explained:

> 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

[26] J. Guillemin, Biological Weapons (2005) 1–20.

[27] See A. Mayor, Greek Fire, Poison Arrows and Scorpion Bombs: Biological and Chemical Warfare in the Ancient World (2003) 37.

transmission; the blood gases, cellular respiration. Advances in the life sciences and in 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.[28]

As noted in Chapter 1 above, there is perhaps little in the way of objective criteria by which to justify the differential presence of this taboo in the area of chemical and biological weapons, and its relative absence in the area of nuclear weapons. The horrific devastation of Hiroshima and Nagasaki, and the nature of the effects of nuclear weapons as including massive instantaneous destruction and loss of life, as well as widespread non-lethal injuries such as burning; and even further the medium and long-term effects upon victims' health caused by exposure to radiation, not to mention the devastating effects of nuclear weapons upon a target environment, all amply and graphically chronicled in literature such as Ibuse Masuji's classic *Black Rain*, would seem fertile sod for the production of a similarly pervasive air of obloquy. As explained in Chapter 1 above, the difference in attachment of moral censure likely has to do with the role nuclear weapons played in bringing World War II to a close, and the positive associations to which the results of this use gave rise in Western consciousness, which successfully drew a curtain over and obscured the horrors of the use of nuclear weapons. This difference may, in frankness, also have significantly to do with the fact that the use in World War I of chemical weapons was as against Europeans, and the use in World War II of nuclear weapons was as against Asians, though this must remain speculation. What is more clear is that the absence of a similar taboo in the nuclear weapons area made more reasonable and objectively unassailable the retention of right in the NWS to possess nuclear weapons under the grand bargain of the NPT, and secured the absence of any moral condemnation of nuclear weapons or their use per se in the text of the NPT, similar to that contained in the BWC Preamble.

As will be discussed further below, this peculiar yet pervasive taboo regarding chemical and biological weapons is the single most significant reason for the successes achieved in implementation of the BWC and CWC.

The third reason for joint analysis of the BWC and CWC regimes is the decreasingly clear line separating biological weapons and chemical weapons. The

[28] J. Robinson, "Chemical and Biological Weapons," in N. Busch and D.H. Joyner (eds), Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy (2009) 75–76.

fields of chemistry and biology are converging, as evident in the recent rise to prominence of the field of molecular biology, and this convergence has blurred whatever clear distinctions were perceived to exist between biological and chemical weaponizable materials.[29] There has always been some overlap in the coverage of the BWC and CWC, as for example both treaties cover biological toxins, or poisonous chemicals which are produced by some living organisms. However the science of biological weapons and chemical weapons is increasingly merging and overlapping, e.g. as scientists are now able to synthetically produce compounds previously only obtainable from natural sources, giving rise to entirely new fields of research into biochemical weapons.[30] The development of materials which defy classic criteria for categorization as between the two legal regimes argues for a more holistic approach to the area of biological and chemical weapons regulation generally.

Fourth and finally, from an institutional/regime perspective, due to the coverage of the Australia Group control lists of both chemical and biological materials and dual-use technologies, there is parsimony to be found in addressing both regimes within the scope of one chapter.

IV. CBW Regimes

A. The 1925 Geneva Protocol

The Hague Regulations of 1899 and 1907 provided the first multilaterally agreed prohibition of "poison or poisoned weapons." However, the proscriptions upon chemically enhanced weapons in the Regulations did not serve to clearly prohibit many potential uses of chemical weapons, in particular chemical gas weapons, in warfare, leading to the widespread use of such weapons in World War I.

By the signing in 1925 of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare (Geneva Protocol), the major industrialized military states, with the significant exception of the United States, had come to the conclusion that the "use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices, has been justly condemned by the general opinion of the civilized world…" Through the Geneva Protocol, the High Contracting Parties (now totaling 132) accept (to the extent they had not already accepted through the

[29] See ibid. at 24.

[30] A. Kelle, K. Nixdorff, and M. Dando, Controlling Biochemical Weapons: adapting multilateral arms control for the 21st century (2006); M. Wheelis, *Biotechnology and Biochemical Weapons*, 9 The Nonproliferation Review 48 (Spring 2002); Submission of the United States, BWC/CONF.III/4, Paragraph 5 (1991) ("the distinction between biology and chemistry is becoming blurred").

Hague Regulations) this prohibition on the use of chemical weapons in war, and agree to extend this prohibition as among themselves to the use of bacteriological, or biological, weapons in war.[31]

The Geneva Protocol is a short document, and is notoriously imprecise in its language, which forms one barrier to its effective implementation. In this regard, significant interpretive differences have arisen as to whether the Protocol covers herbicides and tear gas and other riot agents, i.e. toxic chemicals which are not lethal to humans. The interpretation largely turns on the meaning to be given to the rather vague phrase "or other gases," following the Protocol's prohibition of the use in war of asphyxiating and poisonous gases; an interpretive question complicated by the incongruity between terms used in the Protocol's two official languages at this point in the document.[32]

Another significant barrier to the effectiveness of the Protocol is posed by the character of obligations thereunder as existing only as among the High Contracting Parties themselves, and not as generalized obligations as toward any state. Finally, the number and character of the reservations appended by states to their signature of the Protocol has largely undermined its effectiveness, as with the numerous reservations stipulating that the application of the provisions will be based strictly upon reciprocity (thus the obligations become nullified in response to a prior attack using prohibited weapons). Though not a formal treaty reservation, a similar undermining effect was produced by the "understanding" adopted by the U.S. Senate upon its 1975 consent to ratification of the Protocol, exempting tear gas and herbicides (both of which having been used extensively by the U.S. in the Vietnam War).[33]

With regard to the problem of reservations conditioning compliance with the Protocol upon reciprocity, which in the words of one commentator "was to lend the Geneva Protocol the appearance of a 'no-first-use declaration' rather than a solemn renunciation by treaty of any use in war of chemical and biological weapons,"[34] it is material to note that many such reservations have over the succeeding decades been formally withdrawn by states. A number of these withdrawals occurred due to the conclusion in 1972 of the Biological Weapons Convention. The Irish Government, for example, in 1972 withdrew its reservation to the Geneva Protocol with the following explanatory statement:

> Ireland considers that the Convention could be undermined if reservations made by the parties to the 1925 Geneva Protocol were allowed to stand, as the prohibition of possession

[31] See generally I. Detter, THE LAW OF WAR (2nd edn, 2000) 251–259.

[32] See ibid. at 256.

[33] 14 INTERNATIONAL LEGAL MATERIALS 1975, 49. See generally J.N. Moore, *Ratification of the Geneva Protocol on Gas and Bacteriological Warfare: A Legal and Political Analysis*, 3 VIRGINIA LAW REVIEW 419 (1972).

[34] N. Sims, "Legal Constraints on Biological Weapons," in M. Wheelis, L. Rosa, and M. Dando (eds), DEADLY CULTURES: BIOLOGICAL WEAPONS SINCE 1945 (2006) 330.

is incompatible with the right to retaliate. As the convention purports to strengthen the Geneva Protocol, there should be an absolute and universal prohibition of the use of the weapons in question.[35]

It is likely that the persuasive lesser included logic conveyed in this statement, now equally applicable in the context of the CWC and supplemented by that instrument's explicit prohibition on use of chemical weapons, together with the status of the 1925 Protocol, the BWC, and the CWC in customary international law (all three are with little doubt now supplemented and expanded in their obligational reach by parallel customary international law),[36] as well as state practice including withdrawals of reciprocity reservations, have together worked to produce a rule of customary international law forbidding even the retaliatory use of chemical and biological weapons.[37] This customary rule, in addition to the subsequent treaty provisions on possession and use themselves, almost certainly now trumps remaining reciprocity reservations to the 1925 Protocol per the interpretive cannon *lex posterior derogat priori*.[38]

Due in part to some of the above outlined concerns with the 1925 Protocol, momentum began to build particularly within the United Nations in the late 1960s toward the conclusion of a multilateral convention on the regulation of chemical and biological weapons.[39] Though the conclusion of such a treaty covering both chemical and biological weapons technologies was considered by inter alia the Eighteen Power Disarmament Conference (ENCD) and the Committee of the Conference on Disarmament (CCD), it became apparent that agreement on a multilateral prohibition on possession would be more easily achieved in the biological weapons area than in the chemical weapons area. Thus, the decision was made to separate the two branches of weapons technologies and focus first on the achievement of a treaty prohibiting biological weapons development, possession, and proliferation as a supplementary set of obligations to the 1925 Protocol's prohibition on use.

[35] World Armaments and Disarmament: SIPRI Yearbook 1976, 468, 474.

[36] J.-M. Henckaerts and L. Doswald-Beck, Customary International humanitarian Law, Volume I: Rules (2005) 256–267. There is the rather anomalous fact that, while the use of chemical weapons and biological toxins is included under the definition of "war crimes" in Articles 8(2)(b)(xvii) & (xviii) of the Statute of the International Criminal Court, the use of biological agents themselves are arguably not included in Article 8(2)(b)(xvii)'s prohibition of use of "poison or poisoned weapons." This distinction can, however, be explained in the remaining distinction, notwithstanding significant overlap, as between customary international humanitarian law on the one hand, and customary international criminal law on the other. Thus, as the above cited ICRC study makes clear, the use of biological weapons, including biological agents, is prohibited under customary international humanitarian law, notwithstanding the arguable absence of international criminal liability attaching to such an action.

[37] See ibid.

[38] See A. Roberts and R. Guelff, Documents on the Laws of War (3rd edn, 2000) 160–167.

[39] See, e.g., General Assembly Resolutions 2262 (1970); 2827 (1971); 2933 (1972); 3077 (1973).

B. The Biological Weapons Convention

Article I

The Biological Weapons Convention (BWC)[40] was opened for signature in April 1972 and entered into force on March 26, 1975. In its Article I it states the undertaking of its states parties

> 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…

Because of the profoundly dual-use nature of biological agents as well as some biological toxins, the conclusion was reached that possession of such materials could not be prohibited outright. The question thus became one of describing, in the necessarily vague language of a multilateral treaty, those biological materials which were to be classified as "biological weapons" subject to the prohibitions of the treaty. The purpose-related criteria included in Article I, often referred to as the general purpose criteria of the BWC, were an innovative attempt at concision in this regard. The terms "of types" and "in quantities" would seem best read disjunctively in this article, so as to produce two separate criteria, the satisfaction of either of which will suffice to render the substance in question prohibited under the treaty. Thus, some substances are of types for which no legitimate civilian purpose exists, and their possession in any amount is therefore prohibited. However, there are some substances which do have legitimate "prophylactic, protective or other peaceful purposes," and which may therefore be possessed by states parties in quantities necessary to the fulfilling of these purposes, but no more than these quantities.

While laying the foundation for defining which biological materials are subject to the convention's prohibitions, the general purpose criteria of Article I remain very difficult to implement as, among other reasons, they are not supplemented, as in the case of the CWC to be discussed below, by a listing of prohibited materials and equipment within the treaty text or other binding document.[41] BWC Review Conferences have similarly failed to conclude such a list of prohibited items in their final documents, although the final document of

[40] Formally the "Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction," opened for signature April 10, 1972, 26 U.S.T. 583, T.I.A.S. No. 8062, 1015 U.N.T.S. 163. See generally I. Detter, THE LAW OF WAR (2nd ed., 2000) 259–262; N. Sims, "Legal Constraints on Biological Weapons," in M. Wheelis, L. Rosa, and M. Dando (eds), DEADLY CULTURES: BIOLOGICAL WEAPONS SINCE 1945 (2006).

[41] See J. Beard, *The Shortcomings of Indeterminacy in Arms Control Regimes: The Case of the Biological Weapons Convention*, 101 AMERICAN JOURNAL OF INTERNATIONAL LAW 271(2007).

the Second Review Conference, held in 1986, did include the following statement ensuring the comprehensive character of the terms of Article I:

> The Conference, conscious of apprehensions arising from relevant scientific and technological developments, inter alia, in the fields of microbiology, genetic engineering and biotechnology, and the possibilities of their use for purposes inconsistent with the objectives and the provisions of the Convention, reaffirms that the undertaking given by the States Parties in Article I applies to all such developments. The Conference reaffirms that the Convention unequivocally applies to all natural or artificially created microbial or other biological agents or toxins whatever their origin or method of production. Consequently, toxins (both proteinaceous and non-proteinaceous) of a microbial, animal or vegetable nature and their synthetically produced analogues are covered.

This statement was supplemented by the final document of the Fourth Review Conference, held in 1996, which affirmed the extension of the BWC's terms to more recent developments in the fields of "microbiology, biotechnology, molecular biology, genetic engineering" and further to "any applications resulting from genome studies."

The Australia Group, to be discussed below, does provide control lists of biological dual-use technologies and biological agents and toxins which, per the analysis of VCLT Article 31(3) contained in Chapter 1, could along with other sources including Review Conference final documents be materially useful in interpretation of BWC Article I. However, as in the case of the NSG control list in the context of the NPT, the legal weight of this list for purposes of interpretation of Article I of the BWC is concededly limited by the limited-membership nature of the Australia Group and its non-incorporation into the BWC text.

The production of such a delineation of prohibited materials, their thresholds of use, and related equipment as a formal additional protocol to the BWC was one of the chief goals of the Ad Hoc Group of Governmental Experts to Identify and Examine Potential Verification Measures from a Scientific and Technical Standpoint (VEREX), a body of experts established at the Third BWC Review Conference in September 1991. As will be detailed below, the production of this report and the succeeding process purposed in producing an additional binding protocol for the BWC, culminated in a dramatic series of events in 2001, as a result of which the additional protocol was abandoned.

In a further effort of interpretive clarification of the reach of BWC Article I, the final documents of the Fourth and Sixth Review Conferences of the BWC have included consensus decisions of the treaty parties, interpreting BWC Article I as including an implied prohibition on the use of biological weapons in addition to its express prohibitions on development, production, stockpiling, acquisition, and retention. As stated in the Final Document of the Fourth BWC Review Conference:

> The Conference reaffirms that the use by the States Parties, in any way and under any circumstances, of microbial or other biological agents or toxins, that is not consistent with prophylactic, protective or other peaceful purposes, is effectively a violation of Article I of the convention.

This statement recognizing an extension of the meaning of the terms of Article I of the BWC to include use is an interesting use of the interpretive rights of treaty member states acting subsequent to the conclusion of the treaty. As discussed in the context of NPT Review Conference final documents, the decisions of review conferences by the consensus of treaty parties do carry significant interpretive weight pursuant to Article 31(3) of the Vienna Convention on the Law of Treaties. While not determinative of correct interpretation, such statements do assist in providing the interpreter with valuable evidence of the understanding of the parties to the treaty as to its meaning, and should thus factor significantly into determinations of treaty interpretation.[42]

In the case of the extension of the terms of Article I to include a prohibition on use of biological weapons, as the membership overlap between the 1925 Geneva Protocol and the 1972 BWC is extensive, and as the significance of the former document is expressly noted in the Preamble of the BWC, it should not perhaps be surprising that the states parties of the BWC should see the obligation of non-use first established in the 1925 Protocol as running through and being both incorporated into and reinforced by the terms of the BWC. This incorporation of the prohibition into the BWC, and its continuing consistent and generalized implementation in state practice, add to the strength of the parallel customary law prohibition on the use of biological weapons binding upon all states, including non-parties of the Protocol or BWC.[43]

Article I(2)

In the context of Article I(2) of the BWC and the interpretation of the prohibition therein upon "weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict," Nicholas Sims has usefully discussed a controversial case of interpretation of the term "designed." As Sims explains:

> It was presumably on this reasoning that U.S. government lawyers were relying (those from the State Department reportedly dissenting) when they apparently advised that U.S. efforts to replicate key parts of a biological bomb designed in the former Soviet Union, in order to better understand the BW threat, would not be in breach of Article I. The absence of an intention "to use such agents or toxins for hostile purposes or in armed conflict" would on this argument (which depends crucially upon the interpretation of "designed" to mean the same as "intended") render the design of such a weapon compatible with U.S. obligations under the BWC. There remains the further objection that to advance such a permissive interpretation of the design criterion is undesirably

[42] See Chapter 1 at ___.

[43] See also generally B. Kellman's discussion of non-lethal biological agents in Bioviolence: Preventing Biological Terror and Crime (2007) 197–205. As the most contentious legal debates regarding non-lethal weapons and their use against personnel are currently better located within the context of the provisions of the Chemical Weapons Convention, this treatment will review the issue of non-lethal CBW below within the framework of CWC Article 1.

subjective, allowing each state party to decide for itself whether its intention, in designing a biological bomb, is to hold it in readiness to use it for hostile purposes or in armed conflict, or merely to acquire a better understanding of how others might use it in such circumstances.[44]

For the reasons of unacceptable subjectivity of any other interpretation correctly explained by Sims, the interpretation of the term "designed" in Article I(2) should be understood to make reference to the objective character and primary latent usefulness of the "weapons, equipment or means of delivery" themselves, and not to the intention of the state party who wishes to develop or possess them.

Article II

In BWC Article II, states parties undertake "to destroy, or to divert to peaceful purposes, as soon as possible but not later than nine months after entry into force of the Convention, all agents, toxins, weapons, equipment and means of delivery specified in Article I of the Convention, which are in its possession or under its jurisdiction or control." Thus, in contrast to the differential obligations of the NPT, the obligation of non-possession of the BWC's prohibited materials extends to all states parties, even to those whose possession at the time of signing requires the action of destruction or diversion of such materials in order to attain that state.

Article III

Article III requires states not to transfer "to any recipient whatsoever, directly or indirectly," nor to assist, encourage, or support the manufacture or acquisition of the materials prohibited under Article I. Again, the relative simplicity of the obligations of the BWC as compared to the NPT can be seen in the blanket prohibition on transfer "to any recipient whatsoever," in marked contrast to the various exceptions on nuclear materials trade and transfer embedded within Article I of the NPT particularly. In the final document of the Sixth BWC Review Conference, BWC states parties adopted the following statement clarifying the scope of this prohibition on transfer:

> The Conference reaffirms that Article III is sufficiently comprehensive to cover any recipient whatsoever at the international, national or sub-national levels. The Conference calls for appropriate measures, including effective national export controls, by all States Parties to implement this Article, in order to ensure that direct and indirect transfers relevant to the Convention, to any recipient whatsoever, are authorized only when the intended use is for purposes not prohibited under the Convention.

[44] N. Sims, "Legal Constraints on Biological Weapons," in M. Wheelis, L. Rosa, and M. Dando (eds), Deadly Cultures: Biological Weapons since 1945 (2006) 352.

Article IV

In Article IV, states parties undertake to make any necessary modifications to their own national laws, regulations, and official processes, including to the procedures for enforcement of such laws, in order to fulfill their obligations undertaken in Articles I through III. BWC Review Conference final documents have urged states to view this requirement broadly, and to include the education of relevant private business entities and groups of professionals regarding the obligations of the BWC, and the encouragement of codes of conduct and self-regulatory mechanisms for such private entities.[45] The Final Document of the Second Review Conference of the BWC, held in 1986, specifically noted the importance in the context of the Article IV obligation of:

- legislative, administrative and other measures designed effectively to guarantee compliance with the provisions of the Convention within the territory under the jurisdiction or control of a State Party,
- legislation regarding the physical protection of laboratories and facilities to prevent unauthorised access to and removal of pathogenic or toxic material, and inclusion in textbooks and in medical, scientific and military educational
- programmes of information dealing with the prohibition of bacteriological (biological) and toxin weapons and the provisions of the Geneva Protocol.

Articles V & VI

Articles V and VI comprise the only system for verification and dispute resolution contained within the original BWC text. This system provides in the first instance for consultation and cooperation between states on questions regarding compliance with the provisions of the treaty. In implementation of this obligation of consultation and cooperation, the final documents of the Second and Third Review Conferences of the BWC established and refined a procedure and series of forms for the sharing of information between BWC members, and the voluntary undertaking of specified confidence building measures (CBM) by states parties. This process was to include annual reports by each member state on its information exchange and CBM activity to the United Nations Department for Disarmament Affairs (UNDA). This system remains in place and reports by a number of member states are submitted to the UNDA annually.

However, in the event that a state feels it has not achieved satisfaction through the consultative process of Article V, it may under Article VI(1) report an allegation of another party's breach of the BWC's provisions within the context of a complaint to the U.N. Security Council. The Security Council may then make

[45] See, e.g., the Sixth Review Conference Final Document. See generally Dunworth, Mathews, and McCormack, *National Implementation of the Biological Weapons Convention*, 11 Journal of Conflict & Security Law 93 (2006).

the matter the subject of investigation, and if it does so investigate, all BWC parties undertake in Article VI(2) to cooperate with the Council.

The weakness of the BWC's provisions with regard to verification were apparent from early on in the negotiation of the treaty.[46] Negotiations on the BWC got their start from a proposal put forward by the U.K. in 1968. However, as noted above, during this early period there was broad disagreement on the question of whether a single treaty covering both biological and chemical weapons should be pursued, or whether the two technologies should be addressed through separate instruments. By 1971, a superpower consensus had emerged in favor of a separated process of negotiations on chemical and biological weapons prohibition, and the view of the overall work program came to see a robust verification mechanism as necessary to the disarmament of chemical weapons stockpiles, while in the area of biological weapons verification measures were seen to be "dispensible."[47] The draft of the BWC which was put forward by the U.S. and Russia, and which was eventually signed in 1972, received only lukewarm support from a number of states due to its lack of verification and compliance provisions. In its decision not to sign the BWC in 1972, France particularly noted that verification "was a fundamental condition of our adherence," and that the lack of such mechanisms in the view of the French formed a barrier to their membership.[48] In describing its frustration with the treaty text, Sweden's pre-conference submission to the First BWC Review Conference in 1980 included the statement:

> Verification of Articles I & II is not envisaged in the Convention. Therefore, violation can only be verified by chance or, possibly, by national means. The possibilities for clandestine violation on a smaller scale are substantial. Present trends of technological and scientific development within states—also states not party to the Convention—and organizations indicate that the potential for production of biological warfare agents is spreading globally.[49]

Succeeding Review Conferences attempted to address this dearth of meaningful verification procedures through consideration and in some cases adoption of a range of measures, from organized consultative groups to a variety of voluntary confidence building measures which could be undertaken by states through information exchange as discussed above. However there was palpable resistance to any proposals for serious reform of the BWC text itself, or to the imposition of significant new verification-related obligations through Review Conference

[46] See J. Beard, *The Shortcomings of Indeterminacy in Arms Control Regimes: The Case of the Biological Weapons Convention*, 101 American Journal of International law 271(2007).

[47] See J. Littlewood, The Biological Weapons Convention: A Failed Revolution (2005) 16.

[48] ACDA, "Statement by the French Representative (Rapin) to the First Committee of the General Assembly: Biological and Chemical Weapons, November 26, 1973," *Documents on Disarmament 1973*, (U.S. Government Printing Office, 1973) 830.

[49] BWC 1RC, BWC/CONF.I/4 (20 February 1980), 24.

final documents. Jez Littlewood has very usefully described the dynamic of these negotiations as existing between states of a reformist orientation on the one hand, and states of a minimalist orientation on the other:[50]

> In the BWC context, however, there was no corresponding political decision to introduce "suppleness" into the U.S. position on biological verification. For the U.S. the criterion remained effective verification and, as such, the BWC, according to the U.S., remained unverifiable… The U.S. preferred the status quo to the prospect of an improved BWC, whereas its Western Group allies accepted complete assurance via verification was unachievable. However, the latter believed that some verification mechanisms would provide them with greater confidence in the BWC. This debate split the Western Group.[51]

The VEREX group of experts met twice in 1992 and twice in 1993 and submitted a final report in September 1993 in which 21 different measures, including a listing of prohibited materials and related technologies, for strengthening the BWC's provisions in the area of verification and compliance monitoring were identified and evaluated. In September 1994 a Special Conference of States Parties was held to consider the VEREX report. One result of this conference was the establishment of an Ad Hoc Group, open to all states, and given a mandate to:

> consider appropriate measures, including possible verification measures, and draft proposals to strengthen the convention, to be included, as appropriate, in a legally binding instrument, to be submitted for the consideration of the States Parties. In this context, the Ad Hoc Group shall, inter alia consider:
>
> - Definitions of terms and objective criteria, such as lists of bacteriological (biological) agents and toxins, their threshold quantities, as well as equipment and types of activities, where relevant for specific measures designed to strengthen the Convention; …
> - A system of measures to promote compliance with the Convention, including, as appropriate, measures identified, examined and evaluated in the VEREX Report. Such measures should apply to all relevant facilities and activities, be reliable, cost effective, non-discriminatory and as non-intrusive as possible, consistent with the effective implementation of the system and should not lead to abuse …[52]

Furthermore, the proposals to be developed by the Ad Hoc Group were to "include, *inter alia*, potential verification measures, as well as agreed procedures and mechanisms for their efficient implementation and measures for the investigation of alleged use."[53]

Through its work in 24 sessions over the succeeding six years, the Ad Hoc Group produced a protocol instrument containing, in addition to a list of prohibited materials and their thresholds, a developed system of provisions for annual declarations by states of the existence on their territory of prohibited materials, procedures for technical assistance and cooperation among states

[50] See J. Littlewood, The Biological Weapons Convention: A Failed Revolution (2005) 10.
[51] Ibid. at 35. [52] BWC/SPCONF/1. [53] Ibid.

parties, and the carrying out of site inspections on the territory of states parties at the request of other states parties. It provided further for an organizational structure including a Conference of States Parties, Executive Council, and Technical Secretariat to administer this new verification and monitoring system. In all, the draft protocol provided for the BWC regime verification procedures and supporting organizational structures essentially equivalent to those found in the CWC and in its administrative body, the Organization for the Prohibition of Chemical Weapons; a reflection of the negotiations and drafting recently completed at the time in the chemical weapons area.

By the summer of 2001, work on the draft protocol had reached an advanced stage, and it appeared that, despite significant issues of disagreement among the states members of the Ad Hoc Group, resolution of these remaining issues was possible and that a final agreed draft of the protocol could be ready for presentation to a Special Conference of States Parties for adoption prior to the Fifth BWC Review Conference, scheduled for November. However, as Jez Littlewood has chronicled, in July of 2001 the United States, for some time a supporter of the reformist movement to produce a legally binding protocol to strengthen the verification provisions of the BWC, rather abruptly and conclusively rejected the proposed draft. It was both the abruptness and absoluteness of the U.S. rejection which seems to have bewildered many states which had, along with the U.S., spent many years developing the protocol. As Littlewood has written of the explanations given by the U.S. for its change in attitude toward the protocol:

> None of the . . . issues were unsolvable; certainly they would have created new problems and prolonged the negotiations, but had the US turned to its allies in early July 2001 and stated that these issues required further consideration if the US was to accept the text, the Western Group would have almost certainly capitulated to the US demands. At this stage of the negotiations the US was in a position to present a *fait accompli* to its allies if it chose to go down that route. It did not do so, and the rejection of the composite text resulted in so much ire because of the lack of any effort whatsoever to address problems which could have been resolved. Again, it was not the text of the Protocol that was the problem *per se*; it was the politics in Washington and the change in political criteria under which the Protocol was judged that was used to reject the composite text . . . After tipping the balance of power in favour of the *reformists* in 1994, the US killed off a twenty-year *reformist* effort on July 25, 2001.[54]

With this sudden and conclusive shift of U.S. support away from the protocol, the momentum for the adoption of the protocol seemed to eviscerate overnight, and the work of the Ad Hoc Group effectively ground to a halt. As of early 2008 there has been no serious renaissance of attention by the Ad Hoc Group to the issue of the draft protocol, and no discernible progress toward its eventual adoption by BWC members. The "institutional deficit," the continuance of which was

[54] J. Littlewood, The Biological Weapons Convention: A Failed Revolution (2005) 214–215.

assured through the failure of the protocol negotiations, remains a most serious encumbrance upon the effectiveness of the BWC.[55]

Article X

Again reflecting the dual-use nature of many biological materials and related equipment and technologies, Article X(1) of the BWC codifies the residual right of BWC parties, in complement to the prohibitions agreed in Article I, to facilitate and participate in "the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes." And to further recognize the potential benefits to the international community derived from future peaceful innovations in the area of biology and biological chemistry, Article X(1) obligates able parties to "cooperate in contributing individually or together with other States or international organizations to the further development and application of scientific discoveries in the field of bacteriology (biology) for prevention of disease, or for other peaceful purposes."

Article X(2) is addressed to the impact of the BWC's provisions upon the economic development of states, and to the principle that the implementation of the provisions of the BWC should be designed to "avoid hampering the economic or technological development of States Parties . . . or international cooperation in the field of peaceful bacteriological (biological) activities . . ." In the final document of the First Review Conference of the BWC, held in 1980, the following text concerning Article X(2) was adopted by consensus:

> The Conference notes that since the entry into force of the Convention, increasing importance has been attached by the International community to the principle that the disarmament process should help promote economic and social development, particularly in the developing countries. Accordingly, the Conference calls upon States Parties, especially developed countries, to increase, individually, or together with other States or international organizations, their scientific and technological co-operation, particularly with developing countries, in the peaceful uses of bacteriological (biological) agents and toxins. Such co-operation should include, *inter alia*, the transfer and exchange of

[55] See O. Kervers, *Strengthening Compliance with the Biological Weapons Convention: the Draft Protocol*, 8 Journal of Conflict and Security Law 197 (2003); K.D. Ward, *The BWC Protocol: Mandate for Failure*, The Nonproliferation Review, Volume 11:2 (Summer 2004); G.S. Pearson, *The Composite Protocol Text: An Evaluation of the Costs and Benefits to States Parties*, The BTWC Protocol Evaluation Paper No. 21 (University of Bradford, 2001); K.C. Bailey, *Why the United States Rejected the Protocol to the Biological and Toxin Weapons Convention*, National Institute for Public Policy, October 2002, <http://www.nipp.org/publications.php>. The Sixth Review Conference of the BWC decided in December 2006 to create and fund an Implementation Support Unit (ISU) within the Office for Disarmament Affairs (UNODA) of the United Nations Office at Geneva. The role of the ISU is "to support the work of States Parties during the 2007–2010 intersessional process; in the comprehensive implementation and universalization of the convention; and through the exchange of confidence-building measures." <http://www.unog.ch/80256EDD006B8954/(httpAssets)/53FC4512797DE8D0C125733A0034A554/$file/FLYER.pdf>.

information, training of personnel and transfer of materials and equipment on a more systematic and long-term basis.

Article X is of course a corollary to Article I as it establishes a category for treatment of materials which do not fall under the proscriptive provisions of the category established in Article I. The question of the difficulty in distinction between materials which is necessary to making this categorization, leads again to the question of definition of materials and delineation of thresholds which the VEREX group of experts and the Ad Hoc Group sought to address through their efforts. However, as explained above, no authoritative source for this effort of distinction has yet been produced.

C. The Chemical Weapons Convention

Following the horrific uses of chemical weapons by Iraq during its 1980–88 war with Iran, and particularly its use of chemical weapons to subdue the Iraqi Kurdish population in the north of the country in the late 1980s, momentum in the international community began to increase for the conclusion of a multilateral treaty banning the possession of chemical weapons outright. The movement for a treaty banning chemical weapons had begun at the same time as the movement for banning biological weapons in the late 1960s; however as explained above the politics of the Cold War prevented agreement in the area of chemical weapons until after the dissolution of the Soviet Union in 1991.

As with all multilateral treaties, the final draft of the Chemical Weapons Convention[56] which was opened for signature on January 13, 1993 was the result of years of sometimes difficult negotiations and significant compromise among its drafters. However, notwithstanding the difficulty in its production, the CWC text as it emerged in 1993, and came into force in 1997, can be viewed as one of the great accomplishments in the history of multilateral treaty-making, and a superior piece of legal draftsmanship. It is the product of a trend in multilateral treaty negotiation toward the production of texts not only incorporating substantive norms, but also creating by their terms supplementary organizational structures mandated to facilitate and monitor the implementation of those norms among treaty parties. Other treaty regimes of this type include the 1985 Vienna Convention for the Protection of the Ozone Layer and the 1994 World Trade Organization Agreement.

[56] Formally "The Convention on the Prohibition of the Development, Production, Stockpiling and use of Chemical Weapons and on their Destruction," opened for signature, January 13, 1993, Paris, entered into force April 29, 1997, 32 International Legal Materials 800. See generally W. Krutzsch and R. Trapp, A Commentary on the Chemical Weapons Convention (1994) 16–17; W. Krutzsch and R. Trapp, verification Practice under the Chemical Weapons Convention: A Commentary (1999); R. Thakur (ed.), The Chemical Weapons Convention: Implementation, Challenges and Opportunities (2006); T. Bernauer, The Projected Chemical Weapons Convention: A Guide to the Negotiations in the Conference on Disarmament (1990); I. Detter, The Law of War (2nd edn, 2000) 263–266; E. Myjer (ed.), Issues of Arms Control Law and the Chemical Weapons Convention (2001).

The CWC establishes a highly developed regime of substantive prohibitions as well as positive duties in the area of chemical weapons proliferation, binding equally upon all treaty parties. These basic duties are refined in their scope by the inclusion of detailed, albeit non-exclusive, lists of covered materials in its Annex on Chemicals. These substantive duties are then supplemented by provisions in Article VIII of the convention which establish an international organization to aid in the verification of treaty commitments, and also by a comprehensive set of verification procedures and rules on implementation contained in the Convention's Annex on Implementation and Verification.

The developed, comprehensive, administratively robust international legal regime for regulating chemical weapons proliferation created by the CWC is in many ways a culmination of lessons learned through the experiences of the international community in the operation of the NPT/IAEA regime in the nuclear weapons area and the BWC regime in the biological weapons area. The seamless nature of the CWC text's inclusion of definitions of terms, lists of covered materials, as well as the administrative mechanism for verifying and facilitating compliance represent major improvements over both prior models.

Articles I and II

When interpreting the scope of the obligations of parties to the CWC, Articles I and II of the treaty must be read very much in concert with each other, as the definitions in Article II provide essential meaning to the basic recitations of obligation contained in Article I.

Thus, the obligations in Article I "never under any circumstances" to "develop, produce, otherwise acquire, stockpile or retain chemical weapons;" to "use chemical weapons;" to "transfer, directly or indirectly, chemical weapons to anyone;" to "engage in any military preparations to use chemical weapons;" or to "assist, encourage or induce, in any way, anyone to engage in any activity prohibited to a State Party under this Convention," are all contingent in their meaning upon the definitions given to the terms "chemical weapon," "toxic chemical," and "precursor" in Article II.

Within Article II(1), which defines the term "chemical weapon," we find the essential definition employing the purposive formula originating in Article I of the BWC.[57] Thus, chemical weapons are "[t]oxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes." Article II(2) then defines toxic chemicals as "[a]ny chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions or elsewhere."

[57] G. Pearson, *The Importance of Implementation of the General Purpose Criterion of the Chemical Weapons Convention*, 55 Kemijau Industriji 413 (2006).

Article II(9) further defines "Purposes not prohibited under this Convention" to include:

(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.

As in the context of the BWC, this general purpose formula allows for comprehensive and inclusive application of the prohibitive terms of the convention, even to newly developed materials falling within the definitional ambit of "toxic chemicals and their precursors," through the establishment of a presumption of prohibition. Thus, as Ralf Trapp has explained, under the terms of Article I "*Any* toxic or precursor chemical is regarded as a chemical weapon *unless* it has been developed, produced, stockpiled or used for purposes *not* prohibited, and only as long as types and quantities are consistent with such purposes."[58]

In the context of Article I(1), as defined in Article II, a number of important points bear mention. The first is with regard to the relationship between the materials listed in the Annex on Chemicals and the basic obligations of the general purpose criteria of Article I. As the parenthetical additions to Articles II(2) and II(3) make clear, the chemical agents listed in the Annex on Chemicals consist only of those toxic chemicals which have been "identified for the application of verification measures" contained within the Annex on Implementation and Verification. These chemical agents do not represent an exclusive list of agents subject to the terms of Article I and are not a substitute for the general purpose definitions of Article II. The agents listed in the schedules of the Annex on Chemicals thus comprise only a sub-grouping, or representative listing of materials subject to the terms of the CWC. As the Annex on Chemicals Section B states "Pursuant to Article II, subparagraph 1 (a), these Schedules do not constitute a definition of chemical weapons." This is an important distinction to bear in mind in preserving the comprehensive reach of the definitions of Article II particularly to newly developed materials.[59]

[58] R. Trapp, "The Chemical Weapons Convention—Multilateral Instrument with a Future," in R. Thakur, (ed.), The Chemical Weapons Convention: Implementation, Challenges and Opportunities (2006) 20.

[59] See Organization for the Prohibition of Chemical Weapons, Note by Director General, Report of the Scientific Advisory Board on Developments in Science and Technology, RC-1/DG.2/23 April 2003 ("The definition of CW contained in Article II, as well as the provisions of the Schedules of Chemicals, make it clear that the Schedules do not embrace the entire scope of the Convention. The Convention's prohibitions related to 'chemical weapons' apply to all toxic chemicals and their precursors, except when intended for purposes not prohibited by the Convention, as long as the

With regard to the scope of the obligations listed in Article I(1), a further element of the definition of "chemical weapon" in Article II(1) is instructive. Unlike other arms control and nonproliferation treaties, including the NPT, which define their subject "weapons" as the cumulative entirety of their component parts,[60] Article II(1) of the CWC defines a chemical weapon to mean the following "*together* or *separately*":

(a) Toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes;
(b) Munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in subparagraph (a), which would be released as a result of the employment of such munitions and devices;
(c) Any equipment specifically designed for use directly in connection with the employment of munitions and devices specified in subparagraph (b).

Thus, the terms of the CWC apply their prohibitions not only to the totality of the component parts of a chemical weapon as traditionally conceived, but also equally to each of the component parts themselves. This means for example that artillery shells designed specifically to deliver binary chemical weapons, or non-toxic precursor chemicals manufactured in bulk for purposes of a chemical weapons program, are themselves considered chemical weapons even before they are incorporated into their intended end-product weapons. This expansive definition allows the prohibitions of the CWC to attach to a variety of materials, for example the dual-use low-toxicity precursor chemicals chlorine and phosgene, previously untouched by international law.[61]

Finally with regard to the Article I(1)(a) prohibition on transfers of chemical weapons, reference to the Annex on Implementation and Verification (AIV) provides an important delineation of obligations with regard to transfers of chemicals scheduled within the Annex on Chemicals. AIV Part VI(B) paragraph 3 provides that "A State Party may transfer Schedule 1 chemicals outside its territory only to

types and quantities are consistent with such purposes. Without that broad scope, chemical warfare agents of novel identity (including those which are as yet undisclosed or undiscovered) would remain outside the reach of the Convention.") See, e.g., R.D. Pinson, *Is Nanotechnology Prohibited by the Biological and Chemical Weapons Conventions*? 22 Berkeley Journal of International Law 279 (2004).

[60] One example is presented by the definition of nuclear weapons in the Treaty of Tlatelolco, Article 5: "For the purposes of this Treaty, a nuclear weapon is any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of characteristics that are appropriate for use for warlike purposes. An instrument that may be used for the transport or propulsion of the device is not included in this definition if it is separable from the device and not an indivisible part thereof."

[61] R. Trapp, "The Chemical Weapons Convention—Multilateral Instrument with a Future," in R. Thakur (ed.), The Chemical Weapons Convention: Implementation, Challenges and Opportunities (2006) 20.

another State Party and only for research, medical, pharmaceutical or protective purposes…" Schedule 1 materials, which are those of the highest relative toxicity and/or risk to the object and purpose of the CWC, may therefore only be transferred between states parties to the CWC, and only for specific peaceful purposes.

Schedule 2 chemicals, those of the next highest relative toxicity and/or risk to the object and purpose of the CWC, were originally transferable by CWC member states either to other CWC member states or to states not members of the CWC, subject in the latter circumstance to the provision of an end-use certificate and to due diligence on the part of the exporting state. However, AIV Part VII(C) paragraph 31 provides: "Schedule 2 chemicals shall only be transferred to or received from States Parties. This obligation shall take effect three years after entry into force of this Convention." Thus, as of April 29, 2000, Schedule 2 chemicals cannot be exported to or imported from non-party states.

Pursuant to AIV Part VIII(C) paragraphs 26 and 27, Schedule 3 chemicals, those of lowest relative toxicity and/or risk to the object and purpose of the CWC within the schedules, as well as unfilled munitions and devices and equipment designed specifically to employ chemical weapons included in Schedule 3, may be transferred either to CWC states parties or to non-party states. However end-use certificates are currently required for exports of Schedule 3 chemicals and materials to non-party states.

Within the other subparagraphs of Article I additional fundamental obligations are to be found. In subparagraph 2, the parties undertake to destroy all chemical weapons possessed by them or located within territory under their jurisdiction or control. With regard to this latter category of location, Walter Krutzsch and Ralf Trapp have commented:

> This compels states parties to use jurisdiction with regard to natural and legal persons on its territory, in other places under the jurisdiction outside the territory and on vessels flying its flag or on aircraft registered under the national law, to implement the destruction obligation. The same goes for places under the control of a state party, that means places over which the state party exercises factual power or authority, in particular occupied territories…In cases in which the legal status of a place is disputed, for instance in an occupied territory, the state party actually exercising the control is addressed by this provision.[62]

Pursuant to Article III(1)(a), states parties are to make a declaration of all chemical weapons which are to be destroyed under the Article I(2) obligation. Article IV(6) then specifies that the full destruction of subject materials shall be accomplished by each state party within 10 years of the coming into force of the convention for it, in accordance with the rate and sequence of destruction spelled out in the AIV. The AIV's basic obligation for the destruction of Schedule 1-based chemical weapons in terms of time period is not more that 10 years after entry into force of the convention. However AIV Part IV(C) allows states to apply to the OPCW on

[62] W. Krutzsch and R. Trapp, A Commentary on the Chemical Weapons Convention (1994) 16–17.

the basis of "exceptional circumstances" for an extension of this deadline to no more than 15 years after entry into force. Thus, all CWC parties are obligated to destroy all Schedule 1-based chemical weapons at least by April 29, 2012.

The progress of the largest possessors of declared chemical weapons stockpiles in meeting their obligation of destruction of Schedule 1-based chemical weapons under CWC Article I(2) was summarized in April 2007 by the Arms Control Association using the following tabulated information:[63]

Table 2.1. Possessor States' Category I Destruction Implementation

	Declared Category 1 Stockpile	Revised Destruction Deadline	Agents	Remaining Stockpile	Projection
Albania	16 metric tons	4/29/2007	Mustard	Unknown	Generally estimated to miss deadline by several weeks.
India	1,055 metric tons	4/28/2009	Unknown	578 metric tons on 12/31/2005	Will meet deadline.
Libya	23.6 metric tons	12/31/2010	Lewisite, Mustard, Phosgene, Sarin, Tabun	23.6 metric tons	No projection.
Russia	40,000 metric tons	4/29/2012	Lewisite, Mustard, Phosgene, Sarin, Soman, VX	Russia projects 31,000 metric tons on 4/29/2007	Will not meet deadline; U.S. Government Accountability Office estimates 2007.
South Korea	605 metric tons	12/31/2008	Unknown	304 tons on 12/31/2005	Will probably meet deadline.
United States	27,771 metric tons	4/29/2012	Binary nerve agents, Lewisite, Mustard, Sarin, Soman, VX	16,317 tons on 3/11/2007	Will not meet deadline; U.S. Department of Defense estimates 2023.

[63] Original available at <http://www.armscontrol.org/factsheets/cwcglance.asp>. In presenting this information, the Arms Control Association notes: "these figures are inferences from the Organization for the Prohibition of Chemical Weapons December 2006 implementation report, *Report of the OCPW on the Implementation of the Convention of the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction in 2005.*" Because these figures must by necessity be based upon inferences (all but one of the six possessor states having withheld their declarations from public scrutiny), there are likely some errors of fact presented therein. The information has been reprinted here not to give an accurate accounting, which is an impossible task given the closed nature of sources, but rather to give the reader a general idea of the amounts and types of chemicals possessed by the largest possessor states, and schedules for destruction.

This obligation to destroy is extended in Article I(3) to all chemical weapons abandoned by states parties on the territory of another state party. This provision has particular relevance to Japan, and to that country's abandonment of approximately two million chemical weapon munitions on the territory of China during World War II. The Japanese Imperial Army had used chemical weapons during its conquest and occupation of China between 1937 and 1945. These chemical attacks resulted in approximately 10,000 fatalities and 80,000 injuries, according to Chinese sources. Most of these munitions contained a mustard gas–lewisite mixture and were abandoned primarily in the north-eastern provinces of Heilongjiang, Liaoning, and Jilin. Since the coming into force of the CWC, the Japanese and Chinese Governments have cooperated in fact-finding efforts and have agreed upon a protocol for destruction of these abandoned munitions, with Japan bearing the financial costs of the disposal.[64]

The subparagraph 3 obligation to destroy abandoned chemical weapons notably does not include chemical weapons abandoned on the territory of a non-state party, or abandoned on the high seas or other area not under the jurisdiction or control of a state party. Parts VII and XII of the 1982 Law of the Sea Convention, among other largely subscribed multilateral treaty provisions, include environmental protection obligations which effectively forbid the dumping of toxic chemicals at sea; however this does not address materials already abandoned at sea. Indeed, Article III(2) expressly states regarding the Article III obligations of declaration that:

> [t]he provisions of this Article and the relevant provisions of Part IV of the Verification Annex shall not, at the discretion of a State Party, apply to chemical weapons buried on its territory before 1 January 1977 and which remain buried, or which had been dumped at sea before 1 January 1985.

Article I(1) and Non-Lethal Weapons

As Julian Robinson has described:

> In the ability of CBW agents to target themselves on particular life processes, there is growing scope for users of weapons based on them to "tailor" the nature or severity of their effects to a strategic objective… 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 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…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

[64] See "Abandoned Chemical Weapons in China," Monterrey Institute Center for Nonproliferation Studies, available at <http://www.nti.org/db/china/acwpos.htm>.

during the last months of the CWC negotiation in mid-1992, when the new protagonists of 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 should or should not fall 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). 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 RCA, thus perpetuating a semblance of ambiguity on whether the toxicity criterion fundamental to the CWC did or did not capture RCA . . . The process that can be seen here is a surreptitious equation of toxicity with lethal toxicity, and in this attempt to loosen the CWC constraint on the weaponization of other forms of toxicity we have started to see a creeping legitimation 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.[65]

The basic or presumptive rule of Article I(1) of the CWC is, as has been seen, that chemical weapons are prohibited (i.e. their possession, development, transfer, and use are prohibited). Through the definition of chemical weapon in Article II(1) this obligation is clarified as providing that toxic chemicals (among other things) are chemical weapons. Therefore the presumptive rule (in its lesser included form) restated is that toxic chemicals are prohibited by Article I(1). However, pursuant to Article II(1), if a toxic chemical is intended for purposes not prohibited by the convention (provided that types and quantities of the chemical are consistent with this purpose) then this purpose establishes an exception excluding the subject material from the application of the basic prohibitive rule regarding toxic chemicals.

Most, though not all, non-lethal chemicals used either for law enforcement or military purposes do fall under the definition of toxic chemicals provided in Article II(2), in that they at least cause temporary incapacitation in their targets (this being their *raison d'etre* in the context of either law enforcement or military use).

Thus, in order not to be prohibited as chemical weapons under the presumptive rule of Article I(1), toxic non-lethal chemicals (sometimes referred to categorically in this context as non-lethal weapons (NLW)) employed by militaries or law enforcement agencies must be intended for use for a purpose not prohibited under the CWC.[66] There are two provisions of Article II(9) which are most applicable in this context: subparagraphs (c) and (d).

[65] J. Robinson, "Chemical and Biological Weapons," in N. Busch and D.H. Joyner (eds), Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy (2009) 86–87.

[66] On the subject of toxic vs. non-toxic chemicals and lethality, it is important to note that, in the end, the dose of the chemical in question can determine both its toxicity and its lethality.

Article II(9)(c)

Under Article II(9)(c), toxic non-lethal chemicals can be used for military purposes under two express conditions to be read conjunctively; each a separate condition precedent to the functioning of this exception from the Article I(1) presumptive prohibitive rule. Those military purposes for which toxic non-lethal chemicals are used must:

1. not be connected with the use of chemical weapons; and
2. not be dependent on the use of the toxic properties of chemicals as a method of warfare.

In keeping with the basic definition of a chemical weapon, then, in order to satisfy condition precedent number one, toxic non-lethal chemicals used for military purposes must not accomplish their intended purpose through the operation upon a target of the toxicity of the material being utilized. Explosive chemicals, rocket fuels, incendiaries, and smoke devices which do not accomplish their intended purpose through the operation of toxicity would fall under this category.[67]

In order to satisfy condition precedent number two, the same use of toxic non-lethal chemicals for military purposes, in addition to not accomplishing its purpose through the use of the toxic properties of the material, must also not be a use of the material as a method of warfare.

The term "method of warfare" as a legal term of art first appears in the context of a multilateral treaty in Protocol I to the 1949 Geneva Conventions.[68] In its Article 35 the Protocol provides that "[i]n any armed conflict, the right of the parties to the conflict to choose methods or means of warfare is not unlimited." It is important to bear in mind, however, that the term "method of warfare" under consideration herein is the appearance of this term within the specific and independent context of the CWC, and thus while the meaning of the term in the context of its appearance in other treaties including Geneva Convention Protocol I is instructive to determining its meaning in the CWC context, it must be remembered that the treaty context is in the end different. Thus, in applying this term in the CWC context, one is not bound in interpretation to the parameters of the use of the same term in the Geneva Convention context, e.g. as to what sort of armed conflict can be applied the law of the Geneva Conventions, or on the principle of the exclusive application of the law of the Geneva Conventions as between parties to the Conventions.

See M. Wheelis, *Biotechnology and Biochemical Weapons*, 9 The Nonproliferation Review 48 (Spring 2002).

[67] W. Krutzsch and R. Trapp, A Commentary on the Chemical Weapons Convention (1994) 42.

[68] See generally E. Harper, *A Call for Definition of Method of Warfare in Relation to the Chemical Weapons Convention*, 48 Naval Law Review 132 (2001).

In applying the term "method of warfare" in the CWC context, therefore, distinction need not be made strictly along Geneva Convention lines between international armed conflict and non-international armed conflict.[69] Rather, the term must be interpreted using the interpretive method prescribed in the Vienna Convention on the Law of Treaties, Articles 31 and 32, which focuses on the ordinary meaning of treaty terms, in their context and in the light of the treaty's object and purpose.

Importantly for purposes of interpretation, this term in Article II(9)(c) of the CWC does not provide that toxic chemicals may be used for military purposes "in wartime." This rendering would emphasize the context of the conflict, and its legal status as "war" or "not war" as being determinative of the legality of the use of toxic chemicals including toxic non-lethal chemicals.

Rather, the provision provides that toxic chemicals including toxic non-lethal chemicals may not be used for military purposes as a "method of warfare." This rendering thus emphasizes the method, or the way in which the toxic chemical is used, and the importance of this inquiry in determining whether it is a prohibited method of warfare.[70]

A method of warfare can generally be defined as a means of violence, or procedure for applying a means of violence, used against enemy belligerents, including both regular armed forces and insurgents, in an armed conflict of either an international or non-international character.[71] This definition is in accord with modern definitions of war as encompassing both international armed conflict and some varieties of non-international armed conflict, as well as the trend in both international humanitarian law and international criminal law to extend the protections and obligations of international law to the prosecution of non-international armed conflicts.[72]

Thus, in determining whether a toxic chemical has been used for military purposes as a prohibited method of warfare, the most important question is not what is the character of the armed conflict in which the use takes place, but rather against whom is the chemical being used and in what context.

In applying this interpretation of the Article I(1) obligation in the particular context of toxic non-lethal chemicals including toxic riot control agents, it is clear that any use of toxic chemicals including toxic non-lethal chemicals against belligerents, including both regular armed forces and insurgents, in either an international or non-international armed conflict, is prohibited by the CWC, in

[69] See L.C. Green, The Contemporary Law of armed conflict (2nd edn, 2000) ch. 3.

[70] See Y. Sandoz et al. (eds), Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949 (1987) 398, paras 1401 and 1402.

[71] W. Krutzsch and R. Trapp, A Commentary on the Chemical Weapons Convention (1994) 18–19; J. Bond, The Rules of Riot (1974) 51–58.

[72] M. Shaw, International law (5th edn, 2003) 1068–1072; I. Detter, The Law of War (2nd edn, 2000) 17–26; A. Cassese, International Criminal law (2003) 37–41.

addition to whatever other prohibitions may be in force flowing from the Geneva Conventions or other source of international law.

With regard to the scope of this obligation in the CWC context, unlike the 1949 Geneva Conventions, the CWC contains no limitation on the observance of its obligations with regard to conduct affecting non-parties to the CWC.[73] Thus, the obligations of Article I of the CWC are to be observed by CWC parties with regard to their conduct whether or not that conduct is pursued for the purpose of affecting CWC parties or non-parties. Again, there is no Geneva Convention-like limitation with regard to uses of toxic chemicals as against non-CWC members. The CWC's obligations are universal.

Having thus established this general obligation, some brief consideration will be given to the most controversial issues concerning the use of toxic non-lethal chemicals in situation of armed conflict. Such issues have included the use of such chemicals in peacekeeping operations, in occupied territories, and as against civilians in the context of insurgencies.

Again, using the interpretation of the Article I(1) obligation employed herein, the character of an armed conflict is not the most probative fact in determining whether the use of a toxic chemical for military purposes is a prohibited method of warfare. Thus, the fact of such a usage in the context of a peacekeeping operation or in occupied territories does not per se bear materially on this determination of legality.

As in the context of an international armed conflict, the use of a toxic chemical for military purposes in the context of a peacekeeping operation or in occupied territories will constitute a prohibited method of warfare if that use is against belligerents, including regular military forces or insurgents, in the prosecution of an armed conflict. The few military purposes justifying the use of toxic chemicals as against belligerents in an armed conflict include riot control in the context of prisoner of war camps or military prisons.[74]

As consideration turns to the subject of the use for military purposes of toxic chemicals, including toxic non-lethal chemicals such as riot control agents, as against civilians within the context of an occupation and/or insurgency, the question becomes one of the connection of civilian activity with the continuing armed conflict.[75] If a civilian group is actively supporting belligerents participating in an armed conflict, then as a result of this connection, the use of toxic chemicals by opposing military forces against such civilians would be a method of warfare, and would thus be prohibited by Article I(1) of the CWC.

[73] See Common Article 2 of the Geneva Conventions.

[74] W. Krutzsch and R. Trapp, A Commentary on the Chemical Weapons Convention (1994) 42.

[75] See by analogy the nexus test applied to ground international criminal liability for acts against civilians. See, e.g., the ICTY Appeals Chamber judgment (June 12, 2002) in the *Kunarac* case, paras 58–59.

Article II(9)(d)

On the question of the use of toxic chemicals, including non-lethal chemicals such as riot control agents, against civilians by foreign military forces in an occupied territory where those civilians are not engaging in activity in connection with a continuing armed conflict, neither Article II(9)(c) nor Article II(9)(d) would appear to justify this purpose as one not prohibited by CWC Article I(1).

Article II(9)(d) provides that "law enforcement including domestic riot control" comprises an additional "purpose not prohibited," which can serve to exclude a use of toxic chemicals from the prohibitive terms of Article I(1). This provision effectively excludes most uses of toxic chemicals by government agents as against civilians within the domestic sovereign jurisdiction of the government, provided the use may be classified as law enforcement. Use of toxic chemicals, such as tear gas, for law enforcement often though not exclusively occurs in the riot control context.

Some have read Article II(9)(d) in a bifurcated manner, holding that the term "law enforcement" in the provision is broad in scope so as to include within its meaning both domestic law enforcement as well as law enforcement in territory not within the sovereign jurisdiction of a state, but rather only under its occupation jurisdiction, or jurisdiction otherwise conferred upon the state through, e.g., U.N. Security Council resolution. Under this reading, the terms "including domestic riot control" serve as a non-exclusive subdelineation of activities included within the prior broadly exculpatory term "law enforcement."

A better reading, however, and one more in line with the *travaux préparatoires* of the CWC which clearly emphasizes domestic law enforcement, is that the entire provision refers only to domestic law enforcement, or law enforcement over territory within the sovereign jurisdiction of the acting state government. Under this reading, the inclusion of "domestic riot control" serves to delineate in an exclusionary manner that only domestic riot control, and not riot control in non-sovereign territory, is contemplated to be included within this exception from the general purpose criteria of Article I(1).

Thus, under this interpretation of Article II(9)(d), taken together with the previously determined interpretation of Article II(9)(c), it can be concluded that the use of toxic chemicals by a foreign military against civilians in an occupied territory is in all cases prohibited by Article I(1) of the CWC.[76]

[76] This conclusion is in disharmony with that advanced by Ingrid Lombardo in "Chemical Non-Lethal Weapons—Why the Pentagon Wants them and Why Others Don't," Monterrey Institute of International Studies, Center for Nonproliferation Studies, June 8, 2007. Available at <http://cns.miis.edu/pubs/week/070608.htm>.

Application of the Scope of Article I(1)

The scope of the Article I(1) prohibition, as interpreted herein, will serve to find prohibited certain uses by the United States, for example, of toxic chemicals for military purposes in its continuing prosecution of armed conflicts in Iraq and Afghanistan. In Afghanistan, such a prohibited use of toxic chemicals occurred in the context of "cave clearing" activities against enemy belligerents, as described by James Fry:

> At the beginning of the War in Afghanistan, some analysts encouraged the use of gases to force combatants out of the caves. Apparently the U.S. military had these same thoughts, as it made the use of CS tear gas a fundamental part of its cave-clearing techniques. When cave-clearing teams fear enemy attack in a cave, they use a burning type CS grenade (M7A2) and a Mity Mite Portable Blower to "flush the enemy from the tunnels." Once a cave is cleared, CS is placed throughout the cave and CS powder is blown into the cave's entrance by the Mity Mite in order to temporarily prevent reentry by enemy forces until the cave complex can be completely demolished.[77]

As CWC Article I(1) prohibits inter alia development, possession, or military preparations to use prohibited toxic chemicals, the U.S. military's research regarding development and possession of chemicals and their precursors for the purpose of prohibited activities of this nature are also, independently, violations of the CWC's terms.[78]

Article I(5)

In light of the foregoing analysis and interpretation of Article I(1), Article I(5) seems a largely redundant addition to the terms of the treaty, as it simply re-identifies an obligation subsumed under the Article I(1) obligation. Article I(5) was clearly meant, as explained by Julian Robinson above, to introduce some ambiguity into the terms of the CWC on the question of the scope of Article I(1)'s prohibition of chemical weapons in the context of riot control agents.[79] However, as the analysis of the text as offered herein makes clear, the comprehensive scope of Article I(1) and its application to toxic non-lethal chemicals including many riot control agents stands independently of Article I(5) and there is no principle of treaty interpretation which demands any dimming of the clarity of this scope as a result of the addition of Article 1(5) to the treaty text, particularly when the *travaux préparatoires* of the convention, in which this somewhat subversive intent on the part of one state party is laid bare, is considered as provided in VCLT Article 32.

[77] *Contextualized Legal Reviews For The Methods And Means Of Warfare: Cave Combat And International Humanitarian Law*, 44 Columbia Journal of Transnational Law 453 (2006).

[78] See I. Lombardo "Chemical Non-Lethal Weapons—Why the Pentagon Wants them and Why Others Don't," Monterrey Institute of International Studies, Center for Nonproliferation Studies, June 8, 2007. Available at <http://cns.miis.edu/pubs/week/070608.htm>.

[79] See below n. ___.

To be clear, this should not be framed as an issue of *lex specialis*, or that of a more specific provision of a legal text being read out in favor of a more general provision in violation of this interpretive canon. Rather, it should be framed as an issue of redundancy in the provisions of the same legal text. In this case, Article I(5) should be seen as a redundant provision of lesser included scope which has obfuscatory rather than specifying intent. In such a case, the need for legal clarity should take precedence in interpretation over canons of interpretation favoring the attachment of meaning to every provision of a legal text.

This conclusion is further supported by the VCLT Article 31 rule of treaty interpretation, pursuant to which the meaning of a provision of a treaty is to be interpreted in its context within the treaty, and in light of the treaty's overall object and purpose. In the case of the CWC, the object and purpose of the treaty is clearly to establish a broad prohibition on the development, possession, transfer, and use of toxic chemicals for non-civilian, non-peaceful purposes. In context, as concluded above, the ordinary meaning of the terms of Article I(5) can be interpreted as redundant of the ordinary meaning of previous provisions. Taken together for purposes of interpretation, therefore, the object and purpose of the treaty, and the context of the provision within the treaty, both argue for primacy, independence, and universal application of the terms of Article I(1), and a reading of Article I(5) which does not in any way obscure or confuse the Article I(1) obligation, but rather simply reiterates a part of it.

If there is anything additionally meaningful contained in the obligation defined in Article 1(5), it is to be found in the clarification provided by definitional Article II(7) of the meaning of the term "riot control agent." This definition of riot control agent as "any chemical not listed in a Schedule, which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure" would appear to extend the reach of the CWC's prohibitory terms to include non-toxic riot control agents, e.g. those which do not cause temporary incapacitation but only "sensory irritation," in addition to Article I(1)'s previously described regulation of toxic non-lethal chemicals, into which latter category fall most chemicals used for riot control purposes.

Thus, under this interpretation of Article I(5), even non-toxic chemicals which produce only sensory irritation may not be used as a method of warfare by CWC members, as that term has been interpreted herein.

Monitoring and Verification Mechanism

As previously noted, one of the chief successes of the CWC distinguishing it from both the NPT and the BWC was its inclusion within its text of a developed and universal scheme for monitoring and verification of its basic obligations

contained in Article I.[80] This monitoring and verification mechanism, complete with *sui generis* supervisory administrative organs, is contained within Articles III through XI of the treaty, as supplemented by the Annex on Chemicals and the highly detailed AIV.

This mechanism may be summarized as follows. All CWC parties are to make a declaration of all chemical weapons and chemical weapons production facilities which it possesses, or which are on its territory. This declaration must be followed by a detailed plan for destruction of all such chemical weapons and chemical weapons production facilities. Each state shall proceed with its destruction of all chemical weapons and closing of all chemical weapons production facilities according to the guidelines and schedules specified in the convention.[81]

Each state shall further provide access to all such materials and facilities for the purpose of on-site inspection and verification by the Organization for the Prohibition of Chemical Weapons (OPCW), the umbrella organization for the various monitoring and verification organs and activities provided for within the CWC. Inspections by members of the OPCW Technical Secretariat proceed according to a schedule agreed between the organization and the subject member state, and detailed procedures for the conduct of inspections are laid out in the AIV. The OPCW states on its website that to date it has conducted over 3,000 such on-site inspections in 79 member states.[82] The OPCW further concludes standing arrangements with member states to continue monitoring sites through the use of video and other electronic detection equipment.

All states parties are to cooperate with other states parties in requests for information regarding chemical weapons and chemical weapons production facilities, particularly when such information is requested in order to clarify or resolve a matter which "may cause doubt about compliance with this Convention, or which gives rise to concerns about a related matter which may be considered ambiguous." Such requests for information may be made directly as between states parties, or alternatively through the intermediary offices of the OPCW.

If, however, a state party feels that it has not been satisfied through this process of interrogatory, it may request that the OPCW conduct a challenge inspection on "any facility or location in the territory or in any other place under the jurisdiction or control of any other State Party for the sole purpose of clarifying and resolving any questions concerning possible non-compliance

[80] See generally W. Krutzsch and R. Trapp, VERIFICATION PRACTICE UNDER THE CHEMICAL WEAPONS CONVENTION: A COMMENTARY (1999).

[81] See B. Kellman, *The Advent of International Chemical Regulation: The Chemical Weapons Convention Implementation Act*, 25 JOURNAL OF LEGISLATION 117 (1999).

[82] <http://www.opcw.org>.

with the provisions of this Convention."[83] The state against whom the challenge inspection has been requested is under a basic obligation to cooperate with the challenge inspection by members of the OPCW Technical Secretariat, unless the OPCW Executive Council (composed of 41 state party members based upon the principle of rotation) determines by a three-fourths vote that the inspection request is "frivolous, abusive, or clearly beyond the scope of [the] convention."[84]

On the basis of the report generated by the Technical Secretariat, the Executive Council may determine whether non-compliance with the CWC's terms has occurred and may instruct the offending state party on measures which it must take to remedy such non-compliance. If the measures directed by the Executive Council are not implemented by the offending state, the issue may be referred by the Council to the Conference of the States Parties (the Conference), the principal organ of the OPCW, comprised of a representative of all states parties. In its discretion, the Conference may restrict or suspend the rights of an offending state party under the convention, and may at the extreme in "cases of particular gravity," refer the matter to the U.N. Security Council.

The challenge inspection aspect of the CWC's monitoring and verification system has been rightly viewed as one if its most revolutionary accomplishments. The breadth of the presumptive right of states parties to request an inspection of any facility under the control of any other state party has the potential to be the ultimate guarantor of the effectiveness of the CWC regime. As Masahiko Asada has explained, this system can act as both a deterrent and confidence-building mechanism:

> Although these two functions of deterrence and confidence-building can be found to varying degrees in any type of verification and are not necessarily unique to challenge inspections, the challenge inspection type of verification system could be expected to function far more effectively than others in both respects. This is because most other types of verification system, including the routine-type industry inspection system of the CWC, are based on the declarations made by the States Parties to the relevant treaty implementation bodies, and consequently are not expected to function effectively with regard to undeclared facilities, where proliferating countries may conduct clandestine illegal activities.[85]

Notwithstanding its potential, as of this writing there has not been a single instance of the use or request of the operation of the challenge inspection system. Possible reasons for the reluctance of states to use this procedure include

[83] Article IX(9).

[84] Article IX(17). See generally R. Greenlee, *The Fourth Amendment and Facilities Inspections under the Chemical Weapons Convention*, 65 University of Chicago Law Review 943 (1998).

[85] M. Asada, "The Challenge Inspection System of the Chemical Weapons Convention: Problems and Prospects," in R. Thakur (ed.), The Chemical Weapons Convention: Implementation, Challenges and Opportunities (2006) 77.

a lack of confidence in the ability of OPCW inspectors acting pursuant to their limited powers under the AIV to detect intentionally hidden non-compliance, generally political considerations averse to the use of compulsory verification procedures in such a sensitive issue area, and the fear of retaliatory challenge inspections and a spiraling, resource demanding, tit-for-tat acrimony between member states.[86]

Article XV

Among the other notable innovations of the CWC text is the bifurcated system for *ex post* alteration of the treaty text enshrined in Article XV. The need for this differential system arises from the presence in the CWC text both of substantive obligations as well as the Annexes which facilitate compliance with them. Thus, a formal amendment to the substantive obligations of the CWC may be made, pursuant to Article XV(2)–(3), through the rather traditional mechanism of proposal and consensual acceptance by all states parties. However there is also in Article XV(4)–(5) the novel addition of procedures for "change" to the provisions of the Annexes to the CWC, so long as the alterations proposed "are related only to matters of an administrative or technical nature." Detailed procedures for determining the propriety of a proposal for characterization as a "change" follow.

This bifurcated system of alteration to the treaty text is a creative response to the character of the CWC as containing both substantive obligations as well as a monitoring and verification mechanism within its text. This system allows for ongoing revision of the Annex on Chemicals and the procedures for verification laid out in the AIV as required by the dynamics of scientific advance and political change, with a realistic threshold for securing support for such change among states parties. At the same time it allows for maintenance of the consistency of the substantive provisions of the CWC and for the upholding of the consensual nature of the fundamentals of the treaty.

D. The Australia Group

The Australia Group (AG) was established upon the initiative of the Government of Australia in 1985, with an original membership of 15 countries plus the European Union as an observer. Its original purpose was to constitute a forum for coordination among its members on issues of chemical precursor and dual-use chemical equipment export controls, and for harmonization of national control lists and procedures on export authorization through the agreement of non-binding

[86] See ibid. at 88–90.

guidelines to be implemented according to national discretion.[87] The membership of the Australia group currently stands at 41 states.[88]

Like the Nuclear Suppliers Group, the AG is an informal association of states with no obligatory documentary foundation. Its guidelines and control lists are adopted by simple unilateral declaration of an adherent state. Also like the NSG, membership in the AG may only be gained by the unanimous consent of existing Group members. The AG has no standing organs or regular budget. The Australian embassy in Paris currently acts as the point of contact of the Group, and provides secretarial services for its annual meetings.

In 1990 the members of the AG agreed to expand the ambit of the Group's existing guidelines and lists on chemical agents and dual-use equipment, to additionally cover biological weapon agents and toxins, and related dual-use equipment. In 1992 control lists were established covering 18 bacteria, four rickettsiae, 25 viruses, and 14 toxins. A separate list covers dual-use equipment, such as fermenters, centrifuges, aerosol chambers, and some types of filter and freeze-drying equipment.[89] The next year the AG established a no-undercut policy within its guidelines similar to that established in 1992 by the Nuclear Suppliers Group.[90]

In 2002 the AG significantly expanded the scope of its guidelines, including for the first time a catch-all provision to be implemented in the domestic legal systems of adherents. Also included in the 2002 changes were additions to the guidelines on the subject of "intangible transfers of information and knowledge which could be used for chemical and biological weapons purposes."[91] The 2002 meeting further saw the addition of a number of biological toxins to its control lists, as part of the Group's continuing efforts to keep its six control lists current in reflection of scientific advance and the dynamics of potential use.

It should be noted that the analysis of the international legal import of the guidelines and statements of the AG, particularly in reference to interpretations

[87] See generally A. Kelle, "CBW Export Controls: Towards Regime Integration?" in D.H. Joyner (ed.), Nonproliferation Export Controls: Origins, Challenges and Proposals for Strengthening (2006) 102–103; J. Robinson, "The Australia Group: A Description and Assessment," in H.G. Brauch et al. (eds), Controlling the Spread and Development of Military Technology (1992); A. Smithson, *Separating Fact From Fiction: The Australia Group and the Chemical Weapons Convention*, Occasional Paper No. 34, The Henry L. Stimson Centre, Washington, DC (1997).

[88] <http://www.australiagroup.net>.

[89] A. Kelle, "CBW Export Controls: Towards Regime Integration?" in D.H. Joyner (ed.), Nonproliferation Export Controls: Origins, Challenges and Proposals for Strengthening (2006) 102–104.

[90] See ibid.

[91] Australia Group (2002), "Press Release: Australia Group Meeting," available at <http://www.australiagroup.net/en/releases/press_2002_06.htm>.

of the BWC and CWC, is essentially similar to that given in the context of the NSG and the Zangger Committee in Chapter 1.[92]

1. The AG and the BWC

With the failure of the negotiations in the BWC context regarding possible adoption of an additional protocol on verification, and in consideration of the continuing absence of an effective monitoring and verification mechanism in the BWC context, proponents of the AG contend that AG activities of coordination and harmonization of national control lists and export control policies are integral to its participant states' proper implementation of their obligations regarding transfer under BWC Article III, as well as their obligations of national implementation under BWC Article IV. As in the context of the NSG and its relationship with Article IV of the NPT, detractors of the AG argue that the Group is essentially a supplier-state cartel, whose policies unduly target states legitimately attempting to exercise their rights under Article X(1) of the BWC to participate in "the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes." They argue that the targeted controls of the AG are in disharmony with the Article X(2) obligation of states parties to implement the BWC "in a manner designed to avoid hampering the economic or technological development of states parties to the convention or international cooperation in the field of peaceful bacteriological (biological) activities . . ."[93]

While the countervailing obligations and rights identified in Article X of the BWC are similar to those contained in NPT Article IV, in the context of the BWC, the arguments of AG detractors lack the supportive strength of the presence in the NPT context of the *quid pro quo* relationship between NWS and NNWS, and the heightened obligation arising therefrom for NWS to assist NNWS in the development of peaceful uses of nuclear material in a non-discriminatory manner. This consideration, in addition to the absence of an effective monitoring and verification system supplementing the BWC regime, arguably serves to strengthen the arguments of AG proponents in the context of the BWC, and distinguish this context from that of the NPT/NSG.[94]

[92] See Chapter 1 below at ___.

[93] See generally <http://www.nam.gov.za/background/background.htm>; J. Simpson and T. Ogilvie-White (eds), NPT Briefing Book, Vol. 1: The Evolution of the Nuclear Nonproliferation Regime (2003); T. Ogilvie-White, *International Responses to Iranian Nuclear Defiance: The Non-Aligned Movement and the Issue of Non-Compliance*, 18 European Journal of International Law 453 (2007).

[94] See generally A. Kelle, "CBW Export Controls: Towards Regime Integration?" in D.H. Joyner (ed.), Nonproliferation Export Controls: Origins, Challenges and Proposals for Strengthening (2006).

2. The AG and the CWC

The relationship between the AG and the provisions of the CWC has, however, become a very contentious issue, with provisions of the CWC and aspects of its supportive procedural and institutional structure aligning persuasively behind the arguments of AG detractors.

In the CWC context, the obligations in Article I(1) with regard to transfers and Articles VI(2) and XI(2)(e) regarding national implementation, serve as the presumptive legal basis for CWC member states' continued participation in the AG.

However, these articles must be read in conjunction with Article XI(2)(c) which provides that CWC parties shall:

> Not maintain among themselves any restrictions, including those in any international agreements, incompatible with the obligations undertaken under this Convention, which would restrict or impede trade and the development and promotion of scientific and technological knowledge in the field of chemistry for industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes.

It is the clarity and specificity of this provision of the CWC which creates the most significant problem in reconciling the continued parallel existence of the AG's activities with regard to chemical precursors and related dual-use technologies. This is particularly true as the "obligations undertaken under this convention" referred to in Article XI(2)(c) clearly include the Article XI(1) obligation to implement the provisions of the CWC in a manner which "avoids hampering…international cooperation in the field of chemical activities for purposes not prohibited under this convention, including the international exchange of scientific and technical information and chemicals and equipment for the production, processing or use of chemicals for purposes not prohibited under this Convention." Further damning to arguments supporting CWC states parties' continued participation in the AG is the presence within the CWC regime of the developed monitoring and verification system embodied in the Annexes and in the role and activities of the OPCW, which would seem to create an unsupportable overlap of roles and redundancy of efforts.[95]

In realization of these problems, there have been arguments to move the work of the AG in the chemical weapons context under the auspices of the OPCW. During the Third Session of the Conference of States Parties of the OPCW in November 1998, member states Iran, Cuba, and Pakistan submitted a draft resolution to the Conference stating that the CWC "has not envisaged any export control restriction in chemical trade between States Parties for peaceful purposes," that "the OPCW should be seen as the sole responsible body to verify the compliance of the States Parties with their

[95] Ibid.

obligations undertaken under the Convention," and that CWC states parties "should abide by the provisions of the Convention and abolish existing export control regimes against states parties in order to render their national regulations . . . consistent with the obligations undertaken in accordance with the Article XI of the Convention."[96]

Perhaps not surprisingly, this resolution was not adopted by the Conference, in large part due to the opposition of powerful members of the AG including the United States, which strongly supports the continuing existence and role of the AG. Indeed, in the U.S. Senate Resolution consenting to the U.S. ratification of the CWC, the Senate declared:

> that the collapse of the informal forum of states known as the "Australia Group," either through changes in membership or lack of compliance with common export controls, or the substantial weakening of common Australia Group export controls and nonproliferation measures in force on the date of United States ratification of the Convention, would constitute a fundamental change in circumstances to United States ratification of the Convention.[97]

However, noting (with consternation) that Article 22 of the CWC disallowed the attachment of formal reservations to the U.S. ratification, the Senate proceeded to give its consent to ratification of the treaty in its entirety without being able to secure formal assurances as to the survival of the AG after the CWC came into force in 1997.

Arguments for the illegitimacy of the continuing activities of the AG in the field of chemical weapons are at their strongest as they identify areas in which the guidelines of the AG propose a more restrictive rule regarding transfers than does the CWC text itself, thus presenting a prima facie case of infringement of the Article X(I)(1) obligation not to hamper international cooperation and exchange. Such a case is presented in the AG's Chemical Weapons Precursors control list, and the observation that 24 of the 63 precursors on the AG list are nowhere listed in the schedules of the CWC.[98]

The arguments of AG detractors in the area of chemical weapons received considerable support from Jose Bustani, the Director General of the OPCW's Technical Secretariat, when in his opening statement to the Fifth Session of the Conference on State in 2000 parties he declared:

> As more states join the CWC, and as their chemical producers support it, the arguments originally advanced for the maintenance of restrictions outside a credible reliable

[96] Islamic Republic of Iran, Cuba, and Pakistan (1998), "Draft Resolution Submitted by Islamic Republic of Iran, Cuba and Pakistan: Fostering of International Cooperation for Peaceful Purposes in the Field of Chemical Activities," C-III/NAT.4, November 19, 1998.

[97] Senate Resolution 75, 105th Congress, 1st Session, April 24, 1997.

[98] See A. Kelle, "CBW Export Controls: Towards Regime Integration?" in D.H. Joyner (ed.), Nonproliferation Export Controls: Origins, Challenges and Proposals for Strengthening (2006) 104.

international legal framework become increasingly redundant. Given this fact, the continuing existence of export controls by some States Parties against others is hard to understand and very difficult to justify.[99]

V. Overview of the CBW Legal Regime

In the end, the area of biological and chemical weapons regulation in international law can be seen to be both more and less complex than is the nuclear weapons regulatory regime described in Chapter 1.

It is fundamentally less complex because the starting point of both the BWC and CWC is a universal and comprehensive ban on possession, development, acquisition, and transfer of biological weapons and chemical weapons respectively, without any exceptions in the rights and obligations of parties. Both the BWC and the CWC are thus lawmaking treaties, as defined in Chapter 1. This aspect of the legal character of both the BWC and the CWC carries with it significant advantages both in establishing and maintaining a strong and uniform legal prohibitive norm. Unlike in the context of the NPT, no state party can claim special rights and, importantly, all states are subject to the same verification procedures.

The breadth of the bans codified in the BWC and the CWC adds to this comparative simplicity. For example, as reviewed above the prohibition on transfer in Article I of the CWC and Article III of the BWC is comprehensive as to transferees, meaning that transfer of the covered technologies is prohibited "to any recipient whatsoever," and member state assistance in developing covered weapons programs is clearly prohibited to any state assistee, whether party to the treaty or not. CWC Article I(1)(d) even expands this prohibition on assistance to cover such assistance to non-state actors as well as to states. In both cases, this is a much more comprehensive prohibition than that found in Article I of the NPT, particularly in its second clause, as reviewed previously.[100]

The breadth and universality of the obligations contained in the BWC and the CWC further aids in the development, maintenance, and strengthening of supplementary parallel customary law in both areas. This parallel custom, now undeniably established with regard to the fundamental substantive provisions of both the BWC and the CWC, serves to bind even non-parties, thus broadening the universal rules out past the immediate treaty membership in both areas.[101]

[99] Cited in D. Feakes, "Export Controls, Chemical Trade, and the CWC," in J. Tucker (ed.), The Chemical Weapons Convention: Implementation Challenges and Solutions, Monterey Institute of International Studies (2001) 47.

[100] See below p. ___.

[101] J.-M. Henckaerts and L. Doswald-Beck, Customary International humanitarian Law, Volume I: Rules (2005) 256–267.

In terms of enforcement, the breadth and universality of the BWC and the CWC serve usefully to minimize the potential for hypocrisy in the application of obligations, lending moral authority to calls for compliance emanating from states who are themselves subject to the selfsame obligations, and whose conduct in implementing those obligations can itself be held up as exemplary.

All of these simplifying aspects and products of the legal character of the BWC and the CWC serve to minimize or obviate entirely many legal disputes that are occasioned in the NPT context by the two-tiered, non-universal structure of the NPT text.

The biological and chemical weapons regulatory environment can, however, be described as more complex than the nuclear weapons environment in that the subject materials themselves, inclusive of dual-use technologies, are themselves more complex and varied, and are even more dynamic in terms of development of new covered materials and technologies than is the case with the nuclear weapons regulatory environment.[102]

This complexity and dynamism of the underlying fields of biology and chemistry leads to problems for the legal regime, including problems in classification of new materials and technologies and problems of definition of legal terms, not present to the same degree in the nuclear context.[103]

In order to address this complexity and dynamism, both the BWC and the CWC employ versions of a general purpose test to define their scope. This purposive approach is of course aimed at providing a catch-all legal framework which can adjust without formal amendment to advances in the underlying disciplines and development of new materials and technologies. While this purposive approach does provide comprehensiveness, it can at the same time, and due to the same indefiniteness of its terms which gives rise to its scope, present challenges to its implementation in an objectively discernible, predictable, and consistent manner.[104] These implementation problems are exacerbated in the context of the international legal system due to the absence in many cases of the effectual interpretive aid of international courts and tribunals, as will be discussed in Chapter 5 below.

It could further be argued somewhat ironically that the universality and breadth of the prohibitive norm in both the BWC and the CWC, while conferring advantages on the regime as outlined previously, have also given rise to particular difficulties in implementation of these broad obligations. This difficulty can be most clearly seen in the BWC context, in which the universal prohibitive norm has arguably contributed to the stagnation of the legal

[102] See A. Kelle, K. Nixdorff, and M. Dando, Controlling Biochemical Weapons: adapting multilateral arms control for the 21st century (2006).

[103] See ibid.

[104] For a domestic analogy, see D.H. Joyner, *The Enhanced Proliferation Control Initiative: National Security Necessity or Unconstitutionally Vague?*, 32 Georgia Journal of International & Comparative Law 107 (2004).

regime, and its inability to normatively develop and add further universally binding monitoring and verification obligations to increase its effectiveness. As Jez Littlewood has argued, regime minimalist states, including the U.S. and other powerful states, were the ultimate cause of the collapse of the additional protocol negotiations because they were unwilling to subject themselves to intrusive independent verification.[105] In the CWC context as well, though there is a challenge inspection procedure in place under Article IX whereby any state party may request verification of the compliance of any other party, thus far this compulsory verification system has not been triggered by any state party. As discussed above, this absence of challenge inspection requests, and particularly those targeted at powerful states, is likely explainable largely by fears of retaliation.

In both of these cases, it can be argued that the universality of the obligations of the regime has led to increased obstruction of the effective implementation of the regime particularly on the part of powerful states. In the NPT regime, it will be remembered, these same powerful states are given exceptional rights and immunities, and are arguably therefore more supportive of the strict implementation of the regime inclusive of intrusive verification procedures for those subject thereto, and are furthermore willing to place their considerable diplomatic weight behind the adoption of additional binding law purposed in increasing the effectiveness of the regime, with a case in point presented in the IAEA Additional Protocol.

The reluctance of powerful states particularly to agree to an intrusive and meaningful inspections process in the BWC context, and to properly support the existing process in the context of the CWC, can be argued to constitute the primary cause of the continuing problems experienced by both regimes in the area of implementation and verification.

VI. Conclusion

Viewed together, the biological and chemical weapons regulatory regimes, with the BWC and CWC as their cornerstones, have succeeded in establishing a comprehensive legal prohibition upon possession, development, proliferation, and use of biological and chemical weapons. This legal prohibition is supported by a pervasive and powerful ancient moral taboo particularly on the use of biological and chemical weapons. In the end, it is this reciprocally strengthening, symbiotic, and synergistic convergence of a universal legal ban and overwhelming moral taboo that gives the biological and chemical weapons regulatory regimes their strength and effectiveness, and has led to their enviable success in progressing

[105] J. Littlewood, The Biological Weapons Convention: A Failed Revolution (2005).

the agenda of biological and chemical weapons disarmament and non-use.[106] As Julian Robinson has summarized:

> [M]odern 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.[107]

[106] A. Kelle, *Assessing the Effectiveness of Security Regimes—the Chemical Weapons Control Regime's First Six years of Operation*, 41 International Politics 221 (2004); A. Kelle, *Strengthening the Effectiveness of the BTW Control Regime—Feasibility and Options*, 24 Contemporary Security Policy 95 (2003).

[107] J. Robinson, "Chemical and Biological Weapons," in N. Busch and D.H. Joyner (eds), Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy (2009) 87.