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Chemical and Biological Weapons in the 'New Wars'

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Abstract The strategic use of disease and poison in warfare has been subject to a longstanding and cross-cultural taboo that condemns the hostile exploitation of poisons and disease as the act of a pariah. In short, biological and chemical weapons are simply not fair game. The normative opprobrium is, however, not fixed, but context dependent and, as a social phenomenon, remains subject to erosion by social (or more specifically, antisocial) actors. The cross cultural understanding that fighting with poisons and disease is reprehensible, that they are taboo, is codified through a web of interconnected measures, principal amongst these are the 1925 Geneva Protocol; the Biological Weapons Convention; and the Chemical Weapons Convention. Whilst these treaties have weathered the storm of international events reasonably well, their continued health is premised on their being 'tended to' in the face of contextual changes, particularly facing changes in science and technology, as well as the changed nature and character of conflict. This article looks at the potential for normative erosion of the norm against chemical and biological weapons in the face of these contextual changes and the creeping legitimization of chemical and biological weapons.

Keywords Biological and chemical weapons · Taboo · New wars · BWC · CWC · Norms

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Introduction

The prohibition of chemical and biological weapons (CBW) is based on an ancient cross cultural taboo against poison and disease used as weapons which have long been viewed as morally corrupt.[1] The tacit normative opprobrium is codified in the modern legal framework that outlaws their use. The use of CBW is prohibited by a regime of interconnected measures, treaties and international legal instruments. At the core of this regime are the three principal instruments of international law—the 1925 Geneva Protocol; 1972 Biological Weapons Convention (BWC); and the 1993 Chemical Weapons Convention (CWC) which cumulatively prohibit the development, production, stockpiling, acquisition, and use of CBW.

These principal instruments have served the international community well and in many cases weathered the storm of global incidents. The taboo against chemical and biological weapons may have been weakened by past use; however, this use has not caused any state party to withdraw from the principal instruments prohibiting CBW, on the contrary, the number of members has steadily increased. Moreover, world leaders have repeatedly reaffirmed their commitment to these instruments, implying that the normative opprobrium against poison weapons continues to be relevant, at least for the time being. However, the continued durability of the prohibitions requires states parties to respond to and manage changing contexts to avoid the erosion of this norm (Roberts 1996; Robinson 2009).

In this paper we focus on two particular challenges to the CBW regime: global shifts in the nature and mode of organized violence and conflicts, and incremental and interlinked changes in science and technology. Convergence in science and security threatens to once again raise the spectre of CBW being assimilated in state (and potentially non-state) arsenals and the danger remains that "the more a proscribed weapon gains in military attractiveness, the more likely is its proscription to be ignored" (SIPRI 1973).

In the first section we will look at the cornerstones of the regime against chemical and biological weapons that embodies the norm against CBW. The next section addresses some of the contemporary challenges to the norm: specifically the changing geopolitical context in which the regime is located, drawing particular attention to the 'New Wars' thesis; and the implications of developments in science and technology. In the penultimate section we outline the potential new utilities of chemical and biological weapons in the context of the new wars thesis before concluding by presenting some remarks concerning CBW in the twenty-first century.

The CBW Regime

Chemical and biological weapons are a broad category of weapons characterised by their capacity to affect humans, animals and plants through their toxic or infectious properties respectively. CBW are frequently described through

[1] For a comprehensive account on various aspects of, and approaches to, the taboo see Jefferson (2009).

reference to the fuzzy term weapons of mass destruction (WMD). However, a focus on the massively destructive end of the spectrum belies a much broader range of pernicious effects of available from CBW—from localised nuisance to wide area effects; as well as various utilities other than killing. These include contamination of produce, rendering it unfit for consumption; contamination of landscape, to deny the use of an area; as well as a range of psychological effects, from fear of contamination to psychosomatic effects. Disease and toxicity are frequently odourless, tasteless, and silent—an insidious means of contaminating the body, effectively attacking from within. This appears to elicit a visceral reaction and has a certain kind of dread associated with it (Erikson 1994). It is perhaps this visceral reaction to toxicity and infection that has resulted in CBW long being condemned as morally repugnant and subject to an ancient cross cultural taboo (Cole 1998; Jefferson 2009).

Indeed legal codification of the taboo against the use of poisons and disease can be traced from to the Indian Code of Manu, to Western European medieval Christian doctrine and standards of chivalry, to customs in the conduct of war that were captured in military manuals after the end of the Napoleonic war, to modern attempts to moderate the conduct of hostilities resulting in the declaration of St. Petersburg in 1868 (van Wynen Thomas & Thomas Jr 1970; van Courtland Moon 2008; Jefferson 2009).

Nowadays, these weapons are prohibited by a complex construct of interconnected and multi-layered measures and instruments which shape, and are shaped, by the taboo. Foremost amongst these various control mechanisms is a core framework of international treaties that embody the norm, or taboo, against biological and chemical weapons comprised of the 1925 Geneva Protocol, the 1972 BWC, and the 1993 CWC.[2]

The 1925 Geneva Protocol is a contract between high contracting parties which prohibits the "the use in war of asphyxiating, poisonous, or other gases and of all analogous liquids, materials or devices" and "bacteriological methods of warfare". Building on the Hague Conventions of 1899 and 1907,[3] the Protocol was a response to the horrors of gas warfare in the First World War which propelled the topic to the front of the agenda at the Conference for the Supervision of the International Trade

[2] The proper titles of these treaties are as follows: The *Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare*, otherwise known as the Geneva Protocol, signed on 17 June 1925, entering into force on 8 February 1928. The *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction*, or BWC, opened for signature on 10 April 1972 and entering into force on 26 March 1975. The *Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction* opened for signature in Paris on 13 January 1993, and remained open for signature until its entry into force on 29 April 1997. The full text of the treaties can be found at http://www.sussex.ac.uk/Units/spru/hsp/Harvard-Sussex-Program-regime-overview.htm.

[3] These are known as, respectively: the *Final Act Of the International Peace Conference* adopted on 29 July 1899 by the International Peace Conference 1899 in The Hague; and the *Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land*, adopted 18 October 1907 by the International Peace Conference 1907 in The Hague, and entered into force on 26 January 1910. Relevant parts of the 1899 agreement and the 1907 Convention can be found at http://www.sussex.ac.uk/Units/spru/hsp/Harvard-Sussex-Program-regime-overview.htm.

in Arms and Ammunition and in Implements of War.[4] However, there were clear limits on what could be agreed by consensus (Goldblat 1971: 60) and the contextual dynamics of the time effectively mitigating the language used in the 1925 Geneva Protocol to the extent that it was a 'no-first-use agreement' binding upon the high contracting parties only in conflict[5] with several major powers of the time signing the Protocol with reservations, stipulating ratification was subject to "the condition of reciprocity" (Prince 1942). Despite the "ambiguous legacy" (Zanders 2003), over time the Protocol has become widely accepted as part of customary international law and is therefore binding upon all states, whether they have entered into the agreement or not.

The second instrument, the 1972 BWC, enshrines in its preambular paragraph the determination "for the sake of all mankind, to exclude completely the possibility of bacteriological (biological) agents and toxins being used as weapons, convinced that such use would be repugnant to the conscience of mankind and that no effort should be spared to minimize this risk". Article I of the BWC proscribes all "microbial or other biological agents, or toxins whatever their origin or method of production, of types and *in quantities that have no justification for prophylactic, protective or other peaceful purposes*" [emphasis added]. This latter provision is known as the general purpose criterion (GPC) as this prohibition restricts uses, or purposes, to which agents may be put but does not prohibit specific agents. Arguably, this provides the BWC with a timeless quality able to adapt to changing science and technology rather than being constrained by lists of specific items. The BWC also prohibits States Parties from transferring agents, toxins, equipment or means of delivery; as well as obligating states to "take any necessary measures to prohibit and prevent the development, production, stockpiling, acquisition, or retention of the agents, toxins, weapons, equipment and means of delivery specified […] within the territory of such State, under its jurisdiction or under its control anywhere".

The third agreement, the 1993 CWC is also based around a GPC and contains similar obligations prohibiting the transfer of chemical weapons as well as much more detailed requirements for national implementation. Although the CWC contains lists of chemicals to aid verification activities under the Convention, the scope of the CWC's prohibitions is based on prohibited purposes, and thus determined by the GPC. The corresponding provision in the CWC is contained in Article II and extends to all "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". A toxic chemical is defined as "[a]ny

[4] The US delegate, Theodore Burton, presented a text that formed the basis of CBW related discussions throughout the Conference. In an early intervention at the first meeting of the General Committee held in Geneva on 7th May 1925, he stated: "Before we pass from the consideration of Article I, I must express the very earnest desire of the Government and people of the United States that some provision be inserted in this Convention relating to the use of asphyxiating, poisonous, and deleterious gases". The nature of the 'provision to be inserted', however, was disputed and subsequently referred to both a legal and a military technical committee. League of Nations (1925: 155).

[5] Certainly, the Soviet reservations declared that, "[t]he said protocol only binds the government of the Union of Soviet Socialist Republics in relations to the States which have signed and ratified or which have definitely acceded to the protocol". See Prince (1942: 425–445).

chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals".

By defining prohibited 'uses' rather than prohibited 'things' the GPC comprehensively covers all hostile uses of agents, existing and future ones, whatever their method of production, that rely on infectivity or toxicity to cause harm. However, the CWC contains exceptions to its prohibitions—purposes where the use of toxic chemicals against humans is legitimate. These uses include: "Law enforcement including domestic riot control purposes". Agents for riot control purposes are defined as those that "can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure". The conditions that constitute the nature of domestic riot control and law enforcement are not further defined, apart from the provision that riot control agents are not to be used "as a method of warfare".[6] The inherent ambiguity in this definition is of central concern to this paper; we will return to this point in the following sections.

This trio of international agreements constitutes the core of the regime against CBW.[7] This core framework is further complemented by other measures, rules, legislative acts, and codes on local, national, regional, and international levels, addressing a number of different actors and stakeholders which cumulatively form what some have labelled a web of prevention or 'regime'[8] against CBW (Rappert and McLeish 2007).

The control of biological and chemical weapons is thus traditionally conceived of as a balancing act between the desire to 'exclude completely' the possibility of such weapons being used, and the need to promote, or at least not hinder, socially beneficial applications of chemical and biological sciences and technologies.[9] The traditional policy problem arises out of the dual-use aspect where socially beneficial uses are to be fostered and encouraged whilst at the same time inhibiting the hostile

[6] Earlier this year, at the Third Review Conference of the CWC in The Hague, States Parties to the Convention have once again failed to make headway in clarifying the character of domestic riot control and law enforcement despite long running attempts to do so. There are various reasons for this failure to agree upon a common definition, some directly related to the difficulty in defining the terms under the Convention. In this case, this divisive and difficult issue was sacrificed in order to reach a consensus on issues that were perceived to be more pressing and achievable in the current political climate.

[7] In addition to these focused agreements, the 1977 Environmental Modification Convention, contains provisions prohibiting "military or any other hostile use of environmental modification techniques having widespread, longlasting or severe effects as the means of destruction, damage or injury"—a particular focus is placed upon dangers arising from scientific and technical advances opening possibilities for new means of warfare with regards to modification of the environment with "effects extremely harmful to human welfare". The *Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques*, otherwise known as the EnMod Convention, opened for signature at Geneva on 18 May 1977, entering into force on 5 October 1978.

[8] We use the term regime here in the sense of "Implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given area of international relations" see Krasner (1982).

[9] This is the normative backbone of these treaties, the definition of prohibited purposes by a general purpose criterion and what elevates them above 'mere' disarmament treaties, although disarmament and destruction of stockpiles and facilities are provisions also contained in these treaties. See, for example Littlewood (2005).

uses (Molas-Gallart and Robinson 1997). In effect the control of CBW is about curtailing, foreclosing, suppressing, and denying certain technological pathways in order to shape the direction of chemical and biological technologies.

The regime has been dealt with in depth by other authors (Rappert and McLeish 2007; Dando 2011) and for the purposes of this paper we shall focus instead on the implications of changes in the security context and the science and technology landscape, and their implications for the regime and the taboo which underpins it.

Changing Security

A substantial challenge to the regime against CBW is exerted by the changed geopolitical context and the evolution of security discourses. There have been profound changes in the nature of conflict and the conceptualisation of security over the last two decades. Whilst irregular warfare is not new and doctrines of counter insurgency and counter terrorism have deep historical roots (Boot 2013), there is a shift in nature and character of warfare from state centric conflicts of the nineteenth and twentieth century, fought by regular armed forces to the messier conflicts, asymmetrical wars, terrorism and intra-state violence fought in the twenty-first century. This shift is articulated in the concept of 'New Wars' developed by Kaldor (2012), who described new wars as:

> …wars where battles are rare and where most violence is directed against civilians as a consequence of counter-insurgency tactics or ethnic cleansing […] wars where the distinctions between combatant and non-combatant, legitimate violence and criminality are all breaking down.

Whilst debate continues as to the 'newness'[10], the concept of 'new wars' is useful in the context of this paper, as it captures the changed nature of conflict in its many facets. New wars are conceptualised as conflicts of the globalised age in which organised violence is perpetrated between networks of regular armed forces, paramilitaries, organized criminal groups, and private security contractors. Of course, the employment of private security in conflicts is not new, yet it is much more prominent in the new wars that typify the twenty-first century as opposed to those of the twentieth century.

Secondly, the aims and targets of 'new wars' are different to 'old wars' where territorial gain was achieved through military means. By contrast, in 'new wars' violence is directed against civilians to establish control over territories for purposes of access to state or political power for certain groups that are frequently defined by ethnic, religious or tribal identities rather than any nationality or ideology per se. Under such circumstances, the principle of discrimination in targets in warfare is

[10] Any conceptual category using the terms 'modern', 'new', or 'post' are vulnerable to attack, and give rise to various misconceptions. Various terms have been used to describe the phenomenon of changes in the nature of conflict—hybrid wars, privatised wars, post-modern wars, among other terms; even the validity of a change in the nature of conflict is open to question. The concept of 'new wars' has been established as a useful conceptualisation, it has been widely debated, criticised and clarified so that it yields a rich conceptual back drop (Kaldor 2012).

undermined. The distinctions between combatant and non-combatant and the involvement of 'civilians' are breaking down—either through direct targeting or as a consequence of conflicts being fought out in densely populated areas or urban settings—this is characteristic of the new wars.

Thirdly, the nature of organized violence has changed and blurred previously clearer distinctions between war, terrorism, organized crime and large-scale violation of human rights. The erosion of the distinction between armed conflict and situations other than war, suggests that the laws of war may be rendered redundant in new wars, and with it the distinction of permitted uses of CBW. This is not the case. The difficulty is in identifying an 'armed conflict', a situation to which international humanitarian law (IHL)—the laws of war—applies, and distinguishing it from 'internal disturbances' to which international human rights law (IHR) applies. 'New wars' fall in many cases in the grey area between the two, repeatedly breaching the 'threshold'[11] and falling below it—where it is not clear if the situation is an armed conflict or not.

It is also worth noting that in the twenty-first century urban environments are increasingly serving as the source of insecurity and focus of acts of organised violence. Chronically violent cities, such as Abidjan, Baghdad, Ciudad Juárez, Gaza, Kingston, Grozny, Medellin, and Rio de Janeiro, to name a few, exhibit at times some of the key characteristics of conventional armed conflict. The rapid and unregulated urbanisation and the accompanying lack of governance and rise in violence lead to situations where law enforcement becomes indistinguishable from military operations (Bernal Franco and Navas Caputo 2013; Muggah 2012). The trend towards urbanised conflict conducted by non-traditional actors against (and within) populations may have far reaching implications for the tactics and tools of organised violence, and its repression. It is in this grey area that the concept of "methods of warfare", "riot control", and "law-enforcement" found in the CWC as bounding categories for prohibited and permitted uses are relevant. The ambiguity between legitimate and illegitimate use predominates in new wars.

Changing Science

In addition to the changing security context, incremental and interlinked developments in areas of science and technology raise the possibility of new CBW capabilities as well as the enhancement of old techniques. The InterAcademy Panel on *Trends in Science and Technology of Relevance to the BTWC* identified three trends that pose challenges to the regime—the increasing pace of scientific and technological developments, in particular "rapid progress in both the availability and power of enabling technologies"; coupled with the "rapid diffusion of research capacity", and with it knowledge, materials, and technologies: geographically across the globe (vertical diffusion) as well as to actors outside of traditional research settings (horizontal diffusion) as exemplified by the emergence of

[11] The thresholds between the condition of armed conflict, war, peace, and organized violence are, of course, not defined—there is no threshold—this is part of the complication.

'amateur', 'garage', or 'do-it-yourself (DIY)' biology. The third trend is the integration of, or convergence with, multiple disciplines, including chemistry, biology, information technology, mathematics, and engineering sciences (National Research Council 2011).

The aspect of horizontal diffusion is facilitated by the emergence of enabling technologies such as DNA synthesis, the development of standardised (genetic) parts, and chemical micro process devices (Tucker 2012). Enabling technologies may aid in the process of developing CBW by deskilling certain aspects of it. However, significant barriers remain in tacit aspects of the development process (Vogel 2006; Revill and Jefferson 2013). Nonetheless, these changes have implications for the control of technologies. An increased understanding of, for example, the neural correlates of behaviour, processes of sensation, cognition, and locomotion; and, more generally, the biological basis of life at the molecular and system level offer the opportunity for benevolent uses such as medical interventions as well as new avenues to assault these processes (Meselson 2000). Moreover, advances made in aerosol, oral, and to a lesser extent transdermal drug delivery enable new means of using certain agents, opening up new application spaces (UN 2006; Davison 2007). The Royal Society's Brain Waves project (Royal Society 2012) highlighted the dual-use problem of the significant benefits offered to society by advances in neuroscience on the one side and the potential for military and law enforcement applications of neuroscience on the other. The report identified a variety of ways in which neuroscience and neuropharmacology may be used for performance enhancement and degradation or weaponisation. Significantly, the report draws attention to various examples of ongoing, sustained and specific interest in, research and development of so-called incapacitating and advanced riot control agents—including behavioural modulation, vomiting agents, knock-out gases, and psycho active agents (Royal Society 2012). The quest for incapacitation as a humanitarian alternative to lethal force has long been, and continues undiminished, to be an object of military and defence interest (ICRC 2010; Kirby 2006; Pearson et al. 2007).

New Wars, New (and Old) Utilities

It is perhaps useful to (re)examine some of the utilities (new and old) available from chemical and biological weapons. Not just in terms of their capacity to have a chemical or biological effect on life processes based on infectivity and toxicity but also in terms of their broader psychological, social, political and economic utilities as tools in the new wars that characterise the twenty-first century. Killing, or producing casualties, is of course not the only utility of CBW. Their operational significance includes primary physiological effects of the agents, for example harassment, incapacitation, debilitation, and lethal effects. However, secondary effects of CBW use may include economic damage through for example contamination of land, machinery, or crops, as well as psychological and social effects of terrorising. The psychological effects are of particular importance in the context of new wars as these can avail a disproportionately greater strategic impact

than the primary effects of the actual use, not least as disease and poison weapons invoke a special kind of dread (Erikson 1994; Slovic 2000; Rogers 2013).

Below we outline some of the different kinds of harm available from CBW with the help of historical episodes, to illustrate the range of utilities available from CBW.

Harassing

Harassing chemical agents are some of the earliest examples of CBW used in warfare.[12] For example, during World War I, prior to being used primarily as a means to kill troops, chemical weapons were used to force troops dug into trenches to leave their positions and thus employed to break the deadlock of trench warfare. During WWI two types of agents were employed: "The nonpersistent agent was to be used to soften up an enemy position immediately prior to an assault; the persistent agent was to be used against positions which were not to be occupied immediately" (SIPRI 1973: 137). Modern use of riot control agents demonstrates the on-going perceived utility of CBW as a means of displacing people, forcing people to vacate or avoid certain localities, by means of harassing chemicals. Examples include the recent wide-spread, heavy handed and often excessive use of harassing agents, such as tear gas to displace and supress popular dissent in, for example, Bahrain, Turkey, Egypt, and Brazil.

In contemporary urbanised conflicts it is not difficult to see the appeal of weapons that, like the persistent and non-persistent agents used in battle a century ago, to "soften up an enemy position immediately prior to an assault" or "be used against positions which were not to be occupied immediately" (SIPRI 1973).

Incapacitation

New counter terrorism doctrines can be seen as facilitating (or actively encouraging) the creeping legitimisation of certain chemical weapons:

> The category of riot control agents is now becoming increasingly unconstrained, most conspicuously in the acquisition, deployment or use of irritant-agent weapons for counter-terrorist purposes and other such applications that lie on or beyond the outer margin of what is usually seen as law enforcement. (ICRC 2010)

A prominent and often cited example of the use of toxic chemicals beyond law enforcement is the use by the Russian Federation. In 2002 Russian Special Forces used a toxic chemical to break a siege of armed Chechen separatists who held approximately 800 hostages in the Dubrovka theatre in Moscow. The toxic chemical, knocking out hostages and hostage-takers alike, resulted in 129 deaths

[12] The use of chemical and biological weapons has a long history, see for example Mayor (2003). Here we concentrate on 'modern' uses.

among the hostages—suspected to be a direct result of the effects of the gas. Despite the fatalities the event did not resulted in wide-spread international condemnation, and served to increase rather than decrease interest in such weapons. The Bradford Non-Lethal Weapons Research Project Report reviewing trends in research and development of biochemical incapacitating agents with reference to the difficulty of delivering "a safe and reversible but incapacitating dose to all individuals in a given area, notwithstanding the differences in age, size and health of those individuals and the problems of uneven concentrations and cumulative intake of the agent" noted that:

> the issue of lethality is a distraction. Agents designed to incapacitate rather than kill have been a common feature of several past offensive chemical and biological weapons programmes and there is no reason why new weapons agents should be placed in a privileged 'non-lethal/less-lethal' category that aims to exempt them from restrictions under the CWC and [BWC] (Davison and Lewer 2004:28)

Moreover, the Theatre siege incident also illustrates another feature that is applicable to various types of CBW—their utility as force multiplier: following the dissemination of the incapacitant the Special Forces stormed the venue and killed all of the (unconscious) hostage takers (Royal Society 2012).

Ongoing and sustained interest in the development of incapacitating agents (Royal Society 2012) and the lack of international condemnation of the use of chemical agents in Russia in 2002 may be indicative of tacit endorsement and a "banalisation" of the use of toxin weapons (Robinson 1990).

Economic Damage

CBW have been employed as a means to inflict economic damage, primarily through the use of weapons targeting crops and agriculture.[13] Recent allegations include the use of CBW by British and US forces to kill off opium poppies in Afghanistan "to hamper the opium production and trade that is essential for the continued Taliban insurgency in the region" (SIPRI 2010: 403). Whilst the use of CBW against drugs crops in Afghanistan is contested; use of chemical agents in the Andean region is documented. Anti-crop biological weapons, have long been researched and advocated for use in, for example, Columbia and Uzbekistan under the auspices of the UN Drug Control Programme (Stevenson and Bigwood 2000; Mangold 2000; Donahue 2001; O'Shaughnessy and Branford 2005; Veillette 2005).

It could be argued that such programmes serve a peaceful or protective purpose, in the sense that they seek to limit the production of illicit drugs rather than economic sabotage. Nonetheless, these uses illustrate a lowering of the threshold to use CBW, potentially normalising the use of disease and poison.

[13] Historical examples include anti-colonialist Mau Mau movement in Kenya are alleged to have poisoned livestock with African milk bush in 1952; the Liberation Tigers of Tamil Eelam (LTTE) contaminated Sri Lanka tea crops with potassium cyanide in an attempt to hamper exports in the mid-1980s.

Demoralisation

CBW can play a role in demoralising forces. For example, chemical weapons were used by Italian forces in Ethiopia not to kill necessarily but to demoralise retreating Ethiopian forces. Gas was used "to demoralize the unprotected Ethiopians, and to break their resistance once and for all" (SIPRI 1971: 146). Similar claims have been made over the use of harassing chemicals in China, used in part to "kill morale in the enemy rear echelon, which will often lead to retreat" (SIPRI 1971: 149). The use of CBW to demoralise is not new. However, it remains an area which may offer a strategic advantage. The strategic value of the demoralising effect available from CBW has been raised as a possible motive in the context of various episodes of alleged uses of chemical weapons in the ongoing conflict in Syria. Robinson (2013) suggested that limited and targeted agent releases may represent a new mode of use to demoralize and undermine enemy morale rather than seeking mass-killing wide-area effects.[14]

As such, even a small scale use of CBW may offer a disproportionate psychological advantage over an adversary by demoralising their forces, making the use of CBW more attractive, and thus presenting a challenge to the norm against their use.

Terrorising

Fourthly, above and beyond a demoralising effect, chemical and biological weapons have to the potential to generate terror. Smart (1997) suggested that the Egyptian air force started with using tear gases during the Yemen civil war to terrorize, more than to kill. Indeed CBW is particularly conducive to terrorise, by state and non-state actors alike, in part because of the visceral reaction to the idea of infection. During the al Anfal campaign in Iraq the use of mustard gas and nerve agents is reported to have killed more than 5,000 people, and injured a further 30–40,000, many severely. Boyle (2013) noted that this served:

> a purpose beyond extermination: to spread a generalised, stalking sense of fear within the surviving Kurdish population… [General al-Majid's] plan was to threaten Kurdish villages with chemical weapons to force them to flee their villages and deport the rest, and then use chemical weapons to kill anyone who remained or dared to defy the order to evacuate

The release of sarin in the Tokyo subway in 1995 is another example of the terrorising effects of CBW. The attack caused 12 fatalities, 54 severely injured, and circa 980 with mild or moderate symptoms. However, more than 5,000 people presented themselves to the emergency services with psychosomatic symptoms brought on by the fear and uncertainty over possible exposure (Tucker 2000; WHO 2004).

[14] These episodes of alleged uses of chemical weapons in the protracted civil war in Syria are still subject to an ongoing independent UN investigation. At the time of writing the UN mission to investigate allegations of the use of chemical weapons in the Syrian Arab Republic has investigated the use of chemical weapons in only one location, and confirmed the use of sarin on 21 August 2013 in the Ghouta area of Damascus.

Allegations and Propaganda

CBW is a powerful tool in propaganda campaigns wherein allegations of chemical and biological weapons development, and use, have been adeptly exploited to render an enemy a pariah and condemn the actions of others as reprehensible. It is perhaps this association of CBW with pariah status which limited use of tear gas in the Korean conflict. Plans to use tear gas more extensively in the conflict were, according to Furmanski (2005) "dropped when it was realised such use might well allow allegations of US 'gas warfare' against civilians and cause a propaganda disaster." The extensive use of herbicides—and to a lesser extent tear gas—by the US in Vietnam was seized upon by the Soviet Union as "a crime against humanity" and a "flagrant act of lawlessness" (New York Times 1965).

Allegations do not necessarily need to have any factual basis in order to have an effect, as the use of disinfomation and black propaganda over the course of the Cold War demonstrated. Baseless claims became powerful propaganda tools, and both sides accused each other of things known to be false but nonetheless pursued as a means of sullying the other. On the Soviet side, false accusations included the claim that HIV had come from CIA linked laboratories; that the US funded WHO Malaria Control research unit in New Delhi was involved in "US efforts to use mosquitoes and yellow fever virus as BW agents". So too there were allegations during the Korean conflict by Chinese and North Korean authorities that the US was exploiting 'poisonous bugs and other germs' (Leitenberg 1998). The US still persists with the claim that forces from Laos and Vietnam, supported by Soviet backers, used chemical weapons in Laos and Cambodia. This is despite an apparent absence of any significant evidence:

> The U.S. accusations appear to have been based on no credible evidence: without confirmation of a single alleged witness report, without confirmation of an association between trichothecenes and any alleged attacks, without any sample of the agent itself, without any recovered rocket or other munitions, without any otherwise inexplicable claimed symptoms, and without any credible defector or prisoner testimony in all these years… (Meselson and Robinson 2008)

The role of CBW as a propaganda tool is conspicuous in the thick fog of war that engulfs Syria with claims and counter claims of the use of chemical weapons. Prior to the large-scale release of Sarin in the suburbs of Damascus several small scale releases have been reported. Johnson (2013) remarked that both sides were using the "allegations to try and win political points, less certain is whether either side is actually using agents". Following the large scale release of sarin in the suburbs of Damascus (UN, 2013) both sides pointed at each other, condemning the use.[15]

[15] The release of chemical agents on 21 August 2013 has been independently verified by a UN mission of inspectors who reported on 16 September 2013 (UN 2013). However, the source of the attack is, at the time of writing, still unclear.

Conclusion: Averting the Legitimisation of CBW in the New Wars

This paper outlines means through which the prohibitions of chemical and biological weapons are coming under attack—not through 'shock and awe' violations of the regime, but rather through the surreptitious and incremental exploitation of various means of using CBW. Transgressions of the boundaries of legitimate uses can be seen in continuing interest in various applications of CBW. Although not in the WMD sense, but in the sense that toxic chemicals and disease weapons are being researched and used for a variety of purposes. Cumulatively, this tinkering around the edges of the normative opprobrium has the potential to undermine the norm against poisons and disease weapons.

In the changed security context CBW has already shifted from being a tool for specific operations, for example riot control, to a tool of repression, and quasi-military law enforcement operations, including counter-terrorism and anti-narcotic operations. Such use, even if rare now, erodes the norm from the fringes of acceptability to the core of the taboo.

Hostile exploitation of chemical and biological technologies and a creeping legitimisation of CBW threaten to introduce chemical and biological weapons to conflicts of the twenty-first century. Particularly pernicious are research and development efforts on incapacitating agents as 'humanitarian alternatives' to lethal force. Superficially persuasive, the humanitarian argument masks much less humanitarian implications simmering underneath, the erosion of the norm against hostile use of disease and poison weapons. Accepting the narrative of CBW as a humanitarian alternative carries the substantial threat that certain areas of research, development, and use of CBW become accepted. Even implicit approval has the potential to dramatically undermine the norm, by slowly normalising these weapons and making their use banal.

States that are party to the BWC and CWC frequently reaffirm their commitment to the norm against CBW at periodic Review Conferences of the Conventions; and continue to invest in actions that reinforce the norm (such as national implementation measures, codes of conduct, education and outreach). The wide spread and intense condemnation of the use of nerve agents in Syria suggests that the taboo of poison weapons is still intact, at least for use of CBW on a large scale.

However, the concerns raised in this paper focus on an insidious process of creeping legitimisation through gradual erosion of the norm by various means, but mainly through changes in the security context, and in science and technology. Changes in science and technology have already, and continue to feature prominently in diplomatic discussions. However, the changing (or changed) security context has, so far, not received similar exposure in such fora. In these messier 'new wars'—where aims and targets have shifted and previously clearer distinctions between war, terrorism, organized crime are breaking down—new, and old, utilities of CBW may become reframed. The confluence of: increased understanding of biological and chemical processes and the ability to manipulate them; advances in delivery technologies; and profound changes in the security environment culminate in a significant challenge to the regime against CBW. Without explicit acknowledgement of these contextual changes in the appropriate

for a, the regime, and the norm it is based on, is in danger of being weakened and undermined.

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