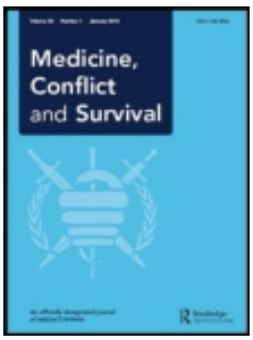

Medicine, Conflict and Survival

ISSN: 1362-3699 (Print) 1743-9396 (Online) Journal homepage: http://www.tandfonline.com/loi/fmcs20

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To cite this article: Brian Rappert & Richard Moyes (2010) Enhancing the protection of civilians from armed conflict: precautionary lessons, Medicine, Conflict and Survival, 26:1, 24-47, DOI: 10.1080/13623690903553228

To link to this article: http://dx.doi.org/10.1080/13623690903553228

Published online: 08 Mar 2010.

Medicine, Conflict and Survival
Vol. 26, No. 1, January–March 2010, 24–47

Routledge
Taylor & Francis Group

Enhancing the protection of civilians from armed conflict: precautionary lessons

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(*Accepted 21 September 2009*)

Attempts to place limits on the conduct of conflict raise many practical and political concerns. This article asks how debates regarding precautionary approaches to risk might inform discussions about how limits are set for armed conflict. The 2008 Convention on Cluster Munitions (CCM) provides the starting point for this analysis. While the adoption of this convention represents a major achievement in multilateral humanitarian disarmament, its provisions are open to question about their meaning. As argued, the manner in which the CCM was agreed provides an opening for embedding precautionary thinking into its future interpretation. Experiences with precautionary approaches to risk are surveyed with a view to considering what lessons they hold for the central prohibition of cluster munitions in the CCM, its novel provisions for Victim Assistance, and its possible implications for the use of explosive force. The overall goal is to ask how debates about the precautionary principle might enhance the protection of civilian populations.

Keywords: arms control; cluster munitions; Convention on Cluster Munitions; international humanitarian law; precautionary principle; risk

Introduction

> In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited.

In making this declaration, Article 35(1) of 1977 'First Additional Protocol to the Geneva Conventions of 1949' expresses a basic tenet constraining modern warfare. And yet attempts to place limits on the conduct of conflict raise many difficult concerns: How can rules be set given the uncertainty and disagreement that often characterize debates about the consequences of armed force? Might attempts to forbid certain technologies or actions

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ISSN 1362-3699 print/ISSN 1743-9396 online

DOI: 10.1080/13623690903553228
http://www.informaworld.com

unintentionally legitimate other forms of violence[1,2]. Might attempts to 'humanize' war distract from or even undermine efforts to work towards its elimination[3].

Bearing in mind these and other concerns, this article asks how debates regarding precautionary approaches to risk might inform how limits are set for armed conflict. While precautionary orientations to risks are now commonplace in many regulatory frameworks, within security-related domains they have been much less prominent. Some commentators have sought to draw or deny parallels between the recent turn to pre-emptive strike polices in the West and the 'precautionary principle'[4–6]. As part of this, critical points have been offered about the said highly contingent and selective introduction of 'precaution' into foreign and security counter-terrorism policies[7]. Less attention though has been given to the conduct of conflict itself[8].

This article does not offer blanket support for the uptake of precautionary frameworks. As detailed in the next section, a myriad of practices and policies have been placed under this term. Rather than simple endorsement, the purpose here is to ask how past experiences associated with handling evidence, uncertainty, and onus for proof could inform current efforts to limit conduct during armed conflict. Taking inspiration from Zwanenberg and Stirling[9], the precaution principle is not treated as a decision rule for resolving questions of what should be done, but rather a set of orientations suggestive of processes that are helpful in approaching troublesome questions.

More specifically, this article asks how the principle might enhance the protection of civilian populations. Part of this improvement stems from how precautionary approaches could challenge, extend, and rejuvenate international humanitarian law (IHL). The principles and rules of IHL share with orthodox approaches to risk management the core logic of weighing expected harms and benefits. It is the viability and advisability of that way of thinking that has been called into question in recent decades across many fields of regulation.

The main focus for this analysis is the 2008 Convention on Cluster Munitions (CCM). It is one of the few treaties that bans the development, production, acquisition, stockpiling, retention and transfer of a weapon type[10]. As discussed in section three, the CCM has a complex relation to notions of precaution. In terms of *process*, the negotiations that led to its agreement differed from those in traditional forums bounded by IHL because of how cluster weapons were deemed unacceptable until the case was proven otherwise. However, unlike other recent multilateral agreements[11] these negotiations were not explicitly framed through reference to the precautionary principle. In relation to *outcomes*, the CCM places novel demands on states to anticipate and avoid future harm to civilian populations from their use of force.

Yet, while the CCM represents a major milestone in humanitarian disarmament that shares affinities with precautionary endeavors elsewhere, questions remain about its future interpretation. In light of past debates about the proper meaning of precaution, section four proposes likely future terms of dispute. Particular attention is given to how exclusions to the CCM's prohibition can be monitored as well as how its obligations for so-called 'Victim Assistance' should be conceived.

Seeking to extend identified progressive potentials associated with the CCM, section five asks how the precautionary dimensions of it could underpin efforts to reduce the harm to civilians from explosive weapons.

In making these arguments, this article sets out a strategic agenda for scholarship and political action. As developed in the final discussion section, what is called for is a rethinking of the intersection of politics, law, and technical analysis.

Precaution and regulation

Central themes associated with the precautionary principle in modern environmental, health, and food safety regulation include how significant harms can be avoided; how action should be taken in light of uncertainty about causal relations and consequences; and how the onus for proving should be distributed. In general terms, precautionary orientations suggest evidence of harm need not be conclusively demonstrated to justify considering responses and, if deemed warranted, taking action. This stands in contrast to conventional forms of regulation by statutory agencies that require conclusive demonstration of the relation between exposure and harm. Typically held as paramount in precaution thinking are concerns for populations at large rather than narrow economic or political groups; though just what constitutes the 'public interest' can be disputed[12].

And yet, underlying such a broad brush description is a complex diversity[13,14]. The development of precautionary approaches is often traced to the German concept of *Vorsorgeprinzip* as well as to long standing components of national regulatory policy in pollution management. What is said by some to be novel in recent decades is not so much that precaution should have a place in managing risks, but that it has become an overarching principle for establishing national and international regulations across many domains[15]. The 1992 Rio Conference on Environment and Development stated that:

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation[16].

This represented a significant development in the international recognition of precaution as a tool for managing risks and responsibilities. Precautionary elements have been incorporated into various official treaties and policies, such as the Cartagena Protocol on Biosafety and the Montreal Protocol on Substances that Deplete the Ozone Layer. Notions of it have become most prominent within the European Union, though their concrete bearing for policy and law continues to be debated[17,18].

As Magnus argues though, since the 1980s what has been labelled as falling under this principle has evolved. As one notable change,

> while the precautionary principle was developed initially as a tool to aid risk managers in their attempts at a science-based risk assessment, the new version of the precautionary principle largely rejects risk management and the very idea of a science-based regulatory policy[19].

This refers to the way in which certain environmental groups have argued that the introduction of genetically engineered organisms poses such profound uncertainties that risk assessment frameworks cannot adequately grasp potential concerns. In addition, Magnus argues 'there was a shift in the nature of the principle from a reason to allow regulation (in the face of uncertainty) to a reason to prohibit or delay the introduction of new organisms or new technology'[19].

With the varied formulations of precaution now in circulation, classifications have been forwarded for different types. Sandin et al. offer a distinction between argumentative and prescriptive versions[13]. Argumentative forms influence the terms of debates by establishing guidelines for what arguments are legitimate (as in the Rio Declaration). Prescriptive versions of the principle, in contrast, stipulate that if certain preconditions are fulfilled regarding the types of hazard and the level of evidence, then a specific regulatory action should follow.

Others have sought to differentiate strong and weak versions.[5,20] (as in Gardiner 2006[20]; McLean and Patterson 2006[4]). Drawing on Cooney[21] and Wiener[22], Peterson sets out a spectrum for the strength of versions by examining what responses they offer to the questions:

- What level (threshold) of threat or potential for harm is sufficient to trigger application of the principle?
- Are the potential threats balanced against other considerations, such as costs or non-economic factors, in deciding what precautionary measures to implement?
- Does the principle impose a positive obligation to act or simply permit action?
- Where does the burden of proof rest to show the existence or absence of risk of harm?
- Is liability for environmental harm assigned and if so, who bears liability[23]?

To elaborate, formulations of precaution range from whether they require convincing evidence of irreversible harm, the possibility of serious harm, or merely the existence of uncertainty about significant harm. The location of the onus for substantiating concern can range from requiring those proposing regulation to indicate why it is necessary to requiring those promoting an activity to demonstrate its relative safety, (for example, as in the 2000 Earth Charter). Some have argued that if shifting the onus requires proving a negative – that a given activity causes no harm – then such demands are impractical[24].

Whether or not traditional risk assessments (such as cost–benefit analyses) have any role to play in precautionary approaches is another area of contention[21]. Evaluations can turn on whether and how political values are seen to enter into *both* precautionary approaches and traditional risk assessments[12,25]. Others have criticized the manner in which notions of precaution are implemented in practice. This includes how aversion to forgone risks can create others[26] and the manner in which precaution can serve protectionist national agendas[24].

As a counter to the possible suggestion that the responses to the concerns in previous paragraph are likely to fall out along traditional ideological divides, Stern and Wiener examined the rise of pre-emptive counter terrorism force policies in the United States since 9/11. As they argued, these policies have used much the same precautionary logic about the necessity of action in conditions of uncertainty that are prominent in environment policy. As result of the sort of asymmetrical evaluations made of the need for precaution, they propose that 'the merits of precaution depend on the consequences of each proposed action rather than the categorical label'[27].

The prohibition of cluster munitions

This section considers how attempts in recent years to prohibit cluster munitions have exhibited a sense of precaution. These initiatives culminated in the adoption by 107 states of the Convention on Cluster Munitions (CCM) in May 2008. Before examining the CCM in detail, some background points will be offered.

Humanitarian concerns with cluster munitions

Cluster munitions consist of a large metal casing that contains multiple (from a few to hundreds) of explosive sub-munitions. Fired from the ground or dropped from the air, the casing opens to scatter the smaller sub-munitions over an area of ground, in the order of several hundred to many thousand square meters. In conflict, it is typical for multiple cluster munitions to be used in individual strikes[28,29].

For over 30 years, some states, non-governmental organizations (NGOs) and international organizations (ILOs) have raised concerns about the humanitarian consequences of cluster munitions. In recent years, these concerns have focused on their area effect at the time of use, and on their tendency to leave large numbers of sub-munitions unexploded in the post-conflict environment. The wide 'area effects' of many cluster munitions has lead to concerns that they are liable to strike military and civilian people and objects alike if used near populated areas. The failure of some sub-munitions to detonate as designed has led to concerns about how unexploded ordnance can be set off later if disturbed.

Drawing on the terminology set out by Stirling[30], it is possible to characterize the past and current disagreement about humanitarian impacts through the language used in environmental debates about precaution.

Uncertainty

While it has been well established that unexploded dud sub-munitions can result in a profile of death and injury to individuals[31], the likelihood of such consequences has been a matter of dispute. Contention has centred on both the rate at which sub-munitions fail to detonate as designed as well as the likelihood of casualties resulting from such instances.

To illustrate this through failure rates, the malfunction of individual sub-munitions is conditioned by internal factors (such as the reliability of components), and external factors (such as the parameters of use, ground conditions, vegetation cover, etc.). Major past stockpilers and users of cluster munitions including the United Kingdom, Israel, and the United States have frequently offered lower assessments of failure rates than non-governmental and intergovernmental organizations involved in ordnance clearance[32–34]. Moreover, it has been argued that some governments have consistently manipulated statistics to conform to official failure rates (such as by calculating a mean dud rate from sets of data that show wide variation in performance of sub-munitions[35]).

Contrasting claims about duds came into sharp focus as a result of the 2006 Israeli attacks into Lebanon[36]. This involved the widespread use of cluster munitions, including modern types fitted with self-destruct mechanisms meant to reduce the post-conflict contamination[37,38]. For instance, it was claimed that the M85 sub-munition had a failure of rate of one per cent based on trial testing. A report by Norwegian People's Aid in collaboration with the Norwegian Defence Research Establishment suggested that the dud rate in Lebanon was in the order of 10%[29].

Arguably the extent of disagreement has been exacerbated because of state practices. Between 1990 and 2005, for instance, the British government undertook no practical assessments of the humanitarian impact of its use of cluster munitions in combat situations and did not gather basic information

during its disposal operations that would help determinate failure rates. Instead it repeated claims of relatively lower rates based on trials[34]. Similarly, a report *Munitions System Reliability* by the US Department of Defense (DoD) Defense Science Board Task Force contented that:

> The Task Force could identify no comprehensive approach – empirical observation or otherwise – to determine and document operational combat failure rates of US munitions. The available data is inconsistent, largely anecdotal, and often from questionable sources [...] There is no method in place that can systematically determine and document the reliability rates of a broad range of munitions during combat[39].

This statement contrasts with ones repeatedly made by US officials indicating known and relatively reliable combat performance[40,41].

Ambiguity

It is not just the likelihood of certain outcomes (such as the failure rate of munitions), which has been disputed in recent years. So too have the characterization of outcomes. In relation to what counts as 'acceptable' post-contamination levels, Norwegian People's Aid contended that even if the M85 had operated with the declared 1% failure rate, the extensive reliance on cluster munitions used in Lebanon would have left an intolerable level of 40,000 unexploded sub-munitions. Those in favour of retaining cluster weapons have argued that if these force options were not used, then others would be instead and these would likewise pose hazards[42–44]. The inability to compare reliability rates across a range of munitions noted in the *Munitions System Reliability* report indicates grounds for difficulty in trying to assess the relative humanitarian standing of alternative munitions.

However, ambiguities associated with characterizing outcomes go beyond disagreements about how to evaluate known or hypothetical outcomes. Instead, at times they pertain to fundamental presumptions, framings, and models related to the use of force. Particularly since the end of the Cold War, many military interventions have been justified in the West as means to bring relief to subjugated populations. How this goal can be furthered in relation to casualties associated with cluster munitions has been subject to radically different treatments. For instance, in a news briefing during the 2001 Kosovo war, it was put to US Major General Wald that some concerns had been raised that unexploded cluster sub-munitions appeared as

> Reporter: 'small, attractive, bright colored packages' that children find intriguing, and they pick them up and the thing goes off. Is there any reason to change that?
>
> Major General Wald: I hope that doesn't happen, but I would certainly say that the sooner we have the Serb/MUP forces leave Kosovo, and we can have

> the Kosovar Albanians get back to a normal life, there are probably going to be a lot more children survive because of that than they would picking up some small object accidentally out in the trees[41].

Herein, the contribution of cluster munitions to the speed of the war effort was said to outweigh concerns about possible humanitarian effects. In contrast, in May 2008 a group of former high level British and NATO military commanders wrote a letter in *The Times* arguing:

> If, by choosing to use inaccurate and unreliable weapon systems, such application causes the loss of civilian lives, provoking strong national and international reaction and opposition, it is very likely that such projection will inhibit the achievement of any political purpose.
>
> If we are to be accepted as legitimate users of force then we must demonstrate our determination to employ that force only in the most responsible and accountable way. Our current standing in the world suggests that our leadership of moves to ensure an international ban on cluster munitions will not only be respected and recognised, but will also strengthen our ability to use force effectively in the modern world, in the future[45].

Herein, civilian deaths and injuries cannot be separated from questions about how force can be made effective.

Ignorance

Much of the humanitarian concern paid by NGOs, ILOs and some states to cluster munitions has focused on injuries and deaths. The wider socio-economic, environmental, and psychological ramifications of attacks are less well characterized.

Crowther offered an attempt to quantify the combined costs of conflict deaths and injuries, contaminated agricultural land, and clearance activities in Lebanon from the 2006 cluster munition strikes. Estimations of sustained and projected costs ranged between US$150–230 million, though with acknowledgement of the difficulty of assigning numerical figures to varied effects and human life[46].

Even beyond difficulties of quantification, attempts to characterize outcomes are bedevilled by problems stemming from limited knowledge of, or lack of access to information on, post-conflict environments. However, even where access is possible, preconceived notions of what information is important can keep data gathering limited to specific channels, making it of limited value as a tool for analysis of concerns that develop subsequently. An example of this can be found in the Cambodian Mine Victim Information System (CMVIS). CMVIS gathers data on landmine and unexploded ordnance accidents in Cambodia but, because for many years it did not disaggregate the category of unexploded ordnance further, it was not possible to use much of the data to provide an indication of the specific levels of harm attributable to cluster munitions (as opposed to unexploded

mortars, grenades and such like). As well, some phenomena are methodologically difficult to assess. For example, the psychological effects of living with elevated risks from an environment contaminated with unexploded ordnance have been subject to little, if any, detailed analysis. Such shortfalls indicate the extent to which any evidence based representation of humanitarian concerns may be severely constrained.

Prohibiting cluster munitions through the CCM

In recent times, these and other uncertainties, ambiguities, and matters of ignorance affecting the assessment of cluster munitions have been most often addressed through the principles and rules set out in international humanitarian law (IHL)[47]. Central to IHL is the suggestion that military necessity should be balanced with anticipated civilian harm. For instance, Article 51 (5)(b) of the Additional Protocol I (1977) of the Geneva Conventions defines as an indiscriminate attack one 'which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated'.

The Convention on Conventional Weapons (CCW) is specifically concerned with means of force 'which may be deemed to be excessively injurious or to have indiscriminate effects'. It has couched determinations of what constitutes 'excessively injurious' and 'indiscriminate' through IHL. Within the CCW, contentions have been forwarded regarding the meaning of the legal terms as well as the standing of rules. For instance, different opinions have been forwarded regarding what should count as 'concrete and direct military advantage anticipated' as well as expected damage to civilian objects[48].

Particularly relevant to the themes of this article is how the balancing of military and humanitarian concerns should be done. The starting point has been that the use of cluster munitions is permissible until proven otherwise. The weighing of military necessity and humanity specified in IHL represents a cost–benefit-type of assessment. Military commanders (perhaps with some assistance by legal advisors) must determine the appropriateness of these weapons on a case-by-case basis in light of the particulars of each situation. As such, justifying a categorical prohibition would require convincing demonstration that the weighing of military necessity and humanity would result in more civilian harms than military advantages across anticipated scenarios. Such an argument is difficult to establish given the variations of cluster munitions and the range of expected use scenarios. Instead of a categorical ban, progressive states in the past have disallowed certain employment practices or specific munitions[35].

Within the international deliberations leading to the CCM, a different overall orientation to humanitarian concerns was evident. This convention

was adopted through a series of international meetings known as the 'Oslo Process' that began in February 2007[49]. Throughout most of that time, the definition of what would be prohibited started with the presumption that cluster munitions as a category were problematic. Early within the process, states adopted a definition for discussion that would establish a wide-ranging prohibition on all munitions designed to disperse or release explosive sub-munitions. What exclusions should be allowed were subsequently addressed (for example, sub-munitions designed to dispense flares). As such, instead of assessing merits on a case-by-case basis, the orientation that emerged through the Oslo Process was that, as a category, these weapons were unacceptable. The onus was with those seeking exclusions to a wide-ranging prohibition to positively make the case for why exclusions were acceptable.

This approach had close affinities with suggestions offered by NGOs and ILOs in 2006 and 2007 who expressed dissatisfaction with the ability of the existing rules of IHL to address humanitarian concerns[35,50,51]. These organizations proposed that given the decades of problems with this class of weapon, an alternative presumption should inform states' evaluations. Both the magnitude of harms and the recurring history of harm justified a movement away from conventional case-by-case evaluations.

Table 1 summarizes contrasting orientations for determining the permissibility of cluster munitions evident in recent years: 'ruling out' and 'ruling in'. Given the varied and sometimes subtle arguing and positioning that goes on within deliberations, it would be too simple to suggest that international deliberations within the CCW and Oslo Process have solely been undertaken according to a reasoning of 'ruling out' and 'ruling in' respectively. Yet, overall, within the CCW states have generally started from the assumption that cluster munitions are legal under IHL until proven otherwise and within the Oslo Process the assumption was that cluster munitions were politically unacceptable until proven otherwise.

Table 1. Contrasting orientations to deliberating cluster munitions.

	'Ruling out'	'Ruling in'
Basic logic	Determining what should be proscribed	Justifying what should be allowed
What needs to be argued for?	Restrictions to use	Exclusions from prohibition
Evidence	Hypotheticals central	History central
Concern	Legality	Acceptability
Role for existing international humanitarian law (IHL)	IHL based	Political process informed but not bounded by IHL
Evaluative basis	Case by case	Pattern of effects over time
Limitations sought	Specific	Categorical

Convention on Cluster Munitions: precaution and the protection of civilians

With the sense in the previous section of how the Oslo Process represented a 'precautionary' break with the past, this section asks how its future implementation can be informed by debates about the place of precaution approaches. In looking forward, this section not only asks what regulatory precedents for handling uncertainty and disagreement might inform the CCM, but how more explicit reference to precautionary approaches could enhance the status of interpretations of states' obligations that favour the protection of civilians[52].

That the provisions of the CCM raise questions about how to handle evidence, uncertainty, and disagreement akin to other areas of regulation becomes evident in examining its boundaries. Box 1 contains the central obligations stated in Article 1 as well as the definition of cluster munitions given in Article 2. While Article 1 entails a comprehensive prohibition of cluster munitions, Article 2 defines what counts as cluster munitions and what is excluded from the CCM.

Of particular note is Article 2(2.c). It specifies the humanitarian consequences that are deemed unacceptable – 'indiscriminate area effects' and 'risks posed by unexploded sub-munitions'. Article 2(2.c) i–v then sets out five cumulative technical requirements.

A question for the future is how to judge sub-munition systems that meet the technical characteristics in 2(2.c) i–v but still are considered by some to cause indiscriminate area effects and unacceptable risks from explosive remnants. Prioritizing the protection of civilians over a narrow conception of military utility would presumably favour a reading of the provisions of 2(2.c) i–v as 'necessary but not necessarily sufficient' to avoid unacceptable effects.

Any future debate about the interpretation of the prohibition will have to contend with the absence of elaboration about the meaning of central terms. Nowhere in the CCM are 'indiscriminate area effects' and 'risks posed by unexploded submunitions' defined, or other terms such as 'single target object' (in Article 2(2.c) iii). What counts as too large an area effect or too many 'risks posed by unexploded submunitions' are not set out either. Since every kind of explosive ordnance is associated with risks from their failure to detonate as planned, the latter term is arguably particularly problematic. Following on from these points, the language in Article 2(2.c) to 'avoid' indiscriminate area effects and unexploded ordnance raises questions about what would count as sufficient action to have met this obligation.

Further to concerns about how to handle evidence, uncertainty, and disagreement, the requirements for exemption in Article 2(2.c) i for less than ten sub-munitions and the weight floor of four kilograms in Article 2(2.c) ii were not justified as scientifically derived standards that would be appropriate for all times. Rather, they were agreed as pragmatic standards informed by a sense of current and near-term technological possibilities.

Box 1. Prohibition provisions of the Convention on Cluster Munitions.

Article 1
General obligations and scope of application

1. Each State Party undertakes never under any circumstances to:
   (a) Use cluster munitions;
   (b) Develop, produce, otherwise acquire, stockpile, retain or transfer to anyone, directly or indirectly, cluster munitions;
   (c) Assist, encourage or induce anyone to engage in any activity prohibited to a State Party under this Convention.

Article 2
Definitions

1. [. . .]

2. '**Cluster munition**' means a conventional munition that is designed to disperse or release explosive submunitions each weighing less than 20 kilograms, and includes those explosive submunitions. It does not mean the following:

   (a) A munition or submunition designed to dispense flares, smoke, pyrotechnics or chaff; or a munition designed exclusively for an air defence role;
   (b) A munition or submunition designed to produce electrical or electronic effects;
   (c) A munition that, in order to avoid indiscriminate area effects and the risks posed by unexploded submunitions, has all of the following characteristics:
      (i) Each munition contains fewer than ten explosive submunitions;
      (ii) Each explosive submunition weighs more than four kilograms;
      (iii) Each explosive submunition is designed to detect and engage a single target object;
      (iv) Each explosive submunition is equipped with an electronic self-destruction mechanism;
      (v) Each explosive submunition is equipped with an electronic self-deactivating feature.

Working under the premise that the protection of civilians requires treating the provisions in Article 2(2.c) i–v as 'necessary but not necessarily sufficient' for avoiding indiscriminate area effects and the risks posed by unexploded sub-munitions, then debate about the way forward is likely to fracture along a number of questions previously experienced in debates about the place of precautionary approaches:

- With whom does the burden of proof rest to substantiate the unacceptable effects in Article 2(2.c)[19]?

- Where disagreement is evident about effects and/or whether a weapon counts as a prohibited cluster munition under the chapeau of 2(2.c), should that count as grounds to prohibit, regulate or permit it[20]? What would count as sufficient basis to trigger a review of a weapon and who would decide this[21]? Would that, for instance, be the lack of reasonable certainty about expected harms or compelling evidence for concern?
- If there are to be future provisos or modifications to the requirements in 2(2.c) i–v, how should they be set – through the type of pragmatic negotiation that characterized the Oslo Process or more formalized assessment procedures[25]?
- What should the need to 'avoid' the risks posed by unexploded sub-munitions be taken to demand by way of technical innovation – to 'minimize', to 'reduce as far as practically possible', to 'reduce to a level comparative to other munitions', to 'reduce as cost effective', or some other criteria[24]? How can standards be set in the likely absence of the germane comparative data and with the scope for disagreement about what constitutes acceptable levels of harm?

Whether or not one accepts the 'necessary but not necessarily sufficient argument' in relation to Article 2(2.c) i–v, the proper interpretation of the CCM is likely to be a matter of future contestation along similar fault lines to those suggested by these questions. However, while the text of the convention does specify the need for periodic Meetings of State Parties and Review Conferences, the provisions for these sessions do not directly address the assessment of exclusions to the prohibition.

Moving forward

In terms of how future reviews under the CCM should be undertaken, the diversity of what can be taken to count as a precautionary approach means that 'the precautionary principle' provides no straightforward proscriptions. The previous debate about the place and the meaning of precaution, though, can serve to raise awareness amongst those concerned with the humanitarian consequences of armed violence to likely issues associated with such review procedures. For instance, authors such as Sadeleer[19] and Stern and Weiner[28] argue that the logic of precaution requires significant uncertainties to be noted and investigations undertaken to diminish them.

In relation to the review of the humanitarian consequences of weapons that might be deemed as prohibited 'cluster munitions' under the definition of the CCM then, past lessons underline the need to monitor adherence to the convention as well as to assess the exclusions allowed to ensure it is flexible and responsive to evolving practices and innovations. During the closing sessions of the final negotiating conference in the Oslo Process, representatives from the International Committee of the Red Cross (ICRC),

Sudan, Austria, Jamaica, and the Red Cross and Red Crescent Societies spoke to the need for review mechanisms as part of future convention meetings. Particularly because of the questions associated with the meaning of the terms in Article 2 and the potential for future technologies to test the boundaries of what is prohibited, the collective and formal review of CCM is likely to be significant to its future relevance.

However, if lessons from the past point to the need for continuing analyses, they also suggest the limits of analysis. Sadeleer contends '[p]recaution is ... testament to a new relationship with science where it is consulted less for the knowledge that it has to offer than for the doubts and concerns that it is in a position to raise'[53]. As he argues, if we reject the assumption that expert assessment can resolve what constitutes acceptable levels of exposure to harm, then this:

> essentially amounts to a re-invigoration of political decision-making, with decision-makers no longer being able to seek refuge behind a facade of scientific pseudo-certitudes presented by their own experts[53:p.160].

Such sentiments about the political dimensions of setting standards support the need for transparent deliberations within the Meetings of State Parties and Review Conferences of the CCM. As part of this, instead of treating the arbitrary status of elements of Article 2(2.c) as a deficiency, they could be treated as contingent outcomes resulting from a political process that will need to be openly evaluated in the future.

Within the process of deliberating appropriate exclusions to the CCM, past lessons with the precautionary principle would suggest that how the onus for proving is handled will be a major issue. As has been suggested in relation to past European chemical regulation, despite the claims to the contrary, the case has had to be made for a product to be unsafe rather than evidence put forward regarding its relative lack of detrimental effects[18]. While such a distribution of onus can tax established international regulatory frameworks, in the case of weapons development the problems would be even more acute given the limited procedures in many countries for legally vetting weapons during procurement processes[54].

In the face of uncertainty about the combat performance of new weapon systems, a range of policies might be adopted. As mentioned previously, a basic starting point within precautionary thinking is that uncertainty should not be a reason for avoiding the deliberation of possible responsive action. Some formulations go much further, stipulating that the lack of information should not be used as a reason for postponing certain responsive action or it should serve to place the onus on those advancing new technologies to demonstrate reasonable grounds for expecting comparatively little harm.

In considering the distribution of onus as part of future deliberations within the States Parties meeting of the CCM, one way forward would be to

rule out borderline permissible weapons until reasonable evidence was presented for believing otherwise. This would retain the overall orientation in the Oslo Process of giving prominence to civilian harms over narrow formulations of military utility. The CCM as a whole could stipulate parameters for what sort of evidence is required depending on the seriousness of possible harms – that could, for instance, pertain to testing parameters, statistical methodologies, and transparency requirements. The testing regime employed by the Norwegian Defence Research Establishment the M85 sub-munition offers one set of possible pre-deployment standards for the future[55]. In recognition of the limits of testing, the permissibility of any weapons could then be subject to formal review within the convention after any combat usages.

As Levidow cautions though, it would be highly limiting to conceive of precautionary review measures as simply attempts to plug knowledge gaps. In an examination of GM crop regulation in Europe, he argued that efforts to overcome uncertainties through further research 'have often intensified methodological disagreements among experts about the appropriate criteria for evidence'[56]. Different organizations used the evidence that emerged from scientific studies to suggest additional matters of uncertainty and limitations to the understanding of ecosystems underpinning regulatory science. The overall effect was that uncertainties *increased* over time because of additional studies. A similar dynamic could transpire in the case of the testing of cluster munitions as further evidence begs follow-on questions.

Widening the precedent: victim assistance

The precautionary-type orientation adopted during the Oslo Process was justified on the exceptional dangers posed by a type of weapon to civilians. This understanding also underscores the need for future review and analyses. A potential danger with such calls for heightened scrutiny to one technology, though, is that it may place disproportionate attention on a narrow certain set of humanitarian concerns at the expense of others (see next section).

One way to avoid this prospect is to ensure the precedents and practices established through the CCM extend beyond cluster munitions. A progressive precedent that could be fostered through the CCM relates to data gathering requirements under the provisions referred to as 'Victim Assistance'. The CCM contains obligations on States under Article 5 to 'collect reliable relevant data with respect to cluster munition victims'. Such an explicit obligation to collect data on victims of armed violence is novel in relation to other disarmament legal instruments. This obligation is reinforced in Article 7 on transparency measures that requires States Parties to report annually on 'the status and progress of implementation of its

obligations under Article 5 of this Convention to ... collect reliable relevant data with respect to cluster munition victims', as well as to provide 'the name and contact details of the institutions mandated to provide information and to carry out the measures described in this paragraph'.

In addition, the CCM has a broad definition of 'victims', covering both conflict and post-conflict periods; combatants and non-combatants; and physical and psychological harm to the individual, including death, as well as wider and indirect aspects of social and economic deprivation to individuals, families and communities. On this basis the CCM places an obligation on States Parties to collect reliable relevant data with respect to all persons who have been killed or suffered physical or psychological injury, economic loss, social marginalization or substantial impairment of the realization of their rights caused by the use of cluster munitions. Whilst it is uncertain to what extent state practice has developed in response to this obligation, the legal precedent has already been extended to the Convention on Conventional Weapons. In November 2008, the High Contracting Parties to Protocol V on all Explosive Remnants of War adopted a novel politically binding 'Plan of Action on Victim Assistance under Protocol V'. This plan was modelled on the provisions of Article 5 of the CCM but does not have the same legally binding status. It suggests support for a broad concept of 'victims' by emphasizing that 'explosive remnants of war may not only affect the persons directly impacted by them, but also have larger social and economic consequences.' Following the CCM, the Plan of Action requires that 'each High Contracting Party should make every effort to collect reliable relevant data with respect to victims'[57].

However, as with the central prohibition, the CCM does not stipulate specifically what data must be collected as part of its provisions. As elsewhere, this situation raises important questions about how harms can be avoided, how uncertainties and unknowns should be handled, and with whom the onus for collecting what kind of information rests.

To further the protection of civilians, state practice in relation to this obligation should employ a broad definition of 'cluster munition victim' so as to build a more comprehensive understanding of the harm caused by these weapons. Beyond this, the provisions on Victim Assistance in the CCM stipulate that they should be implemented without discrimination on the basis of the type of weapon that has caused victimization. As a result, the obligation to collect data should be extended to individuals, families and communities adversely affected by 'various types of weapons'. Such data would be an important basis for understanding the impact of armed violence which in turn can provide an evidential basis for armed violence reduction and development programming.

As a set of broad public health responsibilities, this suggestion is in line with the World Health Organization's core agenda item of 'harnessing

research, information and evidence' as a foundation for setting priorities, defining strategies, and measuring results[58]. It is also in line with the imperative often associated with the precautionary principle to undertake measures to reduce areas of uncertainties[19].

Explosive weapons

The previous two sections elaborated precautionary-informed interpretations of the CCM intended to promote the protection of civilians from armed conflict. This one does so as well, but with a view to asking how the precedents of the CCM could inform debate over a broader category of weapons: explosive weapons. This includes items such as artillery shells, bombs, grenades, mortars, and rockets – all of which project blast and fragmentation out from a point of detonation. Whilst the CCM singles out cluster munitions for prohibition it is significant that the problems associated with cluster munitions in the convention – effects across an 'area' at the time of use and a legacy of unexploded items – are common, to different degrees, to all explosive weapons. Therefore the outright prohibition of cluster munitions raises questions about the regulation of the broader category.

There is a growing recognition that explosive weapons constitute a category that demands a special responsibility on users with respect to the risks they generate after use in the form of unexploded items (see CCW Amended Protocol II and Protocol V, 1997 Mine Ban Treaty and CCM). However, no formal international instruments currently group explosive weapons together and treat them as a distinct category regarding the risks they present at the time of use[59]. And yet, explosive weapons are regularly regarded as distinct in practice. This is evident in the manner in which they are traditionally the tools of the military for the purpose of war-fighting and are not considered acceptable for domestic policing. It is also significant that explosive weapons (even relatively small explosive weapons) are not generally considered appropriate for use amongst citizen populations to whom the users are directly accountable.

As was the case with Victim Assistance, the CCM provides a starting basis for establishing certain wide-ranging humanitarian presumptions regarding explosive violence. It does so through the international standards it sets for legitimate and illegitimate force. Consider again the prohibition in Article 2(2.c). The cumulative characteristics, i–iii are all related, at least in part, to avoiding indiscriminate area effects. Therefore, these technical characteristics serve to calibrate how 'indiscriminate area effects' are to be understood (at least as a necessary minimum set of measures) by State Parties to the CCM.

Of these criteria, Article 2(2.c) iii limits the individual sub-munitions to each striking a 'single target object'. Such a 'target object' should be a

vehicle, artillery piece or other such distinct item. It is prohibited under the convention to use weapons where the explosive sub-munitions are scattered and distribute explosive force and fragmentation randomly across an area, even if this only involves scattering *two* sub-munitions.

Other criteria serve to limit the number of permissible sub-munitions that can be delivered by a single container munition (such as the shell or bomb that disperses sub-munitions) and to limit the miniaturization of permissible sub-munitions (and hence the miniaturization of the whole weapon system). Taken together, these two provisions provide limitations on the capacity for an individual munition to saturate an area *even with* sub-munitions that detect and engage single target objects.

In stipulating such specific proscriptions regarding what constitutes indiscriminate area effects, the CCM provides a basis for re-interpreting IHL. The general parameters of 'indiscriminate attacks' are laid out in the 1977 First Protocol Additional to the Geneva Conventions of 12 August 1949 (Additional Protocol I) at Article 51 4–5. Herein:

> 4. Indiscriminate attacks are prohibited. Indiscriminate attacks are:
> (a) those which are not directed at a specific military objective;
> (b) those which employ a method or means of combat which cannot be directed at a specific military objective; or
> (c) those which employ a method or means of combat the effects of which cannot be limited as required by this Protocol; and consequently, in each such case, are of a nature to strike military objectives and civilians or civilian objects without distinction.
> 5. Among others, the following types of attacks are to be considered as indiscriminate:
> (a) an attack by bombardment by any methods or means which treats as a single military objective a number of clearly separated and distinct military objectives located in a city, town, village or other area containing a similar concentration of civilians or civilian objects.

In relation to the provisions of Article 51, the CCM adopts a presumption that the use of explosive weapons across areas, without (at a minimum) measures to limit the effects of each of those weapons to 'single target objects' will be 'of a nature to strike military objectives and civilians or civilian objects without distinction' and will thus be prohibited. Furthermore, it should be noted that any munitions allowed at CCM Article 2(2.c) must still be used in accordance with IHL. Thus the technical criteria limiting the area-effect of these munitions is not sufficient to straightforwardly allow their use in specific contexts (such as in populated areas).

Therefore, without asserting that all use of explosive weapons to create an area effect constitutes an indiscriminate attack, the CCM supports a reading under Article 51 of Additional Protocol I that the use of such area effect explosive weapons might well be indiscriminate. This has potential to

strengthen understandings of what constitutes a sufficient attempt to limit the area effects of explosive weapons more broadly – with implications for patterns of explosive violence seen in 2009 in both Gaza and Sri Lanka (where cluster munitions were not used, but where other explosive weapons caused extensive civilian deaths and injuries). Such questioning could provide a fresh avenue for asking how humanitarian agendas towards limiting the effects of conflict could be further advanced.

Where this attention should ultimately lead is an open matter. The review of precautionary debates in the previous sections would suggest when and with whom the onus falls for substantiating effects is likely to be a central issue. As noted earlier, major military nations have basic deficiencies in their knowledge about the humanitarian consequences associated with their use of force. Therefore, even the modest positive obligations stemming from the CCM along the lines that governments need to better substantiate how they justify the use of explosive weapons could be significant. In addition, what action or further deliberation should be taken in the absence of definitive evidence about humanitarian harms from explosive weapons will likely be a matter of future contention. One version of the precautionary principle would suggest uncertainty cannot justify not taking reasonable measures[13].

In a more robust formulation, if the implications of the CCM, discussed earlier, for states to gather data on the victims of weapons are combined with the implications here regarding concern over the category of explosive weapons, a demanding policy orientation can be proposed. Given that states would not ordinarily use such weapons amongst their own populations, they should not use them amongst foreign civilians without providing evidence that unacceptable harm will not result, and without attending to the specific technical implications of the CCM for limiting the risks posed by explosive weapons.

Such a discussion would likely bring to the fore questions about what constitutes 'effective' military force today given the humanitarian goals so often cited as the reason for interventions. The focus though need not be solely with the actions of states. Rather efforts could be made to gather information on the effects of explosive weapons irrespective of their user in order to understand the pattern of effects from such weapons.

If through basic information collecting exercises it was suggested that the use of explosive violence in populated areas is a distinct cause of excessive humanitarian suffering, then efforts could be made to further broaden the existing stigma associated with such acts. The stigma against using nuclear weapons, the norms opposing the transfer and use of anti-personnel landmines, and taboo against the development of chemical weapons have elaborated how particular weapons became stigmatized to such an extent that few even contemplate their use[60]. When the possession and use of certain weapons is seen as incompatible with the identity users wish to foster in the international community, then that assessment can contribute to

restrained actions before and during conflict. Thus, efforts to (further) stigmatize explosive violence could have implications for the activities of many states; including those beyond the signatories to the CCM.

Discussion

The purpose of this article has been to consider how the protection of civilians from the consequences of conflict can be improved in relation to evidence of humanitarian harm. The recently agreed Convention on Cluster Munitions has been looked to as providing the starting point for advancing this goal. As maintained, the manner of the agreement of the CCM provides an opening for advancing the standing of civilians by embedding explicit 'precautionary orientations' into the governance of conflict.

As repeatedly pointed out, however, 'the' precautionary principle is not best thought of as a decision rule for short cutting political deliberation. Instead, ways to build precautionary-inspired requirements into the CCM have been looked to as providing argumentative resources for compelling states to better justify their actions and inactions.

Infusing the sorts of general precautionary lessons outlined into the control of armed conflict in particular will pose major challenges. While building new forms of democratic participation[31] and securing binding legal rulings[19] have been prime mechanisms for making notions of precaution meaningful in many areas, such options are less feasible in the case of conflict. In addition, as major military powers – the United States, the Russian Federation, and China – are not signatories to the CCM, they will be outside of its formal mechanisms. Therefore, the question of how to ensure the widest relevancy of humanitarian-inspired interpretations of the CCM is a matter of significant concern. As noted with explosive weapons in the previous section, the normative standard-setting potential of the CCM is likely to be a major way in which it is relevant in upcoming years.

To the extent the CCM is aligned with precautionary approaches, this could play a wider role in framing future debates irrespective of whether a formal understanding of the meaning of 'precaution' in this context is agreed. For instance, in the case of the regulation of genetically modified organisms (GMOs) in France, Marris et al. argued that while explicit references to the principle are uncommon, individuals have been able to draw on notions of it to articulate a place for new forms of expertise[61]. In relation to European fishery stock policy, Ellis contended that despite the limited incorporation of the principle into codified law, it has still been significant:

> first by enhancing the credibility of certain types of arguments and diminishing that of others; second, by providing a framework within which conservationist arguments can be presented; and third, by pointing to interests and values other than those of states as legitimate objectives which the conservation regime should pursue[62].

As she maintained in relation to the third point, as a framing mechanism the principle lends support to those arguments and agreements that move beyond a narrow conception of state interests. This is so because

> [o]nce invoked ... the state is drawn into discussions of the public interests that precaution is intended to promote. Debate and discussion cannot remain at the level of state interests because the framework provided by precaution will tend to pull the debate in the direction of these public interests[62:p.293].

While the said inevitability of precaution to move beyond a narrow consideration of interests seems disputable, precautionary discourse could provide resources for advancing humanitarian goals within the governance of armed conflict. In this regard, the multiple depictions of what properly counts as an instance of the precautionary principle at work would suggest the necessity of open political deliberation about the way forward[31].

A precautionary framing could also provide the basis for a sense of shared identity and purpose. The future import and meaning of the CCM will depend on the efforts made by committed states, NGOs, ILOs, and others. Infusing these discussions with a sense of precaution could be important in shaping a wide sense of the reasons for why the current set of mechanisms governing armed conflict is unacceptable.

Acknowledgements

Our thanks to Thomas Nash, Seb Taylor, John Borrie, Margarita Petrova, Elvira Rosert, Andy Stirling, and Eitan Barak for their contributions.

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