

SELECTED ARTICLE ON INTERNATIONAL HUMANITARIAN LAW

Enhancing civilian protection from use of explosive weapons in populated areas: building a policy and research agenda

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Abstract

Every day, and in a range of contexts, the use of explosive weapons in populated areas harms civilians. Evidence is growing that elevated levels of civilian harm fit a recurrent pattern, suggesting that more coherent and effective humanitarian responses are needed to enhance civilian protection, especially changes in behaviour of users of explosive weapons. This article describes the effects of explosive violence, critically examines how the existing humanitarian law regime tends to address this issue and explores some current developments in building a research and policy agenda to try to reduce civilian harm from the use of explosive weapons.

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When the muffled blast of a mortar round echoes in the distance or the thunder of artillery fire erupts, Hassan (a taxi-turned-ambulance driver in war-torn Mogadishu) stares at his mobile phone. ‘Now I pick up my clients from pools of blood in shattered homes. . . . Most of the calls are about a mortar shell smashing into a populated area.’ . . . The hardest part begins when he reaches the wounded and has to pick his way through body parts to identify who has a chance of surviving and needs his services the most.¹ (Mustafa Haji Abdinur)

Violence, including armed violence, is ‘a leading worldwide public health problem’.² Among the means of armed violence, use of explosive weapons can be ‘an important cause of death and injury’,³ as shown by the quotation above describing life for residents of Mogadishu, Somalia. The impact of explosive weapons use in populated areas is so serious that the United Nations (UN) Secretary-General has repeatedly singled it out as a distinct humanitarian problem: in his 2009 report to the Security Council on the protection of civilians in armed conflict, he expressed increasing concern at the use of explosive weapons in ‘densely populated environments’, which ‘inevitably has an indiscriminate and severe humanitarian impact’.⁴ In 2010, he added that data collected across a range of conflicts revealed

substantial and ongoing civilian suffering caused by explosive weapons when they are used in populated areas. Civilians within the vicinity of an explosion are likely to be killed or injured by the blast and fragmentation effects of such weapons. They may be harmed by the collapse of buildings or suffer as a result of damage to infrastructure that is vital to the well-being of the civilian population, such as hospitals and sanitation systems. The use of explosive weapons also creates unexploded ordnance that persists as a threat to civilians until it is removed.⁵

This article briefly describes characteristics of the harm that the use of explosive weapons in populated areas causes to civilians. The second section critically examines how international humanitarian law (IHL) currently frames this humanitarian concern. The article then presents a novel framework that views explosive weapons as a coherent technological and moral category and attributes a distinct pattern of harm to this technology. This new perspective on the problem of explosive violence has already begun to stimulate some research and reflection within the international humanitarian community. The last section of the article

- 1 Mustafa Haji Abdinur, ‘A day in the life of a Mogadishu ambulance driver’, in *France 24*, 23 August 2010.
- 2 Prevention of Violence: A Public Health Priority, Resolution WHA49.25 adopted by the Forty-ninth World Health Assembly, Geneva, 20–25 May 1996.
- 3 Cæcilie Buhmann, ‘The direct and indirect costs of explosive violence’, in *British Medical Journal*, Vol. 339, 2009, p. 761.
- 4 *Report of the Secretary-General on the Protection of Civilians in Armed Conflict*, UN Doc. S/2009/277, 29 May 2009, para. 36.
- 5 *Report of the Secretary-General on the Protection of Civilians in Armed Conflict*, UN Doc. S/2010/579, 11 November 2011, para. 49.

also indicates possible directions for further research and policy initiatives aimed at better understanding and reducing the human cost associated with the use of explosive weapons in populated areas.

At the outset, it is important to clarify some key terminology. By ‘explosive weapons’ we mean weapons that generally consist of a casing with a high-explosive filling and whose destructive effects result mainly from the blast wave and fragmentation produced by detonation.⁶ For example, mortar bombs, artillery shells, aircraft bombs, rocket and missile warheads, cluster submunitions, and many improvised explosive devices (IEDs) fall within this technological category, the boundaries of which are yet to be formally defined in international law and policy.⁷

The main focus of this article is on the use of explosive weapons in populated areas. The terms ‘(densely) populated area’ and ‘concentration of civilians’ are well-established legal notions, though there is no single agreed definition and international instruments vary slightly in the formulations they deploy.⁸ In this article, the term ‘populated area’ is used as shorthand to refer to places where civilians are likely to be present in high numbers and where public infrastructure is dense. These include locations where civilians live, work, or travel; places that encompass main streets, bus stations, markets, office buildings, camps sheltering displaced persons, residential compounds, or city neighbourhoods.

The article’s main concern regarding humanitarian impacts is the harm to civilians. The term ‘civilian’ is not defined positively in international law (the Geneva Conventions describe civilians by what they are not). Moreover, the degree of involvement and participation of civilians in armed conflict can arguably be ambiguous in terms, for instance, of economic contribution or ideological support. While acknowledging this, we note Slim’s point that ‘at the heart of the civilian idea is a moral argument about identity and harmlessness’ that is meant to transcend such ambiguities.⁹ In view of this, states accept a responsibility to protect civilians from violence. This article focuses on situations that legally qualify as ‘armed

6 Jonas A. Zukas and William P. Walters (eds), *Explosive Effects and Applications*, Springer, New York, 1998, p. 9; Richard Moyes, *Explosive Violence: The Problem of Explosive Weapons*, Landmine Action, London, 2009, p. 4. In addition to primary fragments from the shattered casing, the blast wave creates secondary fragmentation by accelerating objects near the explosion, such as parts of structures and shards of window glass.

7 William Boothby describes weapons falling into his category of ‘missiles, bombs and artillery’ as those that ‘typically employ a warhead with an explosive fill such that a combination of blast and fragmentation will provide the damaging effect of the weapon’. William Boothby, *Weapons and the Law of Armed Conflict*, Oxford University Press, Oxford, 2009, p. 225. See also Report of Conference of Government Experts on the Use of Certain Conventional Weapons, Lucerne, 24 September–18 October 1974 (Lucerne Report), ICRC, Geneva, 1975, p. 44.

8 See for example, 1980 Protocol II to the United Nations Convention on Certain Conventional Weapons (CCW), Art. 4(2); 1996 CCW Amended Protocol II, Art. 7(3); 1980 CCW Protocol III, Arts. 1(2) and 2(2); and 1977 Additional Protocol I to the Geneva Conventions (AP I), Art. 51(5)(a). Note also the references by the European Court of Human Rights (ECtHR) to ‘populated areas’ in explosive-weapons-related cases, such as in ECtHR, *Case of Isayeva v. Russia*, Merits and Just Satisfaction, Judgment, 24 February 2005, and ECtHR, *Case of Esmukhambetov and Others v. Russia*, Application No. 23445/03, Merits and Just Satisfaction, Judgment, 29 March 2011.

9 Hugo Slim, *Killing Civilians: Method, Madness and Morality in War*, Hurst & Company, London, 2007, p. 183.

conflicts¹⁰ governed by the rules of IHL,¹¹ which confer such protection from the effects of hostilities, including from explosive violence, on the civilian population and individual civilians.¹² The humanitarian impacts of explosive violence are certainly not limited to such situations, of course. The use of explosive weapons is, for example, a feature of the struggle between powerful drug cartels in Mexico and government forces pitted against them, as well as in crime and internal disturbances in Burundi.¹³ Nevertheless, it is noteworthy that states generally refrain from explosive weapons use outside armed conflict, and use by non-state actors (including in connection with ‘terrorism’) tends to be criminalized. Explosive violence in such situations is usually perceived as alarming and unacceptable.¹⁴

The humanitarian problem of explosive weapons’ use in populated areas: why should we worry?

Reports of explosive weapons causing death, injury, and material destruction reach us daily from many places around the world.¹⁵ A growing body of evidence indicates a consistent pattern of harm to civilians from the use of explosive weapons in places such as towns, cities, and other areas in which civilians congregate.

Explosive violence produces a distinct pattern of death and injury. Survivors of explosive weapons use tend to suffer multiple, complex, and severe wounds from the blast and fragmentation effects, and from being caught in collapsing structures.¹⁶ The physical and mental trauma can result in a range of debilitating long-term conditions, including lifelong disability, requiring considerable medical and public health resources.¹⁷ Drawing on findings about armed

10 The ‘use of heavy weapons’, including the shelling of towns, has been used as an indicator for the existence of an armed conflict in the legal sense. See for example, International Criminal Tribunal for the Former Yugoslavia (ICTY), *The Prosecutor v. Ljube Bošković & Johan Tarčulovski*, Case No. IT-04-82-T, Judgment (Trial Chamber II), 10 July 2008, para. 177.

11 IHL is defined broadly here to encompass the rules and principles of ‘Geneva law’ and ‘Hague law’.

12 AP I, Art. 51(1). Note that the ECtHR also referred to ‘civilians’ when it discussed the risk posed by the detonation of a bomb in ECtHR, *Case of McCann and Others v. the United Kingdom*, Application No. 18984/91, Merits and Just Satisfaction, Judgment, 27 September 1995.

13 Oscar Becerra, ‘Drugs of choice: Mexico faces security dilemma’, in *Jane’s Intelligence Review*, Vol. 23, No. 1, January 2011, pp. 8–10. See also the documentary film produced by Seth Chase and Brice Blondel, directed by Seth Chase, ‘Bang for your Buck’, ShootingPoverty.org, 2010, which describes explosive hand grenade attacks in Burundi, available at: <http://vimeo.com/16198602> (last visited 2 May 2011).

14 The use of explosive force by states that may result in the deprivation of life probably goes beyond what is ‘absolutely necessary’ for the achievement of legitimate law enforcement purposes. In a recent judgment, for example, the ECtHR considered that ‘the indiscriminate bombing of a village inhabited by civilians – women and children being among their number – was manifestly disproportionate to the achievement of the purpose under Article 2, para. 2 (a)’ of the European Convention on Human Rights. See *Esmukhambetov and Others v. Russia*, above note 8, para. 150.

15 The Explosive Violence Monitoring Project of the British humanitarian organization Action against Armed Violence (AOAV) publishes bi-weekly reports on explosive violence, available at: <http://www.landmineaction.org/issues/page.asp?PLID=1017&pageID=1068> (last visited 2 May 2011).

16 R. Moyes, above note 6, p. 29.

17 See for instance Robin Coupland and Hans Samnegaard, ‘Effect of type and transfer of conventional weapons on civilian injuries: retrospective analysis of prospective data from Red Cross hospitals’, in *British Medical Journal*, Vol. 319, 1999, pp. 410–412. For more information about the particular wounding

violence generally, it is reasonable to posit that men have a higher propensity to be directly killed or injured and disabled by explosive violence.¹⁸ Nevertheless, existing studies suggest that women are significantly at risk from this form of armed violence,¹⁹ though more research is needed into the demographic characteristics of civilian harm from the use of explosive weapons in populated areas. It is reasonable to assume, for instance, that explosive weapon attacks on settlements, for example, disproportionately affect women in societies within which their sphere of action revolves mainly around the home.

In addition, damage to social and economic ‘infrastructure vital to the well-being of the civilian population’²⁰ caused by explosive weapons has deleterious effects on civilians. The destruction of transport facilities, markets, power, sanitation, and health infrastructure, as well as housing and shelter, impedes community access to food, clean water, health care, education, and other necessities of life. Even if such infrastructure is not completely disrupted, it may force changes to civilian behaviour that increase their vulnerability to the effects of armed violence. For civilians waiting for food or clean water at aid distribution points, for instance, explosive weapons use can pose mortal peril.²¹ Meanwhile, destruction of education and health infrastructure may also deepen pre-existing gender gaps in these areas. Anecdotal evidence suggests a link between the use of explosive weapons in populated areas and (protracted) displacement,²² which again results in particular hardship for women, who are more likely than men to be internally displaced persons (IDPs) or refugees.²³ Finally, explosive weapons consistently leave behind explosive remnants. These continue to pose a threat to civilians and cause ongoing harm long after use unless dealt with, and have a negative impact on socio-economic development.²⁴

A few examples can show how explosive violence is apparent across many different recent and contemporary contexts, and appears to inflict civilian harm on

patterns caused by such weapons, see International Committee of the Red Cross (ICRC), *Wound Ballistics: An Introduction for Health, Legal, Forensic, Military and Law Enforcement Professionals*, ICRC, Geneva, 2008; and C. Stewart, ‘Blast injuries: preparing for the inevitable’, in *Emergency Medicine Practice*, Vol. 8, No. 4, April 2006, pp. 1–28.

18 The World Bank, *World Development Report 2011: Conflict, Security, and Development*, World Bank, 2011, p. 61.

19 Madelyn Hsiao-Rei Hicks, *et al.*, ‘Violent deaths of Iraqi civilians, 2003–2008: analysis by perpetrator, weapon, time, and location’, in *PLoS Medicine*, Vol. 8, No. 2, 2011, available at: <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000415> (last visited 2 May 2011). See also R. Moyes, above note 6, p. 26.

20 *Report of the Secretary-General*, 2009, above note 4, para. 36.

21 C.J. Chivers, ‘Qaddafi troops fire cluster bombs into civilian areas’, in *New York Times*, 15 April 2011, available at: <http://www.nytimes.com/2011/04/16/world/africa/16libya.html> (last visited 2 May 2011): ‘The toll of the Grad rocket strikes also framed the ways in which civilians are being forced to take risks to survive. Misurata has few open markets, almost no electricity and limited supplies of food. To eat, many residents must stand in bread lines. When one of the rockets that landed in Qasr Ahmed exploded beside such a line, it killed several people waiting for food. “I jumped onto the ground when the explosions started”, said Ali Hmouda, 36, an employee of the port. “My friend did not. His head came off.”’

22 Esther Cann and Katherine Harrison, *100 Incidents of Humanitarian Harm: Explosive Weapons in Populated Areas, 2009–2010*, Action on Armed Violence, London, March 2011, p. 50.

23 World Bank, above note 18, p. 61.

24 John Borrie, *Explosive Remnants of War: A Global Survey*, Landmine Action, London, 2003.

a significant scale. Humanitarian organizations such as the International Committee of the Red Cross (ICRC) and Doctors Without Borders have broadcast public alarm about thousands of war-wounded people – most of them civilians – caught in mortar or artillery fire or in landmine explosions, and suffering blast and fragmentation injuries, requiring treatment at their clinics and hospitals in and around Mogadishu. The ICRC noted that numbers of these dead and war-wounded ‘sharply increased’ in 2010.²⁵ In recent years, the United Nations Assistance Mission in Afghanistan (UNAMA) has repeatedly identified forms of explosive weapons use as the ‘tactics’ responsible for most recorded civilian deaths, injuries, and major damage.²⁶ Large-scale destruction of homes, cultivations, roads, schools, and hospitals occurred in this way in South Lebanon in summer 2006,²⁷ as well as along the Gaza Strip²⁸ and in the Vanni region of Sri Lanka in 2009.²⁹ Use of explosive weapons in populated areas in Iraq such as in the Coalition air attacks during the 2003 invasion and widespread subsequent IED use by anti-Coalition forces have resulted in high risk to civilians, including the death and injury of many thousands.³⁰

Recent and current conflicts have been distinguished by mismatches of opposing capabilities among belligerents.³¹ This asymmetry can increase the appeal of populated areas as environments in which to launch attacks and then hide among civilians, or environments to dominate because control of the population is a strategic objective.³² Yet if explosive weapons are used, the higher the population density or concentration of civilians or civilian objects in a place, the more people

- 25 ICRC, ‘Somalia: war wounded in Mogadishu referral hospitals reach new peak’, 27 January 2011, available at: <http://www.icrc.org/eng/resources/documents/news-footage/somalia-tvnews-2011-01-27.htm> (last visited 2 May 2011). See also Médecins sans frontières, ‘Somalia: MSF treats 66 women and children injured by indiscriminate shelling’, Press Release, 3 February 2010, available at: <http://www.doctorswithoutborders.org/press/release.cfm?id=4251&cat=press-release> (last visited 3 May 2011).
- 26 According to UNAMA, suicide attacks and IEDs deployed by anti-government forces caused the largest proportion (55%) of conflict-related civilian casualties in Afghanistan in 2010, followed by air attacks by pro-government forces (16%). UNAMA Human Rights Unit, *Afghanistan Annual Report 2010: Protection of Civilians in Armed Conflict*, March 2011, p. i. UNAMA said that the 2,777 civilian deaths in 2010 represented a 15% increase over 2009, when it had noted that such ‘attacks frequently resulted in civilian fatalities and the destruction of civilian property and infrastructure’. UNAMA Human Rights Unit, *Afghanistan Annual Report on Protection of Civilians in Armed Conflict 2009*, 2010. Note that UNAMA’s data do not include deaths and injury from some explosive weapons (such as mortars and ground-launched artillery), and do not recognize explosive weapons as a specific data category.
- 27 Greg Crowther, *Counting the Cost: The Economic Impact of Cluster Munition Contamination in Lebanon*, Landmine Action, London, 2008.
- 28 UN Development Programme, *One Year After Report: Gaza Early Recovery and Reconstruction Needs Assessment*, New York, 2010, available at: <http://www.undp.ps/en/newsroom/publications/pdf/other/gazaoneyear.pdf> (last visited 2 May 2011).
- 29 Médecins sans frontières, ‘MSF treating hundreds of wounded arriving from Sri Lankan war zone’, 21 April 2009, available at: <http://www.msf.org/msf/articles/2009/04/msf-treating-hundreds-of-wounded-arriving-from-sri-lankan-war-zone.cfm> (last visited 2 May 2011); *Report of the Secretary-General’s Panel of Experts on Accountability in Sri Lanka*, 31 March 2011, available at: www.un.org/News/dh/infocus/Sri_Lanka/POE_Report_Full.pdf (last visited 2 May 2011).
- 30 M. H.-R. Hicks *et al.*, above note 19, p. 11.
- 31 See Herfried Münkler, ‘The Wars of the 21st Century’, in *International Review of the Red Cross*, Vol. 85, No. 849, March 2003, pp. 7–22.
- 32 See Rupert Smith, *The Utility of Force: The Art of War in the Modern World*, Allen Lane, London, 2006.

and civilian infrastructure are likely to be within the blast and fragmentation radius of an explosion. Despite this, conflicts in Vietnam, Chechnya, Gaza, the West Bank, Afghanistan, and Iraq have all shown that belligerents do operate out of populated areas, including locating military bases and other facilities there, thereby exacerbating the risks to civilians of being affected by hostilities.³³ Demographic shifts from the countryside to urban environments this century are likely to continue or even exacerbate such phenomena. 'Because resources, power, and people are concentrated in and around them, cities are by definition vulnerable entities',³⁴ in which the use of explosive weapons not only runs the risk of killing and injuring civilians but also damages physical infrastructure and disrupts essential civilian services.

It will be noted that the preceding paragraph does not draw a distinction between states and non-state armed actors. States often use a discourse of 'terrorism', which focuses on the harm and illegitimacy of use of explosive and other weapons by non-state actors. This can detract critical attention from states' own use of explosive weapons in populated areas, which is also a source of harm. Historically, both states and non-state actors have used explosive weapons in populated areas and continue to do so.

Explosive weapons play an important role in the military doctrines of states, and dependence on such weapons by state armed forces looks set to continue for the foreseeable future (despite research into alternative military technologies), as shown by continued developments in the potency, stability, portability, and precision of explosive weapons. State-led developments in explosive weapons have not necessarily been about creating 'a bigger bang' but about achieving greater precision over the delivery of explosive force to target, something that conceivably can lower the threshold for use of these weapons and create additional humanitarian risk to civilians in the vicinity of targets. Such is the central importance of explosive weapons technology to state power that states have generally sought to ensure a monopoly on production, possession, transfer, and use of explosive weapons within their territories.

However, monopolies of states on possession and employment of explosive violence on their territories is increasingly under threat in both quantitative and qualitative terms. The sophistication and destructiveness of IEDs have increased dramatically since the basic early designs of non-state armed actors such as the Provisional Irish Republican Army in the 1970s, who used basic triggers and agricultural chemicals.³⁵ In Iraq, for instance, insurgents obtained military munitions from abandoned or insecure stockpiles following the 2003 invasion by

33 Michael John-Hopkins, 'Regulating the conduct of urban warfare: lessons from contemporary asymmetric armed conflicts', in *International Review of the Red Cross*, Vol. 92, No. 878, June 2010, p. 471.

34 Alexandre Vautravers, 'Military operations in urban areas', in *International Review of the Red Cross*, Vol. 92, No. 878, June 2010, p. 450.

35 Adam Higginbotham, 'U.S. military learns to fight deadliest weapons', in *Wired Magazine*, 28 July 2010, available at: http://www.wired.com/magazine/2010/07/ff_roadside_bombs (last visited 13 May 2011); 'With one of the most intensive and ingenious programs of homemade bombmaking R&D in history, Northern Ireland's Provisional IRA worked its way through every available bandwidth from model airplane controllers to cell phones.'

American-led forces, and since then have deployed these in weapons such as car bombs, suicide bomber vests, and buried command-operated artillery or mortar-shell devices detonated in a variety of ways.³⁶ Moreover, bombers sometimes belong to networks exchanging explosives knowledge and expertise that are global in reach. States parties to the United Nations Convention on Certain Conventional Weapons (CCW Convention) have become so concerned about the diversion of military-type explosive munitions and their components to non-state actors that these have begun to feature in their discussions on responding to the threat of IEDs.³⁷ The increasing frequency of use and destructive power of such explosive weapons is of great humanitarian concern.³⁸ Yet IEDs are only part of the humanitarian threat that the proliferation of explosive weapons in the hands of non-state actors may cause. Non-state actors such as Lebanon's Hezbollah are now more heavily equipped with 'officially' manufactured rockets, missiles, and other explosive weapons than some state militaries. Libyan rebels fighting Quaddafi's regime in 2011 furnished themselves at least in part from captured state arsenals. Islamic militia forces in Mogadishu have deployed heavy military explosive weapons such as artillery, direct-fire cannons, and mortars.

In view of the humanitarian issues described above, there is urgent need to question critically the acceptability of using explosive weapons in populated areas, with a view to changing policy and user practices. Yet the public, the media, and many humanitarian actors tend to treat the pattern of civilian harm from explosive weapons use in armed conflict as 'normal' – or at least a 'fact of life' – without examining this assumption. In contrast, civilian harm from weapons other than explosive weapons, such as white phosphorus or dense inert metal explosives (DIME), is often the focus of greatest concern, as media coverage of the 2009 conflict in Gaza indicated.³⁹ The risks that explosive weapons pose to civilians in populated areas seem to have become part of the background, and thus acceptable. This 'moral outrage gap'⁴⁰ is also reflected in the dominant legal discourse, which

36 Clay Wilson, *Improvised explosive devices (IEDs) in Iraq and Afghanistan: effects and countermeasures*, CRS Report for Congress, Congressional Research Service, Washington DC, 21 November 2007, available at: <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA475029> (last visited 12 May 2011).

37 Twelfth Annual Conference of the High Contracting Parties to Amended Protocol II to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, *Improvised explosive devices (IEDs)*, Report submitted by the Coordinator, UN Doc. CCW/AP.II/CONF.12/3, November 2010, available at: [http://www.unog.ch/80256EDD006B8954/\(http:Assets\)/9D351066DC9A78B4C12577E00064355C/\\$file/Report+APII+Coordinator+on+IED+\(Draft\).pdf](http://www.unog.ch/80256EDD006B8954/(http:Assets)/9D351066DC9A78B4C12577E00064355C/$file/Report+APII+Coordinator+on+IED+(Draft).pdf) (last visited 22 February 2012).

38 Adrian King, *Improvised explosive devices (IEDs): a growing threat to humanitarian demining operations?*, paper delivered at The Geneva International Centre for Humanitarian Demining Technology Workshop, 6–8 September 2010, PowerPoint presentation available at: <http://www.gichd.org/fileadmin/pdf/technology/Technology-Workshop-2010/R-7Sept2010-ThreatToHumanitarianOps-TechWS.pdf> (last visited 12 May 2011).

39 Landmine Action, *Explosive violence: Israel and Gaza*, Policy Brief, 30 January 2009, p. 1, available at: <http://www.landmineaction.org/resources/Explosive%20violence%20-%20Israel%20and%20Gaza.pdf> (last visited 2 May 2011).

40 Roos Boer, Bsart Schuurman and Miriam Struyk, *Protecting Civilians from Explosive Violence: 1. Defining the Humanitarian Problem*, Pax Christi Netherlands, Utrecht, 2011, p. 20.

fails to articulate the serious humanitarian problem that the use of explosive weapons in populated areas causes in a manner that adequately contributes to higher standards for civilian protection.

International humanitarian law and the protection of civilians against the use of explosive weapons in populated areas

IHL has traditionally been a key frame of reference for addressing civilian harm from the use of explosive weapons.⁴¹ The following section briefly surveys the evolution of existing IHL rules on specific types of explosive weapons and some attempts at devising rules to protect civilians in populated areas from bombardments more generally.

From balloon-borne bombs, to blast and fragmentation weapons and cluster munitions

Towards the turn of the twentieth century, the increasing range of land and naval artillery, coupled with the possibility of using aircraft for hostile purposes, enabled attacks on population centres far from the battlefield. This led states at the First Hague Peace Conference in 1899 to prohibit ‘The attack or bombardment of towns, villages, habitations or buildings which are not defended’⁴² and to adopt a declaration that forbade the launching of projectiles and explosives from balloons, or by other new methods of a similar nature.⁴³ This declaration, though renewed at the Second Hague Peace Conference in 1907, was not widely ratified and it was understood that it in any case only applied to non-dirigible balloons and not to motorized aircraft.⁴⁴ Attacks by airplanes were brought into the ambit of Article 25 of the 1907 Hague Regulations, which prohibited ‘attack or bombardment, by whatever means, of towns, villages, dwellings, or buildings’, but again with the important proviso that they be ‘undefended’.⁴⁵ The term ‘undefended’ was interpreted in such a way as effectively to permit the bombardment of civilian settlements that contained any kind of military objective. This position was made explicit in another Convention adopted in 1907, which allowed naval bombardment of military objectives in undefended towns, villages, or dwellings under certain conditions.⁴⁶ These rules proved unable to prevent grave civilian harm from

41 It is increasingly recognized that human rights law applies alongside IHL during armed conflict, but what the interplay of these legal regimes means in terms of substantive rights and obligations remains subject to considerable debate.

42 1899 Hague Regulations, Art. 25.

43 1899 Hague Declaration to Prohibit, for the Term of Five Years, the Launching of Projectiles and Explosives from Balloons, and Other Methods of Similar Nature.

44 Chris af Jochnick and Roger Normand, ‘The legitimization of violence: a critical history of the laws of war’, in *Harvard International Law Journal*, Vol. 35, No. 1, 1994, p. 73.

45 1907 Hague Regulations, Art. 25.

46 1907 Hague Convention concerning Bombardment by Naval Forces in Time of War, Chapter I. Conditions include the requirements that the bombardment be preceded by a formal summons to

explosive weapons use, including unprecedented aerial attacks, on population centres during World War I.

In the wake of World War I, the drafters of the Hague Rules on Air Warfare (1922/1923) attempted to regulate aerial bombardment. Under the Hague Rules, the bombardment of settlements in the immediate neighbourhood of the operations of land forces would be legitimate, 'provided that there exists a reasonable presumption that the military concentration is sufficiently important to justify such bombardment, having regard to the danger thus caused to the civilian population'.⁴⁷ However, the Rules were never adopted. As bombardment of cities renewed in the 1930s, and the public expressed its horror at the bombing of towns such as Guernica in 1937, the Assembly of the League of Nations called for urgent regulation of air warfare, based, *inter alia*, on the principle that: 'Any attack on legitimate military objectives must be carried out in such a way that civilian populations in the neighbourhood are not bombed through negligence'.⁴⁸ No such rules were adopted before the outbreak of World War II, which was marked by practices that epitomize the notion of 'indiscriminate attacks'. In particular, the saturation of vast areas, including population centres, with explosive force in so-called 'strategic' bombing campaigns had disastrous consequences for civilian populations.⁴⁹

The use of explosive (and other) weapons in and near concentrations of civilians continued to cause grave civilian harm after World War II, for example in South-east Asia.⁵⁰ In the 1970s, government experts meeting in Lucerne (1974) and Lugano (1976) discussed the effects of what they termed 'blast and fragmentation weapons'. The experts did not define this category of weapons, but considered that, as 'blast and fragmentation effects were to a varying degree inherent in all explosive devices', there was no clear separation between blast weapons and fragmentation weapons.⁵¹ The experts could not agree whether such weapons caused indiscriminate effects or unnecessary suffering within the meaning of what was then Draft Additional Protocol I to the Geneva Conventions. Additional Protocol I, as

comply with the naval forces' request and that destruction of military objectives by other means is impossible.

47 1922 Hague Rules concerning the Control of Wireless Telegraphy in Time of War and Air Warfare, Art. 24(4).

48 Protection of Civilian Populations against Bombing from the Air in Case of War, League of Nations Assembly Resolution, 30 September 1938.

49 See, for example, Yuki Tanaka and Marilyn B. Young (eds), *Bombing Civilians: A Twentieth-century History*, The New Press, New York, 2009. For a consideration of the wartime moral debate about bombing see Jonathan Glover, *Humanity: A Moral History of the Twentieth Century*, Pimlico, London, 2001, pp. 69–88.

50 See, for example, Eric Prokosch, *The Technology of Killing: A Military and Political History of Antipersonnel Weapons*, Zed Books, London, 1995, which links the refinement of these weapons to conflicts in Korea and, from the 1960s, South-east Asia. For a description of the effects of cluster bomb and artillery attacks on densely populated areas in Lebanon in the 1970s and 1980s, see, for example, Kevin Danaher, 'Israel's use of cluster bombs in Lebanon', in *Journal of Palestine Studies*, Vol. 11, No. 4, 1982, pp. 52–54.

51 Lucerne Report, above note 7, pp. 44 and 49. Recently, the Program on Humanitarian Policy and Conflict Research at Harvard University argued that 'Blast weapons must be distinguished from fragmentation weapons' in its *Commentary on the HPCR Manual on International Law Applicable to Air and Missile Warfare*, Harvard University, Cambridge, MA, March 2010, pp. 75 and 77.

adopted in 1977, did however outlaw the practice of area bombardment and other indiscriminate and disproportionate attacks,⁵² but no instrument prohibiting or restricting blast and fragmentation weapons was annexed to the CCW adopted in 1980.⁵³

Instead, over the coming decades, states negotiated several instruments to regulate or prohibit specific types of explosive weapons. CCW Protocol II, agreed in 1980, restricts the use of ‘mines, booby-traps and other devices’. This protocol was amended in 1996, but disappointment with the outcome of these negotiations led to an international treaty banning anti-personnel mines in 1997 (the Ottawa Convention). CCW Protocol V, adopted in 2003, imposes obligations on states to remediate the ‘serious post-conflict humanitarian problems’ caused by the remnants of explosive weapons.⁵⁴ The CCW’s efforts to negotiate minimum standards in order to ensure ‘mines other than anti-personnel mines’ are detectable for humanitarian reasons failed in 2005, though in late 2011 states parties decided to convene a meeting of experts in 2012 to discuss further the implementation of IHL with regard to these mines.⁵⁵ Cluster munitions were banned by the 2008 Convention on Cluster Munitions, achieved in a process pursued outside the CCW. In the latter forum negotiations of a protocol that aimed to restrict certain cluster munitions continued until November 2011, at which point states accepted that they could not reach agreement on this issue within the CCW. CCW states parties will continue discussions on IEDs in the framework of CCW Amended Protocol II.

This brief survey indicates that humanitarian harm from explosive violence, as such, is not a new phenomenon. It also shows that states are clearly aware of the risks that blast and fragmentation effects of explosive weapons pose to civilians, especially in the context of populated areas, both during and after conflict.⁵⁶ But, even though ‘area bombing’ is illegal today, and many states no longer consider the use of cluster munitions acceptable practice, the use of other explosive weapons – even in densely populated areas – remains a common feature of contemporary armed conflicts. No international treaty prohibits blast and fragmentation weapons or regulates their use through specifically tailored rules.

52 AP I, Art. 51(4–5).

53 Blast effects of weapons were dealt with primarily in connection with fuel–air explosives, which led to some restrictions on incendiary weapons on targets ‘within a concentration of civilians’ under 1980 CCW Protocol III. CCW Protocol I, also adopted in 1980, prohibits the use of weapons the primary effect of which is to injure by fragments not detectable by X-rays. These instruments leave unaddressed the humanitarian impacts of blast and fragmentation of most commonly used explosive weapons.

54 2003 CCW Protocol V, preamble.

55 CCW, Final Document of the Fourth Review Conference, Geneva, 14–25 November 2011 (Part II): Final Declaration (Advance Version), Decision 1. See also François Rivasseau, ‘The past and future of the CCW’, in *Arms Control Today*, March 2011, available at: http://www.armscontrol.org/act/2011_03/LookingBack (last visited 3 May 2011).

56 This is also demonstrated, for example, in International Security Assistance Force (ISAF), ‘Tactical directive’, Kabul, 6 July 2009, available at: http://www.nato.int/isaf/docu/official_texts/Tactical_Directive_090706.pdf (last visited 3 May 2011), which restricts use of ‘air-to-ground munitions and indirect fires against residential compounds’. See also ‘For the record: Maj. Gen. Nathan Mugisha discusses civilian casualties’, in *AMISOM Bulletin*, Vol. 17, p. 2: ‘rules of engagement clearly state that public places like schools, hospitals or markets are never to be targeted’ and ‘public places, including Bakara market, are no fire zones’.

However, as with all means and methods of warfare (and, let us recall, the choice is not unlimited),⁵⁷ explosive weapons use remains subject to the rules on the conduct of hostilities.⁵⁸

Does international humanitarian law adequately protect civilians in populated areas from blast and fragmentation?

There are a number of different types of criticism that could be levelled at the prevailing IHL discourse's handling of issues pertaining to civilian protection from the effects of the use of explosive weapons in populated areas. Some critics have argued that IHL rules suffer a critical deficiency, claiming that 'the laws of war have been formulated deliberately to privilege military necessity at the cost of humanitarian values', and do not impose restraint on customary military practices beyond military expedience itself. Instead, the laws of war cloak these practices in a mantle of legitimacy, providing them with 'a humanitarian cover that helps shield them from criticism'.⁵⁹

Others believe that IHL restrains users of force and humanizes war by balancing military necessity with concerns for humanity. From this perspective, the rules on the conduct of hostilities are 'to give effect' to the 'general protection' that civilians enjoy 'against dangers arising from military operations'.⁶⁰ But the consistent pattern of elevated civilian harm associated with the use of explosive weapons in populated areas suggests that IHL as applied in practice does not sufficiently protect civilians from this type of danger.⁶¹ This pattern of civilian harm also indicates a deeper problem than sporadic violations of the law. Grounds for concern remain about how legal rules on proportionality, distinction, and precautions are implemented, including to what extent these constitute an adequate basis for a solution to the humanitarian problems caused by explosive weapons.

Proportionality: uncertainty and disagreement about the (un)acceptability of incidental civilian harm

The legal prohibition against disproportionate attacks⁶² and the related prohibition against 'wanton destruction of cities, towns or villages, or devastation not justified

57 AP I, Art. 35(1).

58 The provisions of AP I largely reflect customary law in this respect and will provide the basis for the following discussion.

59 C. af Jochnick and R. Normand, above note 44, p. 50. These authors argue further that 'the laws of war have facilitated rather than restrained wartime violence. Through law, violence has been legitimated'. Furthermore 'By endorsing military necessity without substantive limitations, the laws of war ask only that belligerents act in accord with military self-interest. Belligerents who meet this hollow requirement receive in return a powerful rhetorical tool to protect their controversial conduct from humanitarian challenges' (p. 58).

60 AP I, Art. 51(1).

61 'Aerial bombardment of civilian centres is almost inevitable in modern warfare. If the law is meant to temper these attacks, it has proved pliant.' Thomas W. Smith, 'The new law of war: legitimizing hi-tech and infrastructural violence', in *International Studies Quarterly*, Vol. 46, No. 3, 2002, p. 359.

62 Pursuant to AP I, Arts. 51(4) and (5)(b), attacks '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

by military necessity' are central to the law on the conduct of hostilities. However, these concepts can only ever provide a relative measure of civilian protection. First, the majority view holds that the proportionality rule does not impose an absolute limit on extensive (in contrast to 'excessive') civilian harm.⁶³ Second, what is to be considered proportionate is in most cases unclear and disputed.⁶⁴ The question how to balance the vague, abstract, and, above all, dissimilar values of expected civilian harm and anticipated military advantage remains.⁶⁵ This means that IHL implicitly accepts an undefined, yet potentially very high level of civilian harm that can be justified by users of force with reference to military necessity.⁶⁶ Similar uncertainties and disagreements surround some precautionary obligations under IHL.⁶⁷ This situation weighs against the emergence of clear common standards about what level of civilian harm is acceptable as an incidental by-product of the use of force.

In practice, proportionality tends to be evaluated on an operational and tactical level, rather than a strategic one, and in relation to discrete acts of violence (attacks). The geographical and temporal scopes of the proportionality assessment, and of the 'attack' itself, remain disputed. Focus is usually on the immediate effects of violence, mostly on death and injury, and tends to understate longer-term civilian harm, for example from infrastructure damage vital to the survival of the civilian population.⁶⁸ There seems to be growing recognition that 'foreseeable' effects should be factored into the assessment, including, notably, those from unexploded ordnance.⁶⁹ Yet even if certain 'reverberating' effects are to be taken into account,

relation to the concrete and direct military advantage anticipated' are to be considered indiscriminate and are prohibited.

- 63 A number of scholars contest the interpretation given by Yves Sandoz, Christophe Swinarski and Bruno Zimmermann, *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*, ICRC, Geneva, 1987, para. 1980, p. 626, who claim that: 'The Protocol does not provide any justification for attacks which cause extensive civilian losses and damages. Incidental losses and damages should never be extensive'. See, for example, Michael N. Schmitt, 'Precision attack and international humanitarian law', in *International Review of the Red Cross*, Vol. 87, No. 859, 2005, p. 457: 'The standard is "excessive" (a comparative concept), not "extensive" (an absolute concept)'.
- 64 'The main problem with the principle of proportionality is not whether or not it exists but what it means and how it is to be applied.' ICTY, *Final Report to the Prosecutor by the Committee Established to Review the NATO Bombing Campaign Against the Federal Republic of Yugoslavia*, 2000, para. 48. See also A. P. V. Rogers, 'Zero-casualty warfare', in *International Review of the Red Cross*, No. 837, 2000, available at: <http://www.icrc.org/eng/resources/documents/misc/57jqcu.htm> (last visited 3 May 2011).
- 65 'The determination of what constitutes "excessive" collateral damage is unclear to the point of inapplicability... The principle of proportionality thus far remains a rhetorical tool, with little substantive content.' Hamutal E. Shamash, 'How much is too much? An examination of the principle of jus in bello proportionality', in *Israel Defense Forces Law Review*, Vol. 2, 2006, pp. 2-3.
- 66 'As we have seen, arguments from necessity allow warring parties to justify an enormous amount of civilian suffering.' Hugo Slim, above note 9, p. 174. See also T. W. Smith, above note 61, pp. 360-361.
- 67 From the perspective of civilian protection, it is particularly worrying that there is no consensus about what civilian harm 'may be expected', what effects are to be considered 'foreseeable', and what standard of care applies when using explosive weapons in populated areas. It is doubtful that 'an imprecise rule of reason' confers adequate protection. See M. N. Schmitt, above note 63, p. 463.
- 68 T. W. Smith, above note 61, p. 370, notes in relation to the 1991 Gulf War that, while estimates of the ratio of bomb tonnage to civilian deaths in air attacks show remarkable reductions in immediate collateral damage, if one takes into account the long-term effects, 'aerial bombing looks anything but humane'; and (p. 365) 'Although the Coalition hewed more or less to humanitarian law, the destruction was enormous.'
- 69 See, for example, Timothy McCormack and Paramdeep Mtharu, *Expected Civilian Damage & The Proportionality Equation: International Humanitarian Law & Explosive Remnants of War*, Asia Pacific

IHL does not lend itself to preventing civilian harm, such as might result from a breakdown of the public health system following damage to transport infrastructure and overstraining of medical resources.⁷⁰

Proportionality and precautionary assessments of discrete attacks are also not conducive to recognizing and responding to patterns of civilian harm related to a particular weapon technology. First, such patterns manifest over a longer period of time and across different contexts. Second, while a link between a pattern of harm and a weapon technology can be based on the IHL prohibition of superfluous injury and unnecessary suffering, this so-called SirUS rule is not generally applied to civilians.⁷¹ Because civilians should not be harmed in the first place, it is difficult under IHL to prevent civilian harm on the basis of wounding patterns and qualitative aspects of civilian suffering from a weapon technology.

Distinction: not only a question of accuracy

Users of force, a significant number of legal scholars, and, indeed, humanitarian actors often approach civilian harm caused by the use of explosive weapons in populated areas in terms of the IHL rule of distinction⁷² and the related prohibition of indiscriminate attacks.⁷³ The emphasis is on how ‘precision attacks’, ‘smart’ weapons, and technological innovations can help overcome the challenges posed by ‘inter-mingling’, ‘co-location’, ‘dual-use’, and ‘human shields’ in ‘urban’, ‘asymmetrical’, or ‘new’ warfare scenarios. Much attention is paid to the accurate delivery of explosive weapons to their targets where considerations related to distance occupy centre stage.⁷⁴ In legal terms, this translates into a focus on the prohibition of attacks that ‘are not directed at a specific military objective’ or that ‘employ a method or

Centre for Military Law, University of Melbourne Law School, 2006, pp. 12–13. See also 1996 CCW Amended Protocol II, Art. 3(10)(a), which requires that the ‘long-term effect of mines upon the local civilian population’ be taken into account when taking precautions.

- 70 In the context of international criminal law, the ICTY raised this issue in terms of ‘cumulative effects’. See ICTY, above note 64, para. 52: “‘However, in case of repeated attacks, all or most of them falling within the grey area between indisputable legality and unlawfulness, it might be warranted to conclude that the cumulative effect of such acts entails that they may not be in keeping with international law. Indeed, this pattern of military conduct may turn out to jeopardize excessively the lives and assets of civilians, contrary to the demands of humanity.’” (ICTY, *Prosecutor v. Kupreškić*, Case No. IT-95-16-T, 14 January 2000, para. 526). This formulation in *Kupreškić* can be regarded as a progressive statement of the applicable law with regard to the obligation to protect civilians. Its practical import, however, is somewhat ambiguous and its application far from clear.’ Other rules of international law may be relevant in this regard, but it does not appear that, in practice, they have proven effective means to prevent and reduce civilian harm from explosive violence.
- 71 With the possible exception of civilians directly participating in hostilities. See Théo Boutruche, ‘L’interdiction des maux superflus: contribution à l’étude des principes et règles relatifs aux moyens et méthodes de guerre en droit international humanitaire’, PhD thesis No. 559, Université de Genève, Geneva, 2008, pp. 74–101.
- 72 The rule on distinction, as reflected in AP I, Art. 48, requires that: ‘In order to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives.’
- 73 AP I, Art. 51(4–5).
- 74 This may have something to do with the important role of air power, which from its beginnings has been tied up with the use of explosive weapons. Air-launched attacks raise particular issues for civilian

means of combat which cannot be' so directed.⁷⁵ In this context, civilian suffering becomes 'abstracted into the meta-discourse of military planning'.⁷⁶ Users of force are seldom pushed (and rarely seek) to justify incidental civilian harm as a proportionate side effect of an attack. Instead, they tend to argue that civilian harm was non-intentional and resulted from a mistake or an accident. Too often the discussion ends there.

On the relatively rare occasions when claims of accidental civilian harm are scrutinized – for example, in relation to precautionary obligations with regard to weapon choice and the targeting process – discussions do not seem to be grounded in scientific evidence of a weapon's impact on civilians in practice. Largely theoretical considerations dominate the debate as they did, for instance, in the context of anti-personnel mines and cluster munitions until challenged by international campaigns against these weapons based on evidence of their humanitarian effects. Many commentators infer from claims about a weapon's accuracy that its use reduces risk to civilians and civilian harm. High accuracy is desirable if it increases an attacker's ability to avoid, or in any case to minimize, civilian harm, and if its use actually results in less harm. However, the risk of civilian harm cannot be assessed in isolation. It is misleading to call weapons that can be precisely targeted 'clean weapons'⁷⁷ because this occludes the possibility that accuracy may in practice result 'in a net increase in potential harm to the civilian population' by enabling attacks on targets located in urban and other densely populated areas that would not have been attacked with less accurate weaponry.⁷⁸

Moreover, the size of blast and fragmentation zones of certain weapons pose a problem in or near populated areas independently of accurate delivery. Human Rights Watch has, for example, accused Israel of violating the prohibition against indiscriminate attacks by firing '155 mm high explosive artillery munitions into densely populated areas of Gaza' – shells that 'inflict blast and fragmentation damage up to 300 meters from the point of impact', noting that the user's internal guidelines forbid targeting them within 350 metres of friendly troops.⁷⁹ Meanwhile the UN Fact Finding Mission on the 2009 Gaza conflict considered that: 'Mortars are area weapons. They kill or maim whoever is within the impact zone after

protection because of the potentially great (and increasing) distance between the place where targeting decisions are made, the launch point, and the target.

75 AP I, Arts. 51(4)(a) and (b).

76 H. Slim, above note 9, p. 53.

77 Françoise J. Hampson, 'Means and methods of warfare in the conflict in the Gulf', in P. J. Rowe (ed.), *The Gulf War 1990–91 in International and English Law*, Routledge, London, New York, 1993, pp. 90 and 104.

78 M. N. Schmitt, above note 63, p. 453.

79 Human Rights Watch (HRW), 'Letter to EU foreign ministers to address violations between Israel and Hamas', 16 March 2009, available at: <http://www.hrw.org/en/news/2009/03/16/letter-eu-foreign-ministers-address-violations-between-israel-and-hamas> (last visited 3 May 2011). On other occasions HRW has referred to the 'expected lethal radius' and 'expected casualty radius' of a M107 shell, and the 'concentrated blast radius' of a missile, used in or near a populated area. See HRW, *Indiscriminate fire: Palestinian rocket attacks on Israel and Israeli artillery shelling in the Gaza Strip*, 2007, p. 51, and HRW, *Precisely wrong: Gaza civilians killed by Israeli drone-launched missiles*, 2009, p. 3, both available at: <http://www.hrw.org/publications/reports?topic=667®ion=228> (last visited 22 February 2012).

detonation and they are incapable of distinguishing between combatants and civilians'.⁸⁰ This indicates growing recognition that blast and fragmentation effects are problematic in populated areas from the point of view of civilian protection, even if this concern has not always been consistently articulated in terms of IHL.⁸¹

Insufficient transparency and redress for victims

IHL does not prescribe steps that have to be taken or procedural safeguards that have to be in place to produce knowledge about the effects of explosive and other weapons on civilians. It does not expect users of force to publicize information about what they base their assessments on, and it does not shift the burden of proof away from those likely to suffer harm onto the proponents of the harmful activity. Instead, secrecy continues to surround the most important decisions affecting the protection of civilians from the effects of hostilities, leaving legal commentators to second-guess military decisions. Understandably, these commentators are at times 'wary of making judgments regarding military matters, knowing that [they] have insufficient information, and being used to being told exactly that by the military'.⁸²

It is in part due to this lack of transparency that civilian losses are often ignored, and that IHL has not proven a good basis for victims and survivors, their families, and their communities to obtain redress for harm done and consolidate respect for their rights.⁸³ For one thing, IHL contemplates compensation for harm only if the law has been violated (as explained above, something currently very difficult to ascertain in the majority of cases where civilians suffer harm from explosive violence) and it does not confer an individual right to reparation or other forms of redress.⁸⁴ In addition, in dealing with the consequences of civilian harm,

80 *Human Rights in Palestine and Other Occupied Arab Territories*, Report of the United Nations Fact Finding Mission on the Gaza Conflict, Human Rights Council, UN Doc. A/HRC/12/48, 15 September 2009, paras. 697–699. There is some ambiguity about whether concerns about 'area effect' refer to the blast and fragmentation zones of the explosion of a single munition, to the area potentially affected by explosive force (such as the footprint of a cluster munition), or to the 'circular error probable' of a weapon (a question of accuracy). See for example the 'Explanatory Memorandum' annexed to Report of Conference of Government Experts on the Use of Certain Conventional Weapons, Lugano, 28 January–26 February 1976, ICRC, Geneva, 1976, p. 204. See also, B'tselem, 'Stop mortar fire at populated areas in Gaza Strip', 23 March 2011, available at: http://www.btselem.org/english/gaza_strip/20110323_forbidden_mortar_fire_on_gaza.asp (last visited 3 May 2011).

81 See for example, HRW and Harvard Law School's International Human Rights Clinic, 'Use of explosive weapons in populated areas', 4 November 2011, available at: <http://www.hrw.org/news/2011/11/04/use-explosive-weapons-populated-areas> (last visited 20 December 2011).

82 H.E. Shamash, above note 65, p. 33. See also Gregory S. McNeal, 'The U.S. practice of collateral damage estimation and mitigation', 9 November 2011, available at: <http://ssrn.com/abstract=1819583> (last visited 20 December 2011). This recent study paper provides an empirically grounded descriptive account of how the US military implements its IHL obligation to mitigate and prevent harm to civilians. It is a welcome contribution to scholarly literature in that it aims to provide commentators with essential information for analysing US military practices hitherto 'shrouded in secrecy and largely inaccessible'.

83 See for example, Christopher Rogers, *Civilians in Armed Conflict: Civilian Harm and Conflict in Northwest Pakistan*, Campaign for Innocent Victims in Conflict (CIVIC), Washington, 2010.

84 'From the point of view of justice', the argument that an individual right to reparation would defy the capacity of states to ensure adequate reparation to victims 'is flawed, because its consequence is that the more widespread and massive the violation, the less right to reparation for the victims'. Cordula Droegge,

focus is on individual criminal responsibility, which is mostly concerned with the intentional (or reckless) infliction of harm. It would seem, therefore, that current legal debate diverts attention from underlying issues affecting civilian lives and livelihoods, and does not effectively prevent users from ‘externalizing’ the heavy costs of the use of explosive weapons in populated areas onto civilians without providing adequate avenues for redress.⁸⁵

The explosive violence framework

Hitherto, IHL implementation and debates within the discourse it generates have not proven conducive to critical and constructive debate about civilian suffering from the use of explosive weapons in populated areas. This is at least partly because the legal discourse itself acts as a barrier to discussion: an ‘absolutist and legalistic attitude to discussion of civilian suffering means that most international discussion of civilian protection is self-censored as non-negotiable’.⁸⁶ Efforts over the last decade to address the humanitarian consequences of explosive remnants of war,⁸⁷ anti-vehicle mines, and cluster munitions⁸⁸ starkly underlined the shortcomings of existing frameworks such as IHL for fostering critical debate about ways in which systematically to reduce civilian suffering in armed conflict from the use of weapons. In the context of cluster munitions, the notion of banning those weapons that cause unacceptable harm to civilians would become an important benchmark for the so-called Oslo process leading to the Convention on Cluster Munitions in 2008. This initiative emerged after enough states concluded that existing IHL rules were not sufficient, proceeding in a manner resembling the international campaign to ban anti-personnel mines more than a decade earlier. As the logical implications of such effects-based framings sank in for some of those following these developments, it would lead to new thinking.⁸⁹ In 2009, the British non-governmental organization (NGO) Landmine Action (now Action on Armed Violence) drew many of these ideas together into a report entitled *Explosive Violence: The Problem of Explosive Weapons*, which featured a foreword written by the UN’s Emergency Relief

‘The interplay between international humanitarian law and international human rights law in situations of armed conflict’, in *Israel Law Review*, Vol. 40, No. 2, 2007, p. 354.

- 85 Michael W. Reisman, ‘The lessons of Qana’, in *Yale Journal of International Law*, Vol. 22, 1997, pp. 397–398. See also Eyal Benvenisti, ‘Human dignity in combat: the duty to spare enemy civilians’, in *Israel Law Review*, Vol. 39, No. 2, pp. 97–99.
- 86 H. Slim, above note 9, pp. 259 and 260: ‘Arguing on the basis of the law alone leads to a syllogistic position that allows for no discussion and no real reasoning.’ Citing humanitarian laws in an absolute fashion suggests ‘that there is no argument to be had on the subject and no reasoning to be made’.
- 87 Louis Maresca, ‘A new protocol on explosive remnants of war: the history and negotiation of Protocol V to the 1980 Convention on Certain Conventional Weapons’, in *International Review of the Red Cross*, Vol. 86, No. 856, 2004, pp. 815–835.
- 88 John Borrie, *Unacceptable Harm: A History of How the Treaty to Ban Cluster Munitions was Won*, UNIDIR, Geneva, 2009.
- 89 Brian Rappert and Richard Moyes, ‘The prohibition of cluster munitions: setting international precedents for defining inhumanity’, in *Nonproliferation Review*, Vol. 16, No. 2, 2009, pp. 237–256.

Coordinator and proposed explosive weapons as a distinct technological and ethical categorization or framework.⁹⁰

Although there were few signs before 2009 that explosive weapons were explicitly treated as a distinct category by researchers or policy-makers, many humanitarian organizations had long been aware of data indicating that blast and fragmentation injuries cause substantial and ongoing human suffering and impose severe developmental costs.⁹¹ A retrospective cohort study of events involving armed violence, conducted by random selection over a five-year period and published in 2005, showed that ‘a common phenomenon of people using explosives against civilians as a means to express their grievances could be highlighted’. However, the authors also noted that: ‘To our knowledge, this has not been expressed or examined as a discrete policy issue or in public health terms’.⁹² Interest in measuring and monitoring aspects of armed violence was growing, especially regarding civilian casualties in conflicts in Iraq and Afghanistan,⁹³ and would reveal explosive weapons such as IEDs and air-delivered munitions as significant causes of death, injury, and infrastructural damage.⁹⁴ But such studies often failed to make a conceptual connection between the characteristics of harm and the use of weapons that produce blast and fragmentation effects. Drawing on a dataset based on English-language media reports of incidents of explosive violence worldwide from April to September 2006, collected in collaboration with the global health charity Medact, Landmine Action’s report offered five observations grounded in evidence about characteristics of explosive violence treated as a coherent phenomenon:

- within a short sample period, explosive violence was geographically widespread, but with intensive incidence in a few contexts;
- the incidents of explosive violence generally produced multiple deaths and injuries;
- explosive violence killed and injured significant numbers of people who were not combatants;

90 R. Moyes, above note 6.

91 In addition to immediate death and injury, researchers also came to examine the developmental impacts of armed violence, including explosive violence, on communities. In recent years, the 2006 Geneva Declaration on Armed Violence and Development has formed one framework for integrating evidence and policy, with the related 2010 Oslo Commitments emphasizing measurability as an important component of achieving armed violence reductions in differing contexts. See Geneva Declaration on Armed Violence and Development, 7 June 2006, available at: www.genevadeclaration.org (last visited 3 May 2011); Oslo Commitments on Armed Violence: Achieving the Millennium Development Goals, 12 May 2010, available at: <http://www.osloconferencearmedviolence.no> (last visited 3 May 2011).

92 Nathan Taback and Robin M. Coupland, ‘Towards collation and modelling of the global cost of armed violence on civilians’, in *Medicine, Conflict and Survival*, Vol. 21, No. 1, 2005, p. 25.

93 See Kelly M. Greenhill, ‘Counting the cost: the politics of numbers in armed conflict’, in Peter Andreas and Kelly M. Greenhill (eds), *Sex, Drugs and Body Counts: The Politics of Numbers in Global Crime and Conflict*, Cornell University Press, Ithaca, NY, 2010, pp. 127–158.

94 See, for instance, Madelyn Hsiao-Rei Hicks *et al.*, ‘The weapons that kill civilians: deaths of children and noncombatants in Iraq, 2003–2008’, in *New England Journal of Medicine*, Vol. 360, No. 16, 16 April 2009, pp. 1585–1588.

- attacks with explosive weapons in populated areas were linked to elevated levels of civilian harm; and
- in attacks in populated areas, civilians made up the great majority of victims.⁹⁵

Landmine Action's report argued that, although there has been no categorical discussion of explosive weapons in international public discourse, policy, or law, states already treat explosive weapons as a distinct category in their own common usage and practice. States tend to limit the use of explosive weapons to the 'special circumstances' of armed conflict, often occurring outside their territory among people to whom they are less accountable than their own population. Conversely, states generally abstain from using explosive weapons for purposes of domestic law enforcement and they claim a monopoly over their legal control, excluding them from private ownership.⁹⁶

The explosive violence framework as constructed in Landmine Action's report provides a basis on which critically to question prevailing assumptions about the acceptability of explosive weapons use in populated areas. Why, for instance, do governments not seem to consider their actions accountable – or as accountable – when it comes to protecting the lives of civilians from explosive violence in societies other than their own? In a globalizing, urbanizing age of insurgency and 'war amongst the people'⁹⁷ it is an important question, and a logical extension of efforts to protect civilians from the hazards of cluster munitions and anti-personnel mines. For that matter, the CCW's protocol on explosive remnants of war⁹⁸ is an existing treaty that goes a long way towards recognizing explosive weapons as a category in need of special controls: why accept special responsibilities regarding the after-effects of explosive weapons but not also recognize the categorical problems with this technology at time of use? Unlike weapons such as firearms, explosive weapons are indiscriminate within their zone of effect, both spatially and temporally, which means that they are prone to impacts on civilians both across the immediate environment and in the longer term if used in populated areas.

Landmine Action's report suggested that several types of effort for building the agenda on explosive weapons present themselves. The first is to build the debate – to raise awareness and increase acceptance of basic concepts such as explosive weapons and populated areas, and to widen recognition that the use of the former in the latter represents a distinct humanitarian and ethical problem in policy discourse. A second step is to build transparency around the use of explosive force in populated areas through better data collection and analysis, not only by NGOs and international organizations but also by states themselves. (It is, after all, tendentious for these users of explosive weapons to argue that they are protecting civilians if they make no effort to demonstrate their claims based on facts.) Historically, such evidence was necessary to 'shift the burden of proof' of acceptability on to users, and for new norms on landmines, explosive remnants of war, and cluster munitions to

95 For a description of the methodology for this study, see R. Moyes, above note 6, pp. 70–71.

96 *Ibid.*, pp. 10–12. As noted above, this monopoly is increasingly challenged by non-state actors.

97 R. Smith, above note 32, p. xiii.

98 2003 CCW Protocol V.

emerge. Third, accountability could be enhanced if states were to publish policy statements regarding when the use of explosive weapons is acceptable, including in populated areas, and whether or how this relates to accountability for such use. Fourth, states in particular should recognize and act on their responsibilities to the victims of explosive weapons, in the same way as they have already accepted similar obligations through treaties such as the CCW's 2003 Protocol V, the 1997 Anti-Personnel Mine Ban Convention, and the 2008 Convention on Cluster Munitions.

Building an action-oriented research and policy agenda on the use of explosive weapons in populated areas

The explosive violence framework could provide 'a powerful point of engagement for organisations and institutions concerned with civilian protection'⁹⁹ and others. A growing number of actors have already begun to engage with the problems that explosive weapons use poses to humanitarian protection, human rights, and development.

Progress to date in building the discourse and agenda-setting

The United Nations

As mentioned in the introduction, the UN Secretary-General has repeatedly expressed concern about the humanitarian impact of explosive weapons use in densely populated areas. His concerns appear to have resonated strongly within the family of UN agencies and institutions in the areas of development promotion, humanitarian co-ordination, staff security, refugee and child protection, mine action, and disarmament, since explosive violence is increasingly apparent as a theme in statements and items for consideration in working-level policy processes.¹⁰⁰

Early steps to raise awareness were facilitated in part by a project entitled 'Discourse on Explosive Weapons' (DEW) at the UN Institute for Disarmament Research (UNIDIR), which commenced in early 2010. The DEW project organized several symposia, bringing together practitioners and policy-makers in order to stimulate discussions on explosive weapons issues and explore ways of addressing the humanitarian challenges involved. UNIDIR published several briefing papers and summary reports, and disseminated explosive-weapons-related information via a dedicated website.¹⁰¹

99 R. Moyes, above note 6, p. 10.

100 See, for instance, *Deputy Secretary-General, at Meeting on Cluster Munitions Treaty, Seeks Action on Comparable Issues: Anti-Vehicle Mines, Explosives in Populated Areas*, UN Department for Public Information, UN Doc. DSG/ SM/531 DC/3266, 9 November 2010. Explosive weapons issues have been raised during 2010 and 2011 in the UN inter-agency process on mine action, in the context of work on UN staff safety and security from IEDs, and in April 2011 in the Global Protection Cluster.

101 All documents produced by the DEW project are available at: <http://explosiveweapons.info/> and <http://www.unidir.org/>. The DEW project, together with others, also disseminates news about explosive weapons

Alongside this, the UN Office for the Coordination of Humanitarian Affairs (OCHA) played an important role in raising awareness of the impact of explosive weapons on civilians in armed conflict. The head of OCHA, the Under-Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator, repeatedly emphasized the humanitarian challenge posed by the use of explosive weapons in populated areas, for example in a statement at the Security Council's open debate on the protection of civilians in July 2010,¹⁰² and, more recently, in statements calling for the protection of civilians in Libya¹⁰³ and Côte d'Ivoire.¹⁰⁴ OCHA also co-hosted two explosive-weapons-focused events in September 2010,¹⁰⁵ raised explosive-weapons-related concerns in its briefings to the Security Council's informal expert group on the protection of civilians, and supported inclusion of the issue in the Secretary-General's reports on civilian protection.

In his latest report on the protection of civilians in armed conflict, the Secretary-General made specific recommendations, calling on

Member States, United Nations actors and international and non-governmental organizations to consider the issue of explosive weapons closely, including by supporting more systematic data collection and analysis of the human costs of their use. This is essential to deepening the understanding of the humanitarian impact of such weapons and to informing the development of policy and practice that would strengthen the implementation of international humanitarian and human rights law . . .

I would also urge increased cooperation by Member States, both in terms of collecting and making available to the United Nations and other relevant actors information on civilian harm resulting from the use of explosive weapons and in terms of issuing policy statements that outline the conditions under which explosive weapons might be used in populated areas.¹⁰⁶

incidents causing civilian harm via the twitter feed <http://twitter.com/explosiviolence> (all last visited 3 May 2011).

102 UN Security Council, sixty-fifth year, 6354th Meeting, Wednesday, 7 July 2010, 10 a.m., New York, UN Doc. S/PV.6354, p. 6.

103 UN OCHA, 'United Nations humanitarian chief highlights humanitarian consequences of continued fighting in Libya', New York, 17 March 2011, available at: <http://reliefweb.int/node/392448/pdf> (last visited 3 May 2011). In May 2011, with reference to fighting in the Libyan town of Misrata, the UN's Emergency Relief Coordinator stated that 'Explosive weapons have an immediate and indiscriminate impact, killing and injuring those caught in the blast radius, including civilians and the damage to buildings and infrastructure hampers longer term reconstruction and development. I reiterate my call on parties to conflict to refrain from the use of these weapons in densely populated areas.' 'United Nations Under-Secretary General for Humanitarian Affairs and Emergency Relief Coordinator Valerie Amos: Briefing to the Security Council on Protection of Civilians, New York, 10 May 2011', available at: <http://reliefweb.int/node/400939> (last visited 13 May 2011).

104 UN OCHA, 'United Nations Humanitarian Chief alarmed at Cote D'Ivoire violence', New York, 18 March 2011, available at: <http://reliefweb.int/node/392465/pdf> (last visited 3 May 2011).

105 On 14 September 2010, OCHA, together with the Permanent Mission of Austria to the United Nations in New York, co-hosted a panel discussion on the humanitarian impacts of explosive weapons, and on 15 September 2010, OCHA co-organized a symposium on explosive weapons together with the DEW project. More information on the latter event is available at: <http://explosiveweapons.info/events0/explosive-weapons-use-in-populated-areas-a-pressing-humanitarian-concern/> (last visited 3 May 2011).

106 *Report of the Secretary-General*, 2011, above note 5, paras. 50–51.

These recommendations offer a broad mandate for the international community to orient itself toward confronting the effects of explosive weapons on civilians, initially by developing a more detailed picture of the humanitarian problem and policies and practices around the use of explosive weapons. It also suggests opportunities for engagement, in particular by states, to clarify how they regard their obligations to protect civilians, and prompt thinking on steps to enhance the level of civilian protection in practical terms.

The International Committee of the Red Cross

An important strand of ICRC humanitarian work in recent decades has been to focus attention on the human costs of the wounding effects of weapons of various kinds. Evidence of the humanitarian problem this poses can be seen in data collected by the ICRC through its field hospitals.¹⁰⁷ An ICRC study on the effects of violence on the provision of health care, published in mid-2011, explicitly identifies explosive weapons as one of the principal forms of violence affecting hospitals, and other healthcare facilities, medical vehicles, healthcare personnel, and the people in their care.¹⁰⁸

Despite this, the ICRC has tended to frame the humanitarian problems posed by use of explosive weapons primarily in terms of international rules governing the conduct of hostilities, especially the rules of distinction and proportionality, and it often uses legalistic terminology in its humanitarian communication. Of late, however, the ICRC appears to be lending greater emphasis to the specific problems that explosive weapons pose for civilians in that communication. Senior ICRC staff publicly stated in 2010, for instance, that ‘Waging battle in densely populated urban areas, sometimes with highly explosive weapons’ was an example of the constant evolution in the means and methods of warfare contributing to the suffering of civilians in today’s conflicts.¹⁰⁹ The ICRC president noted that ‘military operations conducted in densely populated urban areas, often using explosive force... can have devastating humanitarian consequences for civilian populations in such environments’,¹¹⁰ later adding that it is very difficult to respect the rules on distinction and proportionality in such situations.¹¹¹

107 R. Coupland and H. Samnegaard, above note 17. For more information about the particular wounding patterns caused by such weapons, see ICRC, *Wound Ballistics: An Introduction for Health, Legal, Forensic, Military and Law Enforcement Professionals*, ICRC, Geneva, 2008.

108 ICRC, *Health Care in Danger: a Sixteen-country Study*, 2011, available at: <http://www.icrc.org/eng/resources/documents/report/hcid-report-2011-08-10.htm> (last visited 20 December 2011).

109 See the statement by Yves Daccord, director-general of the ICRC, in UN Security Council, sixty-fifth year, 6427th Meeting, Monday, 22 November 2010, 10 a.m., New York, UN Doc. S/PV.6427, p. 10.

110 ‘Sixty years of the Geneva Conventions and the decades ahead’, statement by Jakob Kellenberger, President of the ICRC, 9 November 2009, available at: <http://www.icrc.org/eng/resources/documents/statement/geneva-convention-statement-091109.htm> (last visited 3 May 2011). See also ‘Geneva Conventions still going strong at 60’, interview with Knut Dörmann, head of the ICRC’s legal division, 7 August 2009, available at: www.icrc.org/web/eng/siteeng0.nsf/htmlall/geneva-convention-interview-120809 (last visited 3 May 2011).

111 Pierre Ruetschi, ‘Jakob Kellenberger “Combien de morts faudra-t-il encore à Gaza!”’, in *24 heures*, 2 February 2009, available at: <http://www.24heures.ch/actu/monde/jakob-kellenberger-combien-morts-faudra-gaza-2009-02-01> (last visited 4 May 2011).

The ICRC further elaborated on the problem in a report on IHL and the challenges of contemporary armed conflicts prepared for the 31st International Conference of the Red Cross and Red Crescent. In that report, the ICRC took the position that: ‘The use of explosive weapons in densely populated areas exposes the civilian population and infrastructure to heightened – and even extreme – risks of incidental or indiscriminate death, injury or destruction’. Moreover, ‘due to the significant likelihood of indiscriminate effects and despite the absence of an express legal prohibition for specific types of weapons, the ICRC considers that explosive weapons with a wide impact area should be avoided in densely populated areas’.¹¹²

Interested states

Although there was little echo from states in the 2009 Security Council open debate on the Secretary-General’s concerns about the impacts of explosive weapons use on civilians,¹¹³ there was some change discernible during 2010. In September, together with OCHA, Austria hosted a panel discussion on humanitarian impacts of explosive weapons in New York. In the November 2010 Security Council open debate among states, an increase was noticed in statements relating to the humanitarian problems posed by the use of explosive weapons in the vicinity of civilians. A number of representatives – including those from Australia, Costa Rica, Mexico, Norway, Slovenia, and the European Union – shared their concerns about the threat posed to civilians by the use of explosive weapons in populated areas and the humanitarian consequences of such use, and some supported the Secretary-General’s recommendations quoted earlier.¹¹⁴ Switzerland considered that the ‘use of certain explosive weapons in densely populated areas is clearly a major source of suffering for civilians in situations of armed conflict’ and said that the issue should be considered further, ‘especially with a view to better implementing international humanitarian law’.¹¹⁵ Mexico condemned ‘the use of explosives in areas where civilian populations are concentrated because of their indiscriminate effects and the attendant risks’ and expressed the hope that the Security Council ‘will in the future adopt more forceful measures in response to the humanitarian impact of the use of explosives in densely populated areas’.¹¹⁶ At subsequent Security Council debates on the protection of civilians, additional states voiced concern about the humanitarian

112 *International humanitarian law and the challenges of contemporary armed conflicts*, report prepared by ICRC, Geneva, October 2011, for 31st International Conference of the Red Cross and Red Crescent, Geneva, 28 November–1 December 2011, Doc. 31IC/11/5.1.2, pp. 40–42.

113 UN Security Council, sixty-fourth year, 6151st Meeting, Friday 26 June 2009, 10 a.m., New York, UN Doc. S/PV.6151, 26 June 2009 and UN Doc. S/PV.6151 (Resumption 1). Several government representatives deplored the humanitarian impacts of improvised explosive devices detonated in high-density civilian areas, the use of cluster munitions or air bombardments, and the impact of landmines and explosive remnants of war, but only one state, Syria, used the term ‘explosive weapons’.

114 See the statements of Australia, Austria, Costa Rica (on behalf of the Human Security Network), Mexico, Norway, Slovenia, Switzerland, and the European Union, UN Doc. S/PV.6427 and UN Doc. S/PV.6427 (Resumption 1), above note 109.

115 *Ibid.*, p. 31.

116 *Ibid.*, pp. 23–24.

impacts of explosive violence. In November 2011, Norway invited others to hold discussions on this issue ahead of the next debate.¹¹⁷

Civil society

Landmine Action's 2009 Explosive Violence report provided both a conceptual basis for treating explosive weapons as a category and some initial research into the pattern of harm that such weapons cause in populated areas. Since then, a number of other NGOs have begun to undertake work to increase knowledge about how explosive violence affects particularly vulnerable groups. Concerned about children being killed or injured by explosive weapons, or dying because of damage caused to health services and infrastructure, Save the Children UK published a study in early 2011 that analysed impacts on children of the use of explosive weapons in populated areas in a number of contexts, including Afghanistan, Iraq, the Occupied Palestinian Territory, Somalia, and Yemen; and a detailed policy analysis was published by the Dutch NGO, IKV Pax Christi.¹¹⁸ In March 2011, Action on Armed Violence published a study of 100 incidents of explosive weapons use around civilians, which illustrated and analysed patterns of harm.¹¹⁹ Meanwhile, explosive weapons have begun to be identified as an analytical category in studies of civilian casualties such as those of the British-based project Iraq Body Count.

This has helped to prompt recognition among a broader group of NGOs about the particular humanitarian problems that explosive weapons appear to cause. In March 2011, a group of NGOs met in Geneva to form a coalition focused on this theme. The International Network on Explosive Weapons (INEW) was founded by Action on Armed Violence, Handicap International, Human Rights Watch, Medact, Norwegian People's Aid, Oxfam International, IKV Pax Christi, and Save the Children UK. Many of these civil society actors have worked together in the past on explosive-weapons-related problems including landmines, cluster munitions, and explosive remnants of war. INEW calls for 'immediate action to prevent human suffering from the use of explosive weapons in populated areas'.¹²⁰

The outline above indicates that investigating and tackling the effects of explosive weapons on civilians is becoming a more urgent concern among a broad range of actors in the international community. Building the debate is already well underway. Significantly, the actors with an interest in the humanitarian problem of explosive weapons do not appear limited to one particular stream of policy work, something that may reflect their recognition of the transversal nature of this problem. However, it also underlines the need for a coherent research and policy

117 See UN Docs. S/PV.6531 and S/PV.6531 (Resumption 1) of 10 May 2011, and UN Docs. S/PV.6650 and S/PV.6650 (Resumption 1) of 9 November 2011.

118 Kerry Smith, *Devastating Impact: Explosive Weapons and Children*, Save the Children UK, London, 2011, available at: <http://www.savethechildren.org.uk/resources/online-library/devastating-impact-explosive-weapons-and-children> (last visited 24 February 2011); R. Boer *et al.*, above note 40.

119 E. Cann and K. Harrison, above note 22.

120 Information on INEW's call, membership, and publications is available at: <http://www.inew.org/> (last visited 20 December 2011).

agenda to build upon recognition of the humanitarian problem and generate further direction and momentum toward effective ways in which to respond. The explosive violence framework suggests several next steps. It is to some ideas about an agenda, and identifying some of its necessary elements that we now turn.

Building a clearer picture of the human costs

The central proposition of the explosive violence framework is that elevated levels of civilian harm results from the use of explosive weapons in populated areas, and that these elevated levels of harm are prevalent across a range of spatial and temporal contexts. Although evidence from a number of different studies appears to support this proposition, there is a need for further research into the pattern of harm in order to deepen understanding and inform the policy debate, in line with the UN Secretary-General's recommendation, supported by a number of states.

More case studies into the pattern of harm of explosive weapons use in particular situations would be helpful, both individually and in aggregate, in illustrating the actual effects of the use of explosive weapons.¹²¹ Useful data can also be gleaned from other sources, such as Human Rights Watch assessments of the impact of recent hostilities on civilians in Southern Lebanon, Georgia–Russia, and Somalia, although such reports until recently did not use the terminology of explosive weapons.¹²² Being able readily to compare the effects of explosive weapons use using more common criteria, especially the manner in which data is categorized, would make it easier to test assumptions and scrutinize user claims.¹²³

Analysis of large relevant datasets for trend information about explosive weapons use would help in mapping the pattern of harm. To this end, tools developed by Coupland and Taback¹²⁴ to model the global cost of armed violence on civilians statistically have already been used to a limited initial extent in the explosive violence context, based on collation, coding, and analysis of media reporting.¹²⁵ Meanwhile, several projects have sought to collect casualty data for Iraq since the 2003 invasion, and to analyse these datasets for trends, including deaths and injury from use of explosive weapons, according to type of perpetrator. In Afghanistan, the International Security Assistance Force (ISAF), the UN Assistance Mission to Afghanistan (UNAMA), and others have each collected their own civilian casualty datasets, including various weapons-related categorizations (air strike, IED, etc.). However, until portions were released recently to

121 AOV has already produced research of this kind. See *ibid.*, and R. Moyes, above note 6.

122 See, for example, HRW, 'Somalia: stop war crimes in Mogadishu: United Nations should establish international commission of inquiry', 14 February 2011, available at: <http://www.hrw.org/en/news/2011/02/14/somalia-stop-war-crimes-mogadishu> (last visited 4 May 2011). See also HRW and Harvard Law School's International Human Rights Clinic, above note 81.

123 AOV has transparently outlined the assumptions about data and meaning of the terms it uses, including in its bi-weekly reports on explosive violence; see above note 15.

124 N. Taback and R. Coupland, above note 92, pp. 19–27.

125 R. Moyes, above note 6.

the journal *Science*, these datasets were not available in the public domain.¹²⁶ This highlights two challenges associated with large datasets of civilian casualties. First, for a variety of reasons, it can be difficult to obtain access to datasets.¹²⁷ Second, the way in which data is categorized in these datasets is a significant factor determining the explosive-weapons-relevant trends (if any) that can be observed. If these political and methodological challenges can be overcome, significant opportunity exists for systematic investigation into establishing whether there is a pattern of harm from explosive weapons use across different geographical contexts.

Such data could also be of value in developing improved technical analysis of which explosive weapons cause what kind of harm to civilians, and thus point toward policy options to prevent such harm. Many militaries have, since World War II, developed sophisticated techniques to improve the technical characteristics of their explosive munitions, to increase their lethality using insights from wound ballistics and other disciplines, and to enhance protection for friendly combatants on the battlefield from them (for instance, ‘danger close’ buffer zones). In contrast, a systematic understanding of the gamut of effects on civilians of explosive weapons in populated areas appears to lag behind, as shown in the course of recent international efforts to address the risks of cluster munitions to civilians: ‘major military nations have basic deficiencies in their knowledge about the humanitarian consequences associated with their use of force’.¹²⁸ Questions to raise include: Are some explosive weapons worse in enclosed or semi-enclosed urban environments than others, for instance, in terms of blast or fragmentation risk to civilians in the vicinity? How do explosive weapons vary in their impact on physical infrastructure essential to civilian wellbeing, such as water and sanitation networks? How do concentrations of structures such as buildings modify the effect radiuses of different explosive weapons? Findings of such technical research could inform operational measures to enhance civilian protection, and user policies.

Critically examining norms governing explosive weapons policies and practices

Research into the pattern of civilian harm, and the technological characteristics and contexts of use associated with that harm can be usefully combined with research into the social and legal norms governing explosive weapons policies and practices. Work on the latter could, for example, contribute to articulating the hitherto implicit transition between situations characterized by a strong presumption against the use of explosive weapons by states (law enforcement) to situations marked by general acceptability of such use in the vicinity of civilians (armed conflict).

126 John Bohannon, ‘Counting the Dead in Afghanistan’, in *Science*, Vol. 331, No. 6022, 11 March 2011, pp. 1256–1260.

127 American Civil Liberties Union (ACLU), *Request under Freedom of Information Act*, 13 January 2010, available at: <http://www.aclu.org/national-security/predator-drone-foia-request> (last visited 4 May 2011).

128 Brian Rappert and Richard Moyes, ‘Enhancing the protection of civilians from armed conflict: precautionary lessons’, in *Medicine, Conflict and Survival*, Vol. 26, No. 1, January–March 2010, p. 42.

Future research in this area could involve a survey of national and international policies and practices governing the production, stockpiling, transfer, and use of explosive weapons, including an analysis of laws and policies determining who may use explosive weapons against whom, among whom, where, and for what purpose. This could also include an examination of protective standards applicable to activities involving explosive weapons, and the responsibility assumed by users towards persons put at risk and those harmed by such activities.¹²⁹

States, in particular, should heed the UN Secretary-General's call and issue policy statements about what use of explosive weapons in populated areas they consider acceptable. Such information would improve transparency about targeting processes that have escaped scrutiny under IHL. It would also increase user accountability towards domestic publics and towards victims of explosive violence. Revealing that states accept different levels of risk to civilians depending on the context of use would help to shift the burden of proof onto users to justify when, why, and under what conditions explosive weapons may be employed in populated areas. In combination with evidence of a pattern of civilian harm from the use of explosive weapons in populated areas, this could contribute to 'de-normalizing' recourse to this practice in situations of armed conflict and persuade users to change their policies and practices associated with elevated civilian harm.

Conclusion

In this article we have argued that, historically, the use of explosive weapons in populated areas has been a significant source of harm to civilians during armed conflict, and continues to be so today despite international rules devised to protect civilians from the effects of hostilities. A consistent pattern of civilian harm appears to manifest itself when explosive weapons are used in populated areas. However, at least until recently, states have not acknowledged that there might be a humanitarian problem beyond 'accidental' or atypical incidents of harm from explosive violence, or particular worst culprits such as cluster munitions. Yet many of the arguments used to justify controls over perceived worst culprits also apply to other explosive weapons, which in practice can cause equivalent harm when used within concentrations of civilians. Indeed, some of those states opposing, for instance, international bans on anti-personnel mines or cluster munitions insisted that restrictions on these weapons would compel them to deploy 'worse' weapons such as heavy artillery or rockets out of military necessity. But such threats prompt a stark question: if it is unacceptable to use one kind of explosive weapon, why would it be acceptable to use another if the harm to civilians is similar or worse?

Of course, reconciling the brutality of armed conflict with civilized norms such as protecting civilians is a conundrum for which humanitarian law provides principles that are at times in tension with one another. Often, it seems, military necessity trumps concern for the protection of civilians. In this regard, the explosive

129 UNIDIR's 'Norms on Explosive Weapons' (NEW) project is carrying out research in this area.

violence framework, and considering explosive weapons as a category in particular, provides one way to formulate questions and collect relevant evidence in order critically to examine the claims made by explosive weapons users of all kinds about their commitment to protect civilians, to stigmatize the use of explosive weapons in populated areas, and to hold users to greater account for the harm they inflict on civilian populations. It invites a humanitarian discourse that welcomes evidence, rather than a discourse favouring the status quo based on elastic notions of military necessity and proportionality that lack transparency.

Tools for research and policy analysis such as the explosive violence framework are especially important when states claim civilian protection to rationalize their explosive weapons use, as in contemporary conflicts in Afghanistan, Libya, and Côte d'Ivoire. It is striking that, in the context of the last, in 2011, the UN Security Council explicitly held up the use of 'heavy weapons' as a threat to the civilian population that should be prevented with all necessary means. Without defining or even describing this threat, the Security Council authorized military intervention that foresaw the use of explosive weapons in populated areas that could pose equally acute hazards to civilians.¹³⁰ This underlines a risk that, without informed understanding of the effects of explosive weapons as a category and in the absence of rigorous examination of user claims about these weapons (such as accuracy), the discourse remains a circular one in which laws are perceived as rationalization rather than restraint. Not only will this breed cynicism about the value of legal rules on the means and methods of warfare among states, but it undermines efforts to stigmatize use of explosive weapons in populated areas by non-state actors at a time when the former are losing their monopoly on technology of explosive force to the latter.

On the other hand, a discourse based on evidence about the effects of explosive weapons and norms around their use or non-use would help to clarify which explosive weapons cause a pattern of elevated harm to civilians when used in populated areas, and hopefully lead to meaningful efforts to prevent their use in those contexts by anyone. Whether enhanced prevention is best achieved through more international treaty-making or other forms of normative strengthening remains to be seen, especially as current research and advocacy on the use of explosive weapons in populated areas is at a formative stage. Nevertheless, greater evidence and more sophisticated argumentation about the effects of explosive weapons on civilians will increase pressure on users of explosive weapons to justify their policies and their actions. History shows that such critical examination is usually necessary in order to call into question general attitudes about means and methods of warfare, and to generate the political and diplomatic momentum necessary to improve humanitarian standards for civilian protection in armed conflict.

¹³⁰ *The situation in Côte d'Ivoire*, UN Security Council resolution S/RES/1975 of 30 March 2011, operative para. 6. See also African Court on Human and Peoples' Rights, *In the Matter of African Commission on Human and Peoples' Rights v. Great Socialist People's Libyan Arab Jamahiriya*, Order for Provisional Measures, 25 March 2011, para. 2.