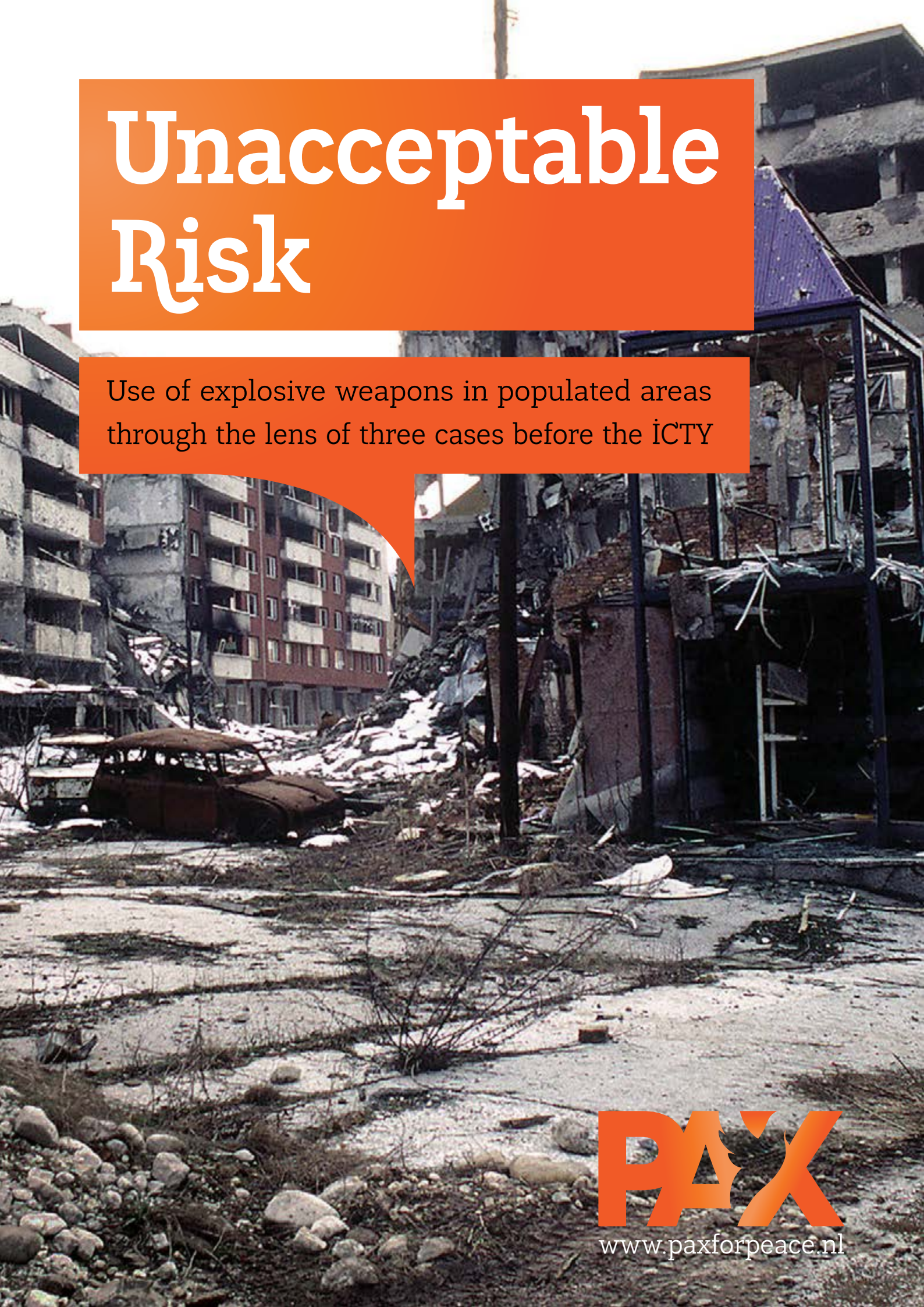
Unacceptable Risk

Use of explosive weapons in populated areas through the lens of three cases before the ICTY



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About PAX (formerly IKV Pax Christi)

PAX means peace. Together with people in conflict areas and concerned citizens, **PAX** works to build just and peaceful societies all over the world. **PAX** brings together people who have the courage to stand for peace. Everyone who believes in peace can contribute. We believe that all these steps, whether small or large, truly matter and will contribute to a just and peaceful world.

Our peace building work in conflict areas is based on values of human dignity and solidarity with peace activists and victims of war violence. In our peace work, the protection and security of civilians leads our responses to conflicts.

Colophon

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Introduction and background

'... I was injured. At first, I didn't realise it. I looked to my right leg. ... My boot was off. ... I had some bleeding. ... I started to crawl towards where my daughter was. I wanted to get to her, to see whether she was alive. ... I was somewhere in the middle part of the market. ...around me there were many injured people. It is very difficult to explain. There was a man without a leg. ... everyone was crying or whimpering, but I wasn't sure that it was that loud, because I think my ears were deafened from the blast. But the more I crawled, the situation was worse. I did not know where to look. Wherever I turned around me, there were lots of body parts. There was a lot of blood. There was lots of everything, the people.'[1]

The above testimony describes the immediate aftermath of the mortar shelling of Markale market, a crowded open-air market in Sarajevo's old town, around mid-day on 5 February 1994. Markale market was shelled again on 28 August 1995. On both occasions a large number of people were wounded, many fatally. The great majority were civilians, including many children.[2] These shelling incidents were among the most horrendous attacks during the siege of Sarajevo. Shelling and bombardment with mortars and other explosive weapons was a common occurrence in many cities, towns and villages in the former Yugoslavia during the wars of the early 1990s. Some locations were bombed repeatedly and over prolonged periods of time, causing death, injury and trauma to their inhabitants, destroying livelihoods and infrastructures, and forcing many to flee their homes. Since then, explosive weapon use in other contexts has resulted in the same pattern of severe harm to civilians, most recently in Gaza, Iraq, Syria and Ukraine.

The need to strengthen the protection of civilians from the humanitarian impact of explosive weapons in populated areas has emerged as a key concern for international policymakers in recent years. In August 2013, the United Nations (UN) Secretary-General called on the UN Security Council and UN member states to recognize this critical humanitarian issue. He said:

> *'We need to better understand the types of explosive weapons that are most problematic. We need to examine how existing international law can help regulate use. And we need to consider the concrete steps that can be taken to reduce the humanitarian impact of explosive weapons in populated areas.'*[3]

International expert discussions have stressed that more consideration should be given to the 'wide-area effects' that certain explosive weapons present, and the need to better understand policy and practice in targeting in the hope of developing practical operational steps to reduce harm to civilians.[4]

This report analyses three cases before the International Criminal Tribunal for the former Yugoslavia (ICTY) with a view to contributing to a better understanding of policy and practice in the use of explosive weapons in populated areas and to identifying operational steps conducive to reducing harm to civilians.

Specific questions posed by the report are:

- What is deemed appropriate, acceptable or permissible with regard to explosive weapon use in a populated area? What is considered inappropriate, unacceptable or illegal?
- Are there explosive weapons, or practices involving explosive weapons, that are deemed particularly problematic in respect of the risk of harm to civilians?

* Unless otherwise stated, footnote references are omitted from quotes and emphasis is in the original. Where applicable, the ranks and affiliations of military experts refer to the time of their testimony, respectively, drafting of expert report, or interview.

1 Testimony of Ezrema Boskailo, *Galić* (Public transcript of hearing, 7 March 2002) 5044-5046. Transcripts of hearings before the ICTY can be accessed at http://www.ictytranscripts.org/.

2 According to the Trial Chamber in *Galić*, the shelling on 5 February 1994 killed 66 people and wounded over 140. In another case, the Trial Chamber found that the shelling on 28 August 1995 had killed at least 35 persons and wounded at least 78 persons, many of them seriously. The great majority of the wounded and all but one of the dead, were civilians. (*Galić* (Trial Chamber Judgment) IT-98-29 (5 December 2003) §3445; *D. Milošević* (Trial Chamber Judgment) IT-98-29/1-T (12 December 2007) §721.)

3 Statement by the UN Secretary-General, Ban Ki-moon, Open debate on the protection of civilians in armed conflict, Security Council, Sixty-eighth year, 7019th meeting, Monday, 19 August 2013, 10.45 a.m., New York, UN doc. S/PV.7019 (19 August 2013), p. 3. See also Report of the Secretary-General on the Protection of Civilians in Armed Conflict, UN doc. S/2012/376 (22 May 2012) §75; Report of the Special Representative of the Secretary-General for Children and Armed Conflict, UN doc. A/67/256 (6 August 2012) §69; *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, Report submitted to the 31st International Conference of the Red Cross and the Red Crescent, Geneva, Switzerland, 28 November - 1 December 2011, doc. 31IC/11/5.1.2, International Committee of the Red Cross (ICRC), 2011, p. 42. See also the compilation of governmental statements on the website of the International Network on Explosive Weapons (INEW) at http://www.inew.org/acknowledgements.

4 *Expert Meeting on Reducing the Humanitarian Impact of the Use of Explosive Weapons in Populated Areas, London, 23-24 September 2013*, Report, UN OCHA and Chatham House, 2013, p. 3.

- What factors are deemed relevant in assessing whether explosive weapon use carries an unacceptable or impermissible risk of civilian harm and what consideration is given to ‘wide-area effects’ in this regard?

Explosive weapons include air-dropped bombs, mortar shells, howitzer projectiles, cluster munitions, and rockets. Although different technical features and user practices influence the effects of explosive weapons, they all project blast and fragments outwards from the point of detonation. Persons and objects in the blast and fragmentation zone are affected without distinction. When explosive weapons are used in a populated area—a location containing concentrations of civilians—civilians make up the great majority of victims.[5] Every year, large numbers of children are among those killed and injured by explosive weapons.[6]

The use of explosive weapons that have wide area effects is associated with particularly high levels of direct death and injury among civilians.[7] Wide area effects can be caused by an individual explosive weapon having a large blast or fragmentation radius, multiple explosive weapons being launched at a wide area, insufficient accuracy in the delivery of an explosive weapon, or a combination of these factors.[8]

The pattern of harm associated with the use of explosive weapons differs markedly from that associated with other weapons, small arms fire, for example. Explosive weapons tend to cause severe, complex and often lethal injuries to persons in the immediate vicinity of an explosion. Incidents involving the detonation of an explosive weapon in a populated area tend to cause multiple casualties.[9] The great destructive force of certain explosive weapons can lead to the collapse of buildings crushing people within them.[10] In addition to direct harm, shelling and bombardment can deprive people of shelter and livelihoods, cause the breakdown of the drinking water, sanitation, electricity and transport infrastructures, impede access to education,[11] threaten

5 Data collected by the British civil society organization, Action on Armed Violence (AOAV), over the last few years illustrates this pattern of harm. AOAV recorded 37,809 people killed and injured by explosive weapons in 2,430 incidents in 2013. Of these casualties 82% were civilians (31,076 civilian deaths and injuries). (R. Perkins and H. Dodd, *Explosive Events: Monitoring Explosive Violence in 2013*, AOAV, 2014, p. 9.) For an introduction, see *Explosive Weapons in Populated Areas: Where Civilians Pay the Price*, Factsheet, PAX, 2014, http://www.paxforpeace.nl/our-work/programmes/explosive-weapons-in-populated-areas.

6 N. Martlew, *Childhood Under Fire : The Impact of Two Years of Conflict in Syria*, Save the Children, 2013, http://www.savethechildren.net/sites/default/files/libraries/Childhood%20Under%20Fire%205th.pdf.; M. Hsiao-Rei Hicks et al., ‘The Weapons that Kill Civilians: Deaths of Children and Noncombatants in Iraq, 2003–2008’ 360(16) *The New England Journal of Medicine* (16 April 2009) 1585–1588.

7 See e.g., R. Perkins, ‘Investigation: Syria’s Dirty Dozen’, AOAV, 23 September 2013, http://aoav.org.uk/2013/syrias-dirty-dozen/.

8 R. Moyes, M. Brehm and T. Nash, ‘Heavy weapons and civilian protection’, Article 36, 9 August 2012, http://www.article36.org/wp-content/uploads/2012/08/Heavy-weapons-and-civilian-protection.pdf

9 The effects of explosive weapons on human health are well-documented in military and other medical and forensics literature. See e.g., R. F. Bellamy and R. Zajtchuk (Eds), *Conventional Warfare, Ballistic, Blast, and Burn Injuries*, vol. 5, Textbook of Military Medicine, Series of Combat Casualty Care, Office of the Surgeon General, Department of the Army, USA, 1991; Z. Lovric et al., ‘Ballistic Trauma in 1991/92 War in Osijek, Croatia: Shell Fragments versus Bullets’ 143(1) *Journal of the Royal Army Medical Corps* (1997) 26–30.

10 ‘Causes and Types of Injuries Encountered by Handicap International while Working with Internally Displaced Persons in Syria’, Factsheet Syria, Handicap International, 2014, http://www.handicapinternational.be/sites/default/files/bijlagen/nieuws/hi_factsheet-syria-_21_01_2014_en.pdf.

11 *Damage to the Built Environment from the Use of Explosive Weapons*, Briefing paper, Article 36, September 2013, http://www.article36.org/wp-content/uploads/2013/09/DAMAGE.pdf; K. Brown, *Explosive Weapons and Grave Violations against Child*ren, Save the Children, 2013, http://www.savethechildren.org.uk/sites/default/files/images/Explosive_Weapons_and_Grave_Violations_Against_Children.pdf.

Having the ability to employ a weapon does not mean it should be employed.[13]

the provision of health care at a time when the population is at its most vulnerable,[12] and hinder the delivery of humanitarian aid.[14] Explosive weapon use in populated areas is also a key driver of population displacements.[15] Moreover, explosive remnants of war and toxic remnants of war can constitute long-term impediments to the safe return of displaced populations, and hamper recovery, reconstruction and human and socio-economic development. Some injuries, psychological trauma and loss of livelihoods can affect survivors for the rest of their lives and have repercussions on affected families and communities.[16]

With this report, PAX, a founding member of the International Network on Explosive Weapons (INEW),[17] seeks to contribute to ongoing discussions aimed at identifying ways to reduce civilian harm caused by explosive weapons. PAX works to build just and peaceful societies. Its response to conflicts is guided by values of human dignity and solidarity and the protection of civilians from harm. PAX is concerned about the profound humanitarian consequences of explosive weapons. The report finds that to successfully protect civilians against the effects of explosive weapons,

12 ICRC, *Health Care in Danger: a Sixteen-Country Study*, 2011, http://www.icrc.org/spa/assets/files/reports/report-hcid-16-country-study-2011-08-10.pdf.

13 *Fire Support*, [US] Department of the Army, Field Manual (FM) 3-09, 3 November 2011, section 1-56.

14 C. Wille and L. Fast, *Humanitarian Staff Security in Armed Conflict: Policy Implications Resulting from Changes in the Operating Environment for Humanitarian Agencies*, Policy Brief, Insecurity Insight, 2013, http://www.insecurityinsight.org/files/Policy_Brief_1_Humanitarian_Staff_and_Armed_Conflict.pdf.

15 S. Bagshaw, ‘Driving displacement: explosive weapons in populated areas’, 41 *Forced Migration Review* 2012, p. 12.

16 *The Impact of Explosive Violence on Mental Health and Psycho-social Well-being*, Briefing paper, Article 36, September 2013, http://www.article36.org/wp-content/uploads/2013/09/MENTALHEALTH.pdf.

17 For more information, visit http://www.inew.org/.

a clear boundary must be drawn against the use of explosive weapons with wide area effects in populated areas. PAX calls on states to work towards an international commitment aimed at preventing the use of explosive weapons with wide area effects in populated areas.

The first section of this report sets out the scope and methods of research. The section on key notions introduces technical terms taken from the military and legal fields and used in this report. The remainder of the report is structured around the cases selected for analysis and discusses the shelling of Sarajevo (*Galić*), the shelling of Zagreb (*Martić*) and the shelling of Knin (*Gotovina et al.*). The conclusion presents key findings, and the report ends with policy recommendations. ♦

Methods and scope

This report concentrates on what—as a matter of policy and practice—is deemed appropriate, acceptable or permissible regarding the use of explosive weapons in populated areas. It is based on an analysis of texts and interviews with military experts. Aside from texts citing national and international laws governing the use of force, texts presenting policy and practice in this regard include military doctrines, manuals and rules of engagement.

Most states strictly regulate who may possess and use explosive weapons through domestic laws. Such use tends to be reserved for the state's own agents and is generally limited to use by its armed forces for combat operations. Only a few states do, however, disclose these texts.

As the ICTY court records and most of the proceedings and materials are public, they served as an important source of information for this report. Trials call attention to the circumstances of explosive weapon use and underline information on the weapons, doctrines, procedures and processes involved, and on the consequences of weapon use. Court materials also reveal the arguments advanced by judges, lawyers and expert witnesses to justify or condemn use in a specific case. Judgments are particularly significant to this study because international case law influences the interpretation and development of customary international law as well as international treaty law and national policy.

PAX interviewed three expert witnesses and received one written answer to its questionnaire.[18] All of these expert witnesses submitted written testimony to the ICTY in one or several cases analysed for this report. **The views expressed in this report are the sole responsibility of PAX. They do not necessarily represent the views or opinions of the experts interviewed.**

The report focuses on three cases before the ICTY: *Martić* (IT-95-11), *Galić* (IT-98-29), and *Gotovina et al*. (IT-06-90).[19] These cases were selected as they comprehensively discuss the use of explosive weapons in populated areas. The texts analysed include judgments and decisions rendered by the Trial and Appeals Chambers of the Tribunal, expert reports on matters pertaining to explosive weapon use submitted to the Tribunal by the Prosecution or the Defence (irrespective of whether or not these reports were admitted into evidence) and briefs and transcripts of oral testimony given by expert and other witnesses. In addition, texts citing military doctrine, operational rules and regulations and secondary literature were consulted.[20]

The selected cases focus on events that took place in and around Sarajevo from 10 September 1992 to 10 August 1994 (*Galić*), in Zagreb from 2 to 3 May 1995 (*Martić*), and in and around Benkovac, Gračac, Knin and Obrovac from 4 to 5 August 1995 (*Gotovina et al*.). All of these locations are 'built-up' areas with permanent civilian concentrations as opposed to refugee camps. The cases, however, differ significantly with regard to time periods (2 years versus a couple of days) and the consequences of explosive weapon use in terms of casualties and material damage. The three cases also involve different explosive weapon users and different explosive weapon types.

Looking at policy and practice in explosive weapon use through the prism of ICTY cases is not without its challenges. This report concentrates on what is deemed appropriate or acceptable as a matter of policy or practice, rather than what is deemed illegal and criminal in a specific case. Yet, the extent to which ICTY case materials can provide insight into general policy and practice and afford lessons of broader application, may be limited by the mandate of the ICTY, the focus of its work, prevailing legal discourse, and the geographic and historical context of the events.

The Tribunal is limited in its interpretation of the situations it addresses in a number of ways. The geographic focus and the time span of events discussed in these cases are a function of the period covered in the indictment. Broader social and political processes are dealt with only if they are deemed instructive to the case at hand. Prosecutorial choices and strict evidentiary requirements under international criminal law (ICL) mean that very few incidents of explosive weapon use are even scrutinized. As a result, there are only a few instances in which it can be proven beyond a reasonable doubt that the alleged events indeed took place and caused the alleged harm.[21]

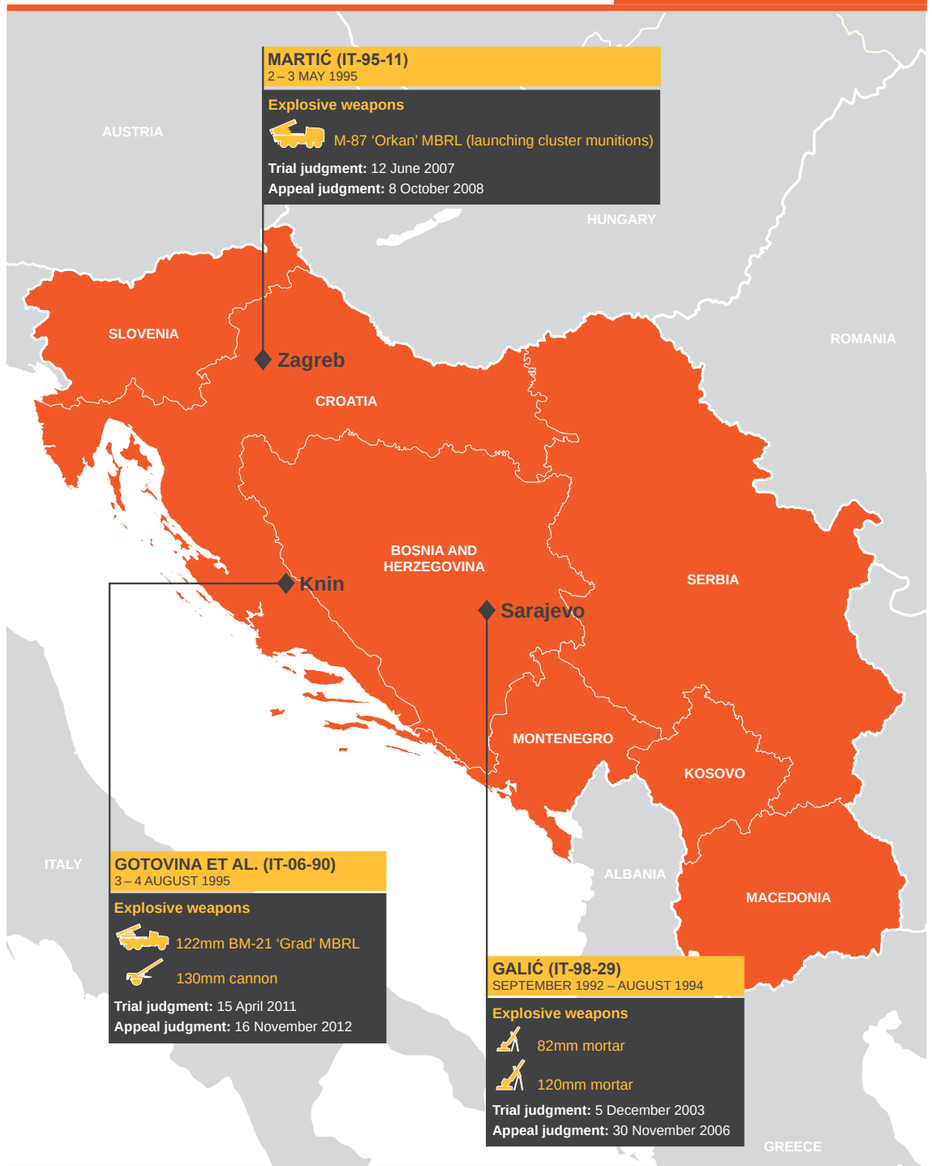
18 Semi-structured interviews were conducted between 16 April and 9 May 2014 in Utrecht, the Netherlands, and over the phone, with Harry Konings, Tetsuo Itani and Geoffrey Corn. Written summaries of these interviews and the written response to the questionnaire by Berko Zečević on file with PAX. All interviews were conducted in English.

19 For more information on these cases, please consult the ICTY website at http://www.icty.org.

20 This report is based on English-language court records. The ICTY has translated some of the Bosnian, Serbian or Croatian texts into English. Due to their public availability, the military reference documents consulted for this report mostly reflect United States of America (US) policy or that of the North Atlantic Treaty Organization (NATO). To what extent NATO policy reflects the views of individual member states or of other states is unclear.

21 Only if the Trial Chamber considers it has been provided with 'sufficient' evidence to determine the causal relationship (e.g. whether injury or damage was due to artillery fire, as opposed to unspecified reasons), the number of projectiles fired, the times and locations of impacts of projectiles, the intended targets of attack, and which force launched the attack, will it even scrutinize the legality of the attack and the responsibility of the Accused in respect of that particular instance of explosive weapon use. See e.g., *Gotovina, Ivan Čermak, Mladen Markač* (Trial Chamber Judgment) IT-06-90 (15 April 2011) §1162, where the Trial Chamber denies consideration of artillery attacks in and near Kistanje, Kaštel Žegarski in Nadvoda municipality, and Polača and hamlets in the Plavno Valley (Knin municipality).

Figure 01.
Use of explosive weapons in selected ICTY cases



Map showing the territory of former Yugoslavia in 1990 (in orange) and the present-day borders of the now independent states. The weapon types listed here are examples of explosive weapons focused on in this report. The respective cases may deal with violence involving other weapons and in additional locations as well.

The Tribunal sees the use of explosive weapons (a term the Tribunal does not employ) through the lenses of international humanitarian and international criminal law. The focus is on determining whether the alleged conduct was *legal* and *criminal*. The terms used in IHL and the constitutive elements of crimes define how the consequences of explosive weapon use are characterized. The focus is on death and the physical injury suffered by persons identified as civilians and, to a lesser extent, damage to civilian objects resulting directly from an attack. Legality is evaluated in terms of *individual attacks*. As a result this can sometimes lead to the Tribunal adopting an 'overly compartmentalised and narrow view'.[22]

The partial perspective afforded by ICTY case materials does not mean, however, that general conclusions cannot be drawn. The events discussed in these cases are representative of a consistent pattern of harm associated with the use of explosive weapons in populated areas that is also experienced in contemporary conflicts. And whilst an approach focusing on a small sample of individual attacks is not ideally suited to dealing with the indirect and long-term consequences of explosive weapon use on civilians, aspects of the wider pattern of harm are recognised by the Tribunal. Given the partial perspective afforded by ICTY cases it should, however, be borne in mind that **casualty numbers and numbers of shell impact locations that can be proven beyond reasonable doubt in these cases do not mean that explosive violence did not occur or cause harm elsewhere to others and at other points in time.**

The ICTY's concern with a specific historical context, and thus, with particular types of weapons, military doctrines and practices from a specific region in the past, raises the question whether expert opinions and judgments about the acceptability of weapons or their use have broader validity, and how we should relate them to the possible evolution of the normative context since the time of the events. The events under consideration took place between 1992 and 1995, and were adjudicated between December 2003 (*Galić*, Trial Judgment) and November 2012 (*Gotovina et al.*, Appeal Judgment). From an ICL perspective, the permissibility of explosive weapon use must be determined pursuant to the legal standards applicable at the time of the events. Yet, it is reasonable to expect that certain practices deemed acceptable in 1995, almost 20 years ago, would not be adopted by many militaries today.[23]

Some experts explicitly address the possibility of regional differences and developments in weapon technologies and practices. Several experts noted that advances have been made in surveillance and locating and targeting technology since 1995, that communications and computer power have also improved and that the accuracy of munitions has increased.[24] Whilst some experts used NATO standards or standards set by their own armed forces as reference points for their assessments of what is acceptable or appropriate practice, others made a deliberate effort to

22 *Gotovina et al.* (Dissenting Opinion of Judge Agius to the Appeals Chamber Judgment) IT-06-90-A (16 November 2012) §3.

23 Historically, there is a trend away from saturating wide areas with explosive force. Area bombardment, as practiced during World War II and after that in South-East Asia, for example, is no longer considered acceptable today. There is a clear trend toward increased accuracy of delivery of explosive weapons, and recent years have also seen the development of explosive weapons with a smaller blast radius advertised, specifically for use in urban and other populated areas. Proponents of such weapons tend to underline the reduced risk of collateral damage associated with their use. Arguably, this reflects recognition on the part of at least some weapon developers and users of lower tolerance for civilian casualties. At the same time, such weapons increase the salience and importance of avoiding civilian casualties. See e.g., J. I. Walsh, 'Precision Weapons, Civilian Casualties, and Support for the Use of Force' (19 November 2013), *Political Psychology* (Forthcoming), available at SSRN: http://ssrn.com/abstract=2356886; D. Pugliese, 'Aiming to Cut Collateral Damage, Canada Eyes Smarter Weapons', *DefenseNews.com*, 27 July 2014.

account for possible differences in military doctrine.[25] On the whole, however, it appears that experts broadly agree on what constitutes 'good artillery practice', even though they might disagree on whether its application in a specific case was appropriate or not.[26]

In spite of possible differences in military policy and practice among regions and historically, considerations that affect weapons choice and measures to reduce risk of harm to civilians from the use of explosive weapons are essentially the same across different contexts. The anticipation that weapon users will take these measures also remains the same.[27] Although the cases discussed in this report concern specific armed forces in a particular historical setting, the arguments made by those involved in explosive weapon use and by those called upon to assess the appropriateness, acceptability and permissibility of such use speak to the broader normative context and indicate what is more generally accepted policy and practice in explosive weapon use. ♦

25 See e.g. *Gotovina et al.* ('Comments by Lieutenant General (Retired) C C Brown on the Reports, Comments and Observations of Generals (Retired) Scales, Shoffner, Griffith and Granville-Chapman on Croatian Army ("HV") Use of Artillery and Rockets on Targets Based in Knin, Croatia, 4-5 August 1995', Notice of Filing of Public Redacted Version of Prosecution Response to Gotovina's Second Rule 115 Motion, and Request for Change in Status of Corrigendum, Public Annex II) IT-06-90-A (3 August 2012) 5635, footnote 1 ('Brown Report').

26 Lieutenant General (Retired) Anthony A. Jones who submitted an expert witness report in the Gotovina case based himself on US doctrine. Whilst recognizing that there were differences between US doctrine and that applied by the Croatian Army in 1995, he considered that the general principles remained the same. (*Gotovina et al.* ('Operational Commander Roles and Responsibilities During Offensive Operations', Defendant Ante Gotovina's submission of expert report of Lieutenant General (Retired) Anthony R. Jones pursuant to Rule 94*bis*) IT-06-90-T (8 July 2009) 24971-24970 ('Jones Report').)

27 Major General Nicholas Ashmore, a prosecution expert in *Gotovina et al.* considered that the significance of factors that a commander is obliged to consider and address when deciding whether to engage military targets that are in an urban environment and in close proximity to civilians or civilian installations has not changed from 1995 to the present day, 'as their significance is derived from the overriding principle, … , that "military leaders are morally compelled to take every prudent action to protect non-combatants in their zones and/or areas of operations"'. (*Gotovina et al.* (' Comments by Major General Ashmore on the reports, comments and observations of Generals Scales, Shoffner, Griffith, Granville-Chapman, Brown and Applegate', Notice of Filing of Public Redacted Version of Prosecution Response to Gotovina's Second Rule 115 Motion, and Request for Change in Status of Corrigendum, Public Annex II) IT-06-90-A (3 August 2012) 5586 ('Ashmore Report').)

Context and key notions

This section provides background information to situate the cases discussed in this report in a historical, legal and judicial context. İt also briefly explains the military and technical expressions used in this report. The information is meant to enable readers who are not specialists in the respective fields to gain a basic understanding of key notions. A more comprehensive treatment of these complex subjects is beyond the scope of the report.

The historical context

The Yugoslav Wars provide the historical backdrop to the events discussed in this report. The disintegration of the Socialist Federal Republic of Yugoslavia (SFRY) was marked by several periods of violent conflict involving a number of armed actors on different parts of the territory of the former Yugoslav Federation. At the beginning of 1991, the SFRY was composed of six republics, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia and Slovenia. Within the Republic of Serbia, the regions of Kosovo and of Vojvodina held the status of autonomous provinces.

On 25 June 1991, Slovenia and Croatia both declared independence from the SFRY, marking the beginning of a process that would result in the dissolution of the Yugoslav Federation. By the end of April 1992, Macedonia, as well as Bosnia and Herzegovina, had also declared independence, and Serbia and Montenegro together formed the Federal Republic of Yugoslavia (FRY). This union (renamed in 2003) ended in 2006 with the constitution of Montenegro and of Serbia as independent states.

Between the declaration of independence of Bosnia and Herzegovina in April 1992 and the conclusion of the Dayton Peace Accord between Bosnia and Herzegovina, Croatia and Serbia in November 1995, intense violence caused immense human suffering and material devastation. A number of armed actors were involved in the violence. Tens of thousands of persons were killed and over two million persons were displaced. The fate of many thousands of persons remains unknown today.[28] Horrific atrocities amounting to war crimes, crimes against humanity and genocide were committed during these wars.

The legal framework

International humanitarian law (IHL) provides the main frame of reference for assessing the legality of acts involving the explosive weapons discussed in this report. IHL is a set of rules that seeks, for humanitarian reasons, to limit the effects of armed conflict, to protect those not taking a direct part in hostilities, and to minimize suffering and destruction during wartime. All parties involved in armed conflict, states and non-state actors alike, are obliged to adhere to these rules.[29]

Under IHL, **civilians** enjoy general protection against the effects of hostilities and may not be made the object of attack.[30] Any person who is not a combatant (a member of an armed force party to the conflict) is a civilian. **Civilian objects** may not be attacked either. Homes, hospitals and schools, for example, are *a priori* civilian objects. **Military objectives** (and combatants), on the other hand, may be attacked. Military objectives are limited to those objects 'which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage'.[31]

To give effect to the protection of civilians, the basic rules governing the conduct of hostilities must be observed when attacking military objectives. The choice of means and methods of combat, including weapons, is limited by those rules and by weapon-specific treaties.[32] One of the basic rules on the conduct of hostilities is the **rule on distinction** which requires that parties to an armed conflict at all times distinguish between civilians/civilian objects and combatants/military objectives, and direct their attacks only against the latter. It follows from the rule of distinction

28 For casualty data and a discussion of casualty estimation in this context, see E. Tabeau (Ed.), *Conflict in Numbers: Casualties of the 1990s Wars in the Former Yugoslavia (1991–1999)*, Testimonies, vol. 33, Helsinki Committee for Human Rights in Serbia, Belgrade 2006, www.helsinki.org.rs/doc/testimonies33.pdf. On missing persons, see e.g. 'Western Balkans: Authorities must support families of missing persons', Interview, ICRC, 22 August 2013, http://www.icrc.org/eng/resources/documents/interview/2013/08-28-disappeared-missing-western-balkans-milner.htm.

29 It is increasingly recognized that international human rights law (HRL) is also a relevant legal framework during armed conflict, although the interplay between IHL and HRL can be complex. IHL only applies in situations that are legally characterized as a non-international or an international armed conflict. During such an armed conflict, IHL governs the use of force by a party to the conflict in connection with the conduct of hostilities (military combat). IHL does not apply to the use of force by a party to an armed conflict for other purposes, such as policing.

30 The protection from attack afforded to civilians is suspended if, and for as long as, they directly participate in hostilities.

31 1977 Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (1977 AP I), Art. 52(2); J.-M. Henckaerts and L. Doswald-Beck, *Customary International Humanitarian Law*, ICRC, Geneva, 2005, vol. 1: Rules, Rule 8 ('Customary IHL study'). In some cases, homes and schools, and under limited circumstances, even hospitals, can become legitimate military objectives.

32 An example of a weapon-specific treaty is the 2008 Convention on Cluster Munitions, which prohibits the use of and other activities involving cluster munitions.

and the requirement that civilians be protected against dangers arising from military operations that the use of 'weapons which are by nature indiscriminate' (indiscriminate weapons), as well as indiscriminate and disproportionate attacks, are prohibited.[33]

Indiscriminate weapons are those 'that cannot be directed at a military objective or whose effects cannot be limited as required by international humanitarian law'. What weapons, concretely, are indiscriminate weapons in the legal sense, in certain or all contexts, is subject to debate.[34] Even if the answer to this question cannot be determined, the use of a weapon may in a particular situation amount to an indiscriminate attack. **Indiscriminate attacks** include attacks that are not directed at a specific military objective, that employ a method or means of combat which cannot be directed at a specific military objective, or that employ a method or means of combat, the effects of which cannot be limited as required under IHL.[35] Area bombardment is a form of indiscriminate attack and is prohibited. **Area bombardment** is defined as an attack by bombardment that treats a number of clearly separate and distinct military objectives located in a city, town, village or other area containing a similar concentration of civilians or civilian objects, as a single military objective.[36] **Disproportionate attacks** are attacks which may be expected to cause incidental civilian harm (death, injury or damage) which would be excessive in relation to the concrete and direct military advantage anticipated.[37]

Because IHL requires that constant care be taken to spare civilians and civilian objects in the conduct of military operations, attackers must take **precautionary measures**, which include choosing means (weapons) and methods of attack with a view to avoiding (and at any rate minimizing) civilian harm.[38] Defenders must also take precautionary measures. Notably, they must avoid locating military objectives 'within or near densely populated areas'.[39] The presence of combatants among the civilian population ('intermingling') and military objectives located in populated areas is often identified as an important cause of harm to civilians in contemporary conflicts. This report covers the policy and practice in choosing and targeting weapons, and focuses on the immediate cause of civilian harm—the use of weapons—rather than the behaviour of the defender or the challenges of 'urban warfare' in general.

IHL rules, considered in light of a broader principle of humanity, are meant to guide all military decision-making and the choice of weapons by parties to armed conflicts. National laws, military doctrines, regulations and rules of engagement concretize these rules and provide additional, more detailed guidance.

33 Under IHL, 'attacks' means 'acts of violence against the adversary, whether in offence or in defence.' (1977 AP I, Art. 49(1)) ICTY case law defines an 'attack' as 'a course of conduct involving the commission of acts of violence.' *Galić* (Trial Chamber Judgment) §52.

34 1977 AP I, Art. 51(4); Customary IHL study, Rule 71. According to the ICRC, explosive weapons cited in practice as being indiscriminate in certain or all contexts include anti-personnel landmines, mines in general, explosives dropped from balloons, V-1 and V-2 rockets, cluster munitions, Scud missiles and Katyusha rockets.

35 1977 AP I, Art. 51(4); Customary IHL study, Rule 11.

36 1977 AP I, Art. 51(5)(a); Customary IHL study, Rule 13.

37 1977 AP I, Art. 51(5)(b); Customary IHL study, Rule 14.

38 1977 AP I, Art. 57; Customary IHL study, Rule 15.

39 See 1977 AP I, Art. 58; Customary IHL study, Rule 22.

The judicial context

The **ICTY** provides the judicial context for this report. The ICTY was formally established in 1993 by the UN Security Council to bring to justice those responsible for committing serious violations of IHL committed in the territory of the former Yugoslavia since 1991.[40] In some cases, the use of explosive weapons in a populated area can lead to a serious violation of IHL entailing the personal criminal responsibility of the individual(s) involved, and amount to an **international crime** within the jurisdiction of the Tribunal.

The Tribunal has jurisdiction over war crimes (violations of the laws or customs of war), crimes against humanity and genocide.[41] The interplay between IHL rules on the use of weapons and charges under ICL can be complicated. Many ICL issues in the cases discussed are not addressed in this report. It suffices to say that the ICTY considers that 'attacks which employ certain means of combat which cannot discriminate between civilians and civilian objects and military objectives are tantamount to direct targeting of civilians'. A direct attack on civilians (a war crime) can thus be 'inferred from the indiscriminate character of the weapon used'.[42]

The Tribunal pronounces **judgments** determining the guilt or innocence of the Accused and imposes sentences on persons convicted. Judgments are delivered in public and are accompanied by a reasoned opinion in writing. Appeal proceedings are available to both the Defendant and the Prosecutor. Judgments are rendered by a majority of the judges. Separate and dissenting opinions of judges may be attached to a judgment.

During a trial the Defence and the Prosecution may call **expert witnesses** to provide testimony in areas requiring specialized knowledge, experience or skills that the Tribunal does not possess. Expert witnesses are professionals who provide their opinion in the form of a statement or report, helping the judges to understand or determine an issue in dispute. The Trial Chamber decides on the evidentiary value of the reports and testimony of expert witnesses.[43] Of particular interest to this report are expert materials on certain types of explosive weapons or on the policies and practices surrounding their use.

40 UN Security Council resolution S/1993/827 (25 May 1993).

41 Updated Statute of the International Criminal Tribunal for the former Yugoslavia, September 2009, Arts. 1-5.

42 *Galić* (Appeals Chamber Judgment) IT-98-29 (30 November 2006) §132. This inference is not automatic, however. The 'indiscriminate character of an attack' is to be determined on 'a case-by-case basis' and *can assist* in determining whether the attack was directed against the civilian population. (Ibidem.) For an Accused to be held responsible for the 'wilful killing' of civilians as a war crime, the victim must be dead, the death must have been caused by an act or omission on the part of the Accused (or a person for whom he or she was criminally responsible) and such act or omission must have been committed with intent to kill, or in the knowledge that death was a *probable* consequence. With regard to the latter (the *means rea*), it is insufficient that death was a *possible* consequence, but 'indiscriminate intent to kill whoever is fatally injured as a result of [the perpetrator's] action is sufficient'. (*Martić* (Trial Chamber Judgment) IT-95-11 (12 June 2007) §60.)

43 Rules of Procedure and Evidence of the International Criminal Tribunal for the former Yugoslavia, IT/32/Rev. 49, 22 May 2013, Rule 94*bis*. See also, *Galić* (Decision concerning the expert witnesses Ewa Tabeau and Richard Philipps) IT-98-29-T (3 July 2002).

Technical and military notions

This report looks at military practices and doctrines surrounding the use of explosive weapons. Owing to the weapons involved in the cases under discussion, the focus lies on surface-to-surface artillery weapons.

Artillery weapons (or weapons systems) can be categorized according to different criteria, such as calibre, assigned function, range or weight. A distinction is often made between tube artillery–weapons that launch an unpowered projectile from a barrel–and rocket artillery (or rocket systems).

Traditionally, **tube artillery** includes mortars, howitzers, and guns, which fire a projectile that follows a ballistic trajectory. Generally speaking, **guns** have elongated tubes and can fire shells in a fairly flat trajectory at high speed and at greater distances than howitzers. They are used for fire support and anti-armour combat. **Howitzers** have shorter tubes and fire shells of larger calibre and weight in a higher trajectory at lower velocity. They 'have a tighter fall of shot pattern than a mortar'[44] and are used for firing at fortified targets, for example. **Gun-howitzers**, usually pieces of 105mm calibre and above, combine certain characteristics of howitzers and guns. **Mortars** are very short-barrelled weapons that are more limited in range and payload than guns or howitzers. They can fire shells in a very high arc, which allows them to clear obstacles. For this reason, they are often used against targets in built-up areas with high-rise buildings.[45]

Rockets have a motor but once the fuel burns out they follow a ballistic trajectory. Rockets tend to be larger and fly at lower velocity than tube artillery projectiles, and they are more susceptible to ballistic influences. With **unguided** rockets, correction of the trajectory in flight is not possible, nor can the rocket be guided to the target. In the former Yugoslavia, most rockets were launched from **multiple-barrel rocket launchers** (MBRLs), such as the M-87 Orkan or the BM-21 Grad MBRL. Such systems can launch many rockets (40 in the case of the Grad) within a very short space of time, either in salvos (all rockets at once) or sequentially. MBRLs are generally considered less accurate than tube artillery.[46] The primary role of long-range MBRLs is in saturating a wide target area with explosive force at a high rate of fire.

Rockets can be fitted with different warheads. The *Martić* case discussed in this report involves the use of rockets equipped with cluster warheads. This type of rocket is called a **cluster munition**. Cluster munitions are designed to saturate the target area with explosive force. A single rocket of the type used in the *Martić* case can disperse hundreds of explosive submunitions over a wide area.

Today, distinctions among artillery weapons have become less sharp, partly due to the introduction of weapons that cannot be clearly categorized. Some experts quoted in this report distinguish between artillery weapons and rocket systems, or between artillery weapons and mortars. Unless otherwise indicated, all references to artillery weapons in this report should be understood to include mortars and rocket systems. In addition, although experts may at times use different terms to refer to **explosive munitions**, such as shells, bombs, rounds or projectiles, this report uses the term '**shelling**' to describe all surface-to-surface fire involving the use of explosive munitions including rockets, unless indicated otherwise.

Artillery is mainly used to provide fire support to own forces in combat. The military function of artillery 'is to attack distant targets, usually by indirect fire with large quantities of explosives'.[47] The effects to be achieved with artillery fire tend to be expressed in terms of degrees of damage to an enemy target or loss of enemy capability. **Neutralization** is the prevention of enemy fire operations for a given time.[48] **Destruction** is the infliction of such losses on the enemy forces and assets that they cannot continue operations without replenishment.[49] **Interdiction** (denial) is the prevention of an attack by enemy forces. **Harassment** fire seeks to hamper the enemy's reconnaissance, conduct of defensive actions, traffic, etc.[50]

Artillery fire can be delivered by direct fire, where the target is visible from the location of the artillery piece, or **indirect fire**, where the target is not visible from that location. Indirect fire is aimed by means of an auxiliary aimpoint. Artillery weapons are generally considered '**indirect fire weapons**' as they do not require a direct line of sight to the target.[51]

The process of 'selecting and prioritizing targets and matching the appropriate response to them, taking into account operational requirements and capabilities' is called **targeting**.[52] For the purposes of artillery fire a **target** is an area defined by its coordinates, dimensions, and other characteristics. Whilst it is possible to use guided artillery munitions against point targets, artillery fire using unguided munitions (as in the cases analysed in this report) is commonly used only against **area targets**.[53] An area target can be a single target (a unitary target), i.e. a physical whole (such as a storage reservoir or a bunker of significant dimensions), or a group target

44 *Galić* (T. Itani, *Weaponry in the Former Yugoslavia*, P. Exhibit P3675) IT-98-29-T (14 August 1995) p. 4. Itani describes howitzers of a calibre up to 105mm as light, between 105 and 155mm as medium, and 203mm and above as heavy.

45 Itani describes mortars of calibres 50mm/60mm as light, those of 81/82mm as medium, and those of 120mm as heavy. (Itani, *Weaponry in the Former Yugoslavia*, p. 3.)

46 'For systems with a high rate of fire, like the BM-21, there is usually no readjustment of the launcher during the salvo. This implies that all rockets in a salvo are aimed at the same target, and that the lack of readjustment results in a wide dispersion of the salvo.' (O. Dullum, *The Rocket Artillery Reference Book*, FFI-report 2009/00179, Norwegian Defence Research Establishment (FFI), 2010, p. 24.)

47 M. J. Dougherty, *Artillery and Missiles*, Modern Weapons: Compared and Contrasted, The Rosen Publishing Group, New York, 2013, p. 5. Artillery can be used for close support of the unit that the artillery is attached to (direct artillery fire support), or in support of own forces in general, including in the operational depth (general artillery fire support). For more detail, see *Martić* (Prosecution's Submission of the Expert Report of Lieutenant Colonel Jožef Poje pursuant to Rule 94*bis*) IT-95-11-PT (28 February 2005), 4177 ('Poje Report'). See also 'direct support' and 'direct supporting fire', in *NATO Glossary of Terms and Definitions*, AAP-06(2014), NATO Standardization Agency (NSA), 2014, section 2-D-7. The aim of mortar fire, in general, is 'to kill military personnel in the open, harass the enemy and/or prevent the use of ground'. (Higgs Report, 3258.)

48 Neutralization fire aims to inflict personnel and combat asset losses of up to 30%. (Poje Report, 4159.)

49 According to Poje, such fire is used against 'particularly important targets, usually using direct fire'. Destruction is neutralization with a neutralization level of 50% and above. (Poje Report, 4158.) NATO defines destruction fire as 'fire delivered for the purpose of destroying a point target'. (*NATO Glossary*, section 2-D-5.) Mortars are not generally used for destruction missions. (Higgs Report, 3258.)

50 Harassment is, in effect, neutralization to a level of 10% or under. (Poje Report, 4158.)

51 Vehicle-mounted anti-tank guns are an example of a direct fire delivery system.

52 *NATO Glossary*, section 2-T-3. Target designation is 'The act of assigning a target to a weapon system'. (Ibidem,)

53 NATO defines a 'point target' as '[a] target which requires the accurate placement of bombs or fire', and an 'area target' as '[a] target consisting of an area rather than a single point'. (*NATO Glossary*, sections 2-P-6, 2-A-18.) NATO further defines 'area bombing' as '[b]ombing of a group of targets constituting an area rather than a pinpoint target'. (Ibid., section 2-A-17). Note, that area bombing as defined here does not necessarily amount to 'area bombardment' prohibited under IHL, although, of course, in some cases it may.

(an area of target elements), e.g. several tanks in formation. Targets can be scheduled where they are to be fired on at a specific time, or they can be **targets of opportunity**, 'targets which appear during combat and against which fire has not been scheduled'.[54]

The part of the wider targeting process related to determining the type and quantity of weapons required to achieve a certain effect on a target is sometimes called **weaponeering**. The effects of explosive weapons on a target, as well as on civilians and civilian objects in the vicinity of a target, are a function of many factors including the characteristics of the weapon, the environment within which it is used and the manner of its use.

One of these factors is the **accuracy** with which a weapon is delivered onto a target.[55] The inaccuracy (or delivery error) associated with a given weapon system results in the **dispersion** (spread) of rounds in the target area. The distribution of impact points about the mean point of impact is called the dispersion pattern. Unguided artillery weapons, as well as cluster munitions (whether surface or air-launched) are often called '**area weapons**' used to engage area targets, because the dispersion of rounds affects an area that can be several hectares wide.[56]

A common measure for expressing accuracy and dispersion is the probable error in range and deflection (and height). The range error probable (REP, PE_r) describes the distance from the desired point of impact (the mean point of impact in the figures) to one of *a pair* of lines perpendicular to the range direction, equidistant from the desired point of impact, such that 50% of the impact points lie between them.[57] Assuming normal distribution (in the statistical sense), half of all rounds fired will land within 1 PE_r on *either side* of the aimpoint. The other half of the rounds will land up to 4 PE_r on either side of that point.

Another common measure is the circular error probable (CEP, CEP_{50}), which is the *radius* of a circle, centred on the aimpoint such that 50% of the impact points lie within it.[58]

The CEP can be interpreted in two ways: the area inside which 50% of the rounds may be expected to fall, or the area inside which a single round has a 50% chance of falling. It should be emphasized that

> *'it is impossible to predict what happens to a particular munition; all that may be done is to describe the behaviour, in a statistical sense, of the sample of impact points.'*[59]

54 *NATO Glossary*, section 2-T-3.

55 'Delivery accuracy may be defined as a quantitative measure of the capability of a weapon system to place ordnance on its intended target'. (M. R. Driels, *Weaponeering: Conventional Weapon System Effectiveness*, (2nd ed.), American Institute of Aeronautics and Astronautics, Inc., Reston, Virginia, USA, 2013, p. 127.)

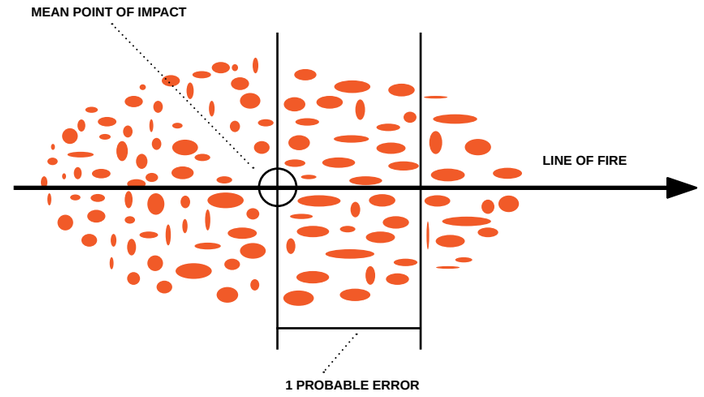
56 One hectare (ha) = 10,000 square metres (m^2).

57 Similarly, the deflection error probable (DEP, PE_d), is the distance from the aimpoint to one of a pair of lines parallel to the range direction, equidistant from the aimpoint such that 50% of the impact points lie between them. (Driels, *Weaponeering*, p. 136.)

58 Driels, *Weaponeering*, p. 136. According to a US field manual, 'precision capabilities have a circular error probable (CEP) of less than 10 meters. Near-precision capabilities have a CEP between 10 and 50 meters. Area capabilities have a CEP greater than 50 meters.' (Fire Support, FM 3-09(2011), section 2-96.)

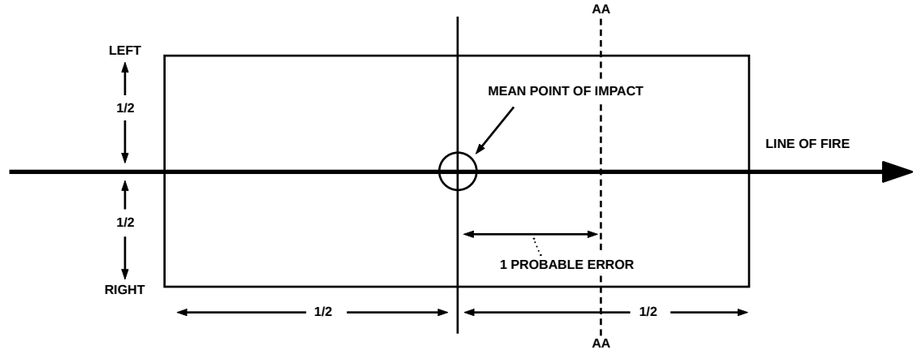
59 Driels, *Weaponeering*, p. 135.

Figure 02.
Burst in elliptical pattern of a mortar



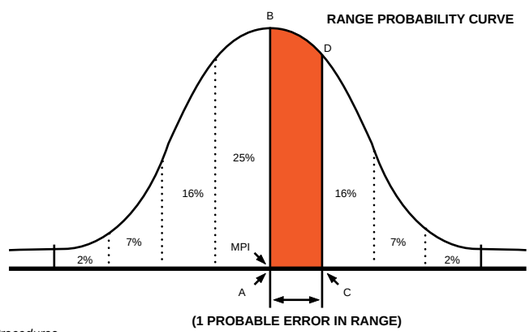
Source: *Mortar Fire Direction Procedures*, US Army, Field Manual FM 3-22.91

Figure 03.
One probable error



Source: *Mortar Fire Direction Procedures*, US Army, Field Manual FM 3-22.91

Figure 04.
Range probability curve



Source: *Mortar Fire Direction Procedures*, US Army, Field Manual FM 3-22.91

A weapon's inaccuracy can be compounded or mitigated depending on the methods and **firing techniques** chosen. Accuracy of delivery of unguided artillery weapons is itself a function of many parameters, including delivery technique, hardware and software, and various non-standard conditions, including meteorological factors like wind or humidity of the air.[60] **Firing tables** (and software tools) provide points of departure for detailing firing solutions. Based on test firings and computer simulations, they provide information about the performance of a projectile under standard conditions, and indicate adjustments (angle of elevation, muzzle velocity, range, drift, etc.) that must be made. Actual firing conditions will never equate to standard conditions, and **corrections** are therefore necessary to compensate for variables in the weather-weapon-ammunition combination known to exist at a given instant and location.[61] If the deviations from standard conditions are not or not sufficiently corrected (**uncorrected fire**), this will cause projectiles to impact somewhere other than the desired location.[62]

Errors in the initial data can be eliminated in the firing process through fire adjustment. Fire that relies on the most current data for the meteorological situation, muzzle velocity, etc. to generate a firing solution is called predicted fire (**unadjusted fire**). Adjusted fire can be adjusted by observers or adjusted with data from a registration mission (**registered or (pre-)recorded fire**).[63] **Observer-adjusted fire** uses a forward observer who observes the impact points of rounds and provides the necessary information to adjust, control and assess the effects of fire. Observer-adjusted fire is 'the most accurate means of fire'.[64]

Another set of factors that determines the effects of an explosive weapon relate to the position and kinetics of the munition at the time of detonation and to the target environment. Explosive munitions do damage mostly through **blast overpressure** and the **projection of fragments** outwards from the point of detonation—primary fragments from the munition casing and secondary fragments (debris) from the target environment accelerated by the blast. Fragments travel at high velocity. Even very small fragments can cause severe injury at long distances from the detonation point.

The extent to which explosive weapons do damage through blast versus fragmentation varies and accurately predicting the blast and fragmentation effects of an explosive munition is complicated. Although blast overpressure generally decreases with greater distance from the detonation point, blast can be either absorbed by the ground or it can be amplified by reflection in a confined space. As blast effect is, in part, a function of the amount of explosive material, the **calibre** of a weapon is loosely correlated, at least for tube artillery, with the blast effect of a projectile. For tube artillery weapons, calibre refers to the diameter of the bore. A larger calibre can indicate that a munition contains a larger amount of explosive material and thus has greater explosive force than a comparable munition of smaller calibre. However, neither the calibre nor the description of a weapon as 'light', 'medium' or 'heavy' (denominations only partly reflecting different calibres) are very good indicators of the effects produced by a munition in a particular environment.[65]

The mass, size, shape, number and velocity of fragments, the fragment dispersion pattern and the dimensions of the zone affected by fragmentation are a function of munition design (type of explosive material, shell case geometry, etc.), fuze type (or fuze setting), impact conditions of the munition (angle of impact, impact velocity respective to the target, etc.) and detonation environment. Depending on the **fuze** (setting) an explosive munition can detonate on impact (contact or point detonating fuze) or at a certain point of its trajectory, for example above the target or after penetration of the target (time or proximity fuzes). Detonation above the target (air-burst) maximizes the fragmentation effect and is particularly dangerous to persons in the open. The risk of harm from fragments generally decreases with greater distance from the detonation point but it is difficult to accurately predict the effect of fragmentation, particularly because environmental factors play a role.[66]

Common measures used to describe the effect of an explosive munition in terms of its effectiveness in a military sense are the **lethal area** and the **lethal radius** (or lethal range). These are a function of weapon-munition-fuze combination, vulnerability of the target, and a given desired degree of damage or harm to that target (the 'kill level' or 'damage criterion').[67] In military parlance therefore, 'lethal' and 'kill' do not necessarily refer to death. Such measures are also used to determine the 'risk-estimate distance' (**safety distance**) for own troops, defined as the distance from the intended centre of impact at which a specific degree of risk and vulnerability will not be exceeded.[68]

Lethal area and similar measures are also used for estimating risk of '**collateral damage**' and choosing appropriate measures to 'mitigate' that risk.[69] In military parlance, 'collateral damage' or 'collateral effects' refers to harm to civilians that is the incidental or accidental result of an attack.[70] Due to the paucity of public information on the details of collateral damage estimation

60 In addition to meteorological conditions, accuracy is a function of the precision with which the weapon and the target are located, the amount of wear and tear on the gun, the shape and surface roughness of the projectile, the amount of propellant charge (which can vary from round to round) among other things.

61 Driels, *Weaponeering*, p.110.

62 Modern indirect fire systems can factor in geographic, topographic, meteorological and other non-standard conditions, including projectile weight, propellant temperature and variations in muzzle velocity. The more accurately measured and complete the data is on these parameters, the better the corrections.

63 NATO defines registration fire as 'Fire delivered to obtain accurate data for subsequent effective engagement of targets'. *NATO Glossary*, section 2-R-6. Higgs describes the process as follows: 'When the rounds land on target, the target may be recorded. It is given a target number. This is done to enable the unit to engage the same target again in the future without the need to adjust fire.' (Higgs Report, 3256.)

64 Driels, *Weaponeering*, p. 167.

65 'The technical classifications of weapon systems into *light*, *medium* and *heavy* are used indiscriminately by various authorities and the media. …but what is important are the *effects*.' (Itani, *Weaponry in the Former Yugoslavia*, p. 1. Emphasis in the original.)

66 Higgs notes, for example, that the blast effect of a mortar is slight. 'The effectiveness of a mortar comes from the amount and velocity of shrapnel'. (Higgs Report, 3256.) Note, however, the statement by Konings, according to whom the high number of casualties that resulted from the shelling of Markale market on 28 August 1995 can be explained by the explosive power of a 120mm mortar shell in conjunction with the detonation environment being a confined area surrounded by high buildings which reflected the blast, and shards of window glass falling from the buildings due to the explosion. (Testimony of Harry Konings, *D. Milošević* (Public transcript of hearing, 13 March 2007) 3640-3641.)

67 Lethal area and related measures are not always defined in the same way by different experts. A 'lethal fragment' is defined as 'one that possesses kinetic energy greater than the minimum energy needed to disable a soldier in action' in *Galić* (Defense's Submission pursuant to Rule 94*bis* of Expert Report of Prof. Dr. Aleksandar Stamatović, Ass. Prof. Dr. Janko Viličić and Dr. Miroljub Vukašinović, D. Exhibit 1917) IT-98-29-T (19 November 2002) 7181 ('Stamatović report').

68 'Risk-estimate distance takes into account the bursting radius of munitions and characteristics of the delivery system. It associates this combination with a probability of incapacitation for personnel at a given range. Risk-estimate distance is the minimum distance at which friendly troops can approach friendly fires without 0.1 percent or more probability of incapacitation'. (*Tactical Employment of Mortars*, [US] Department of the Army, Army Tactics, Techniques, and Procedures (ATTP) 3-21.90 (FM 7-90), 4 April 2011, section 5-141.) 'A safe distance from artillery fire for one's own unconcealed personnel is 300 metres (200 meters if concealed).' (Poje Report, 4159.) A US field manual gives a safety distance of 2,000 metres for the M270A1 MLRS, a type of MBRL. (*Tactics, Techniques, and Procedures for the Field Artillery Battalion*, [US] Department of the Army, Field Manual (FM) 3-09.21, 22 March 2001, sections 5-99, 5-100.)

69 See e.g. *No-Strike and the Collateral Damage Estimation Methodology*, [US] Chairman of the Joint Chiefs of Staffs Instruction (CJCSI) 3160.01A, 12 October 2012.

70 NATO defines collateral damage as '[i]nadvertent casualties and destruction in civilian areas caused by military operations.' *NATO Glossary*, section 2-C-6.

and mitigation, it is unclear to what extent they account for the risk of harm from secondary fragments or from the progressive collapse of buildings, how they factor in indirect and longer-term (though predictable) harm to civilians (e.g. from the break-down of public services infrastructure or explosive remnants of war), what assumptions are made about the vulnerability of civilians to blast and fragmentation injury, and what level of risk is deemed acceptable.[71]

In any event, the risk of direct and indirect harm to civilians can be reduced in various ways, including through appropriate target selection, weapon choice, firing technique, **fire control measures** (restrictive fire support coordination measures) and other restraints. Such measures can include the imposition of **no-fire zones**, i.e. zones designated by the appropriate commander into which fires or their effects are prohibited, and **restricted fire zones**, zones in which specific restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters.[72] ♦

71 It can be questioned whether assumptions and limitations inherent in models aimed at calculating effectiveness or risk-estimate distances for the protection of soldiers are adequate for assessing the risk of harm to civilians. For example, measures of vulnerability of persons to fragment injury tend to assume that the target/victim is an adult male in uniform with a helmet, whereas a civilian population typically comprises different gender and age groups with few people wearing helmets. This affects their vulnerability to fragment injury. Similarly, assumptions about how the degree of structural damage translates into loss of function of enemy activity within a building is perhaps not best suited to assess the impact of material damage on civilians in terms of safe and adequate shelter. It should also be noted that whereas a measure, such as the CEP^{50} may be adequate for effectiveness calculations, for the protection of civilians from direct harm, a statistical measure capturing 100% of impact locations combined with the blast and fragmentation radius of a munition would seem to be a more appropriate measure. Poje looks at the area of 8 errors probable in range and in deflection when assessing risk of harm to civilians. (Poje Report, 4119, 4117.)

72 *Fire Support*, FM 3-09(2011), sections A-24, A-27. See also, Ashmore Report, 5585.

Photo credit: Jennifer Boyer

Sarajevo's Markale market in 2011. Shelling of the market in 1994 and 1995 killed over 100 people. ♦

The shelling of Sarajevo

Galić (İT-98-29)

'Q. Now, Doctor, in your experience in that hospital... how do you think so many, so many casualties could have been brought about?

A. What İ think is the following: Sarajevo is a relatively large city with quite a large population, and you couldn't keep that entire population in a basement. The population had to move around. People went to work. They had to go and fetch foodstuffs or humanitarian aid. ... There is concrete all around you, and wherever a shell falls leads to further dispersion and reverberation. ... it is very difficult when you are outside a basement or cellar to save yourself from that if there was to be an explosion close by where you were. And it is precisely because of that that there were far more injured and wounded civilians coming into hospital.'[73]

Case background

Shortly after Bosnia and Herzegovina was recognized as a sovereign state in April 1992, violence erupted in Sarajevo.[74] The Bosnian-Serb Army (VRS) was formed in May. One of its formations, the Sarajevo Romanija Corps (SRK), operated in the Sarajevo area. Troops of the Army of Bosnia and Herzegovina (ABiH) placed in Sarajevo and along the confrontation lines outside the city were locked in battle with the SRK, who sought to blockade the city, from September 1992.[75] UN peacekeepers were stationed in Sarajevo with the UN Protection Force (UNPROFOR) and in May 1993, the UN Security Council ordered Sarajevo to be treated as a 'safe area' free from armed attacks.[76]

This case deals with events surrounding the 'siege of Sarajevo' when Stanislav Galić was commander of the SRK, between September 1992 and August 1994 (the indictment period).[77] Galić was prosecuted before the ICTY for his role in what the Prosecution called 'a protracted campaign of sniping and shelling against civilians in Sarajevo'.

On 5 December 2003, the Trial Chamber found Galić guilty of several counts of war crimes and crimes against humanity—including acts of violence, the primary purpose of which was to spread terror among the civilian population—and inhuman acts committed against civilians. He was sentenced to 20 years of imprisonment. The judgment was rendered by a majority of judges, with one judge appending a separate and partially dissenting opinion.

Both Galić and the Prosecution appealed the judgment. The Appeals Chamber dismissed Galić's appeal in its judgment of 30 November 2006 but granted (by a majority of judges) the Prosecution's appeal and sentenced Galić to life imprisonment.

Relentless bombardment of a besieged population

Sarajevo, the capital of Bosnia and Herzegovina, is 'built in a hilly region along an east-west axis which follows the Miljacka River. By 1992, Sarajevo had grown into the most important political, cultural, industrial, and commercial centre of Bosnia and Herzegovina.'[78] According to one expert, greater Sarajevo had around 500,000 inhabitants at the time, 80% of them living in the fully urbanized municipalities.[79]

During the years of Sarajevo's encirclement almost every neighbourhood was shelled with explosive weapons—some areas were more heavily affected than others. The shelling in some parts of the city was particularly intense between September and December 1992 and in the winter of 1993 up to the shelling of the Markale market in February 1994 (see below), after which it subsided for a while. The daily number of shells impacting in the city ranged from 200 to 300 on a 'quiet day' to 800 to 1,000 on an 'active day'.[80]

73 Testimony of Dr. Milan Mandilović, *Galić* (Public transcript of hearing, 7 December 2001) 1036-1038.

74 The European Community recognized Bosnia and Herzegovina as a sovereign state on 6 April 1992. It was admitted as a member of the UN on 22 May 1992.

75 The ABiH was superior in infantry numbers with about 80,000 troops in the city, but deficient in artillery, whereas the SRK had superior firepower. Its artillery could reach almost every point within Sarajevo but due to lack of troops the SRK could not take and effectively control the city. (Final Report of the Commission of Experts Established Pursuant to Security Council resolution 780 (1992), UN doc. S/1994/674, 27 May 1994, §184.)

76 UN Security Council Resolutions 743 (21 February 1992) and 824 (6 May 1993).

77 This time period covers only part of the conflict in and around Sarajevo which lasted around three and a half years.

78 *Galić* (Trial Chamber Judgment) §197.

79 *Galić* ('Sarajevo Battlefield 1992 - 1994', Defense's Submission pursuant to Rule 94bis of Expert Report of Prof. Dr. Radovan Radinović, general) IT-98-29-T (21 November 2002) 8465 ('Radinović report'). Judge Shahabuddeen speaks of a population of 300,000 persons. (*Galić* (Separate Opinion of Judge Shahabuddeen to the Appeals Chamber Judgment) §39.)

80 Final Report of the Commission of Experts Established Pursuant to Security Council Resolution 780 (1992), UN doc. S/1994/674, 27 May 1994, §188.

Thousands of shells were landing at the time. It was raining shells.[81]

Among the many types of explosive weapons used were mortars of various calibres (including 82mm and 120mm), howitzers of various calibres (including 122mm, 130mm and 155mm), anti-tank guns, anti-aircraft guns, as well as MBRLs.

Based on an expert report by Ewa Tabeau, the Trial Chamber found that several hundreds of civilians were killed and thousands injured during the indictment period.[82] According to that report, of all civilians killed, about 932 civilians (67%) were killed by shelling, 25% by sniping and other firearms, and 8% due to other causes. Of all civilians wounded, about 3,405 civilians (67%) were wounded by shelling, 31% by sniping and other firearms and 2% by other causes. The report notes that several persons were wounded more than once.[83]

Many civilians were injured or killed whilst engaging in typical every-day pursuits. The Trial Chamber noted that '[i]nhabitants of Sarajevo–men, women, children and elderly persons – were terrorized and hundreds of civilians were killed and thousands wounded during daily activities such as attending funerals, tending vegetable lots, fetching water, shopping, going to the hospital, commuting within the city, or while at home.'[84]

81 Testimony of Ismet Hadžić, *Galić* (Public transcript of hearing, 24 July 2002) 12248.

82 *Galić* (Trial Chamber Judgment) §581.

83 *Galić* (Prosecutor's Submission Pursuant to Rule 94*bis* of Expert Report of Ewa Tabeau, P. Exhibit P3731) IT-98-29-T (13 May 2002), 3732, 3722. The author of the report believes that the number of civilians killed would have been much higher if an external definition of status had been used instead of a self-reported status. (Ibid, 3702.)

84 *Galić* (Trial Chamber Judgment) §764. According to a UN military observer, attacks on funerals were so frequent that it 'became normal'. (*Galić* (Trial Chamber Judgment) §220.) There were allegations that firefighters and ambulances were specifically targeted. (*Galić* (Trial Chamber Judgment) §§218-219.)

The shelling caused 'extensive destruction of civilian inhabitations in Sarajevo' and damage to several hospitals.[85] The Koševo hospital, a civilian medical facility, for example, was regularly shelled causing the death of and injury to patients and significant damage to the hospital infra-structure. According to the Trial Chamber, this led to a substantial reduction in the medical facility's ability to treat patients.[86] Inhabitants of Sarajevo also suffered from shortages of food and medicine and parts of the population did not have access to running water and electricity because of damage done by the fighting to power lines and water pipes.[87] Many civilians 'lived for a long period of time in the cellars of their buildings in order to avoid the shells … some old people were "literally dying of malnutrition because they were too terrified to come out".'[88]

A campaign of shelling onto civilian areas

The case brought by the Prosecution, for procedural reasons, is based on a number of scheduled incidents of shelling and sniping, understood as representative of a 'coordinated and protracted campaign of artillery and mortar shelling onto civilian areas of Sarajevo and upon its civilian population'.[89] Because UN peacekeepers of UNPROFOR had been stationed around Sarajevo, numerous testimonies by military experts and investigation reports were submitted to the case file. Four scheduled incidents are discussed below.

MORTAR SHELLING OF A FOOTBALL TOURNAMENT IN THE DOBRINJA RESIDENTIAL AREA

Some inhabitants of Dobrinja, a residential area situated alongside the airport to the south-west of the city, decided to organize a football tournament on 1 June 1993. The tournament was held in a corner of a parking lot bounded by six-storey apartment blocks on three sides. A crowd of about 200 people gathered to watch the matches. Shortly after the start of the second match, two 82mm mortar shells exploded in quick succession in the parking lot. The Trial Chamber established that the attack killed over 10 persons and injured about 100 persons.[90]

The Defence argued that the football pitch was located very close to the confrontation lines and that the shells were not deliberately fired at the civilians. The Majority of the Trial Chamber found that possible military objectives in the area were not the intended targets of the attack. This finding was based mainly on the 'pattern of the firing'—the second shell did not land closer to any of the potential military objects and was fired too quickly after the first shell to have been correction fire.[91] In contrast, Judge Nieto-Navia noted in his Partly Dissenting Opinion that 'the distance from the confrontation lines to the parking lot was in the order of only 120 metres', and that it could thus not be established whether the shells were fired 'deliberately or indiscriminately' at

85 *Galić* (Trial Chamber Judgment) §584.

86 *Galić* (Trial Chamber Judgment) §509. See also *Galić* (Trial Chamber Judgment), §§244-245, discussing injuries to staff and patients at the State Hospital, and damage to several hospital buildings, particularly from artillery shelling which led to reduced bed capacity.

87 *Galić* (Separate and Partly Dissenting Opinion of Judge Nieto-Navia to the Trial Chamber Judgment) §8.

88 *Galić* (Trial Chamber Judgment) §222.

89 *Galić* (Trial Chamber Judgment) §15.

90 *Galić* (Trial Chamber Judgment) §§372-376.

91 *Galić* (Trial Chamber Judgment) §§382-383.

Dobrinja neighbourhood, Sarajevo (1996)

civilians.[92] Richard James Higgs,[93] an expert witness called by the Prosecution, considered that 'The odds of hitting this target [the football match] … are very high' even without pre-recording fire.[94]

The Defence also submitted that off-duty soldiers were among the crowd, suggesting they were the legitimate target of the attack.[95] Although it accepted that the number of soldiers present at the game was 'significant', the Trial Chamber found that the crowd was carrying out a civilian activity (watching and playing football), and that 'an attack on a crowd of approximately 200 people, including numerous children, would clearly be expected to cause incidental loss of life and injuries to civilians excessive in relation to the direct and concrete military advantage anticipated'. Taking account of evidence showing that the shelling of Dobrinja was a common occurrence and that the parking lot area had been shelled on previous occasions, the Majority of the Trial Chamber found that the attack was an example of 'indiscriminate shelling by the SRK on a civilian area'.[96] The Appeals Chamber supported the view that even if combatants had 'intermingled' with the civilian population, this did not in any way change the civilian character of a population, provided these were not regular units with fairly large numbers.[97]

MORTAR SHELLING OF A WATER COLLECTION POINT IN 'C5' DOBRINJA

As the water had been cut off, inhabitants of 'C5'—a part of Dobrinja—replenished their water supply at a well-known emergency water point in the front yard of a residence. On the afternoon of 12 July 1993, a crowd of about 50 to 60 people were waiting in line when an 82mm mortar shell exploded in the vicinity of the well killing over ten people and wounding over ten more.[98]

The Defence submitted that the intended target of the mortar shelling was a nearby military objective. Expert witnesses for the Defence, Aleksandar Stamatović, Janko Viličić and Miroljub Vukašinović, emphasized that different witnesses had testified that the confrontation line was between 50 and 250 to 300 metres away from the water pump and they concluded that the queue was not the intended target.[99]

Possible military targets considered by the Trial Chamber were 120 metres to 250 metres away from the impact point of the shell. The Majority of the Trial Chamber concluded that because there was no immediate military objective 'near the well' and because the area around the well was repeatedly shelled after the incident, the civilian water queue was 'deliberately targeted'.[100]

92 *Galić* (Separate and Partly Dissenting Opinion of Judge Nieto-Navia to the Trial Chamber Judgment) §§64-65.

93 Quarter Master Sergeant Instructor, British Army.

94 Higgs Report, 3253.

95 *Galić* (Trial Chamber Judgment) §§377, 386, 387. Stamatović et al. cited witness testimony according to which possible military objectives were at a distance of 800-1000m and the confrontation line at a distance of 250m. On the basis of a 'lethal range' calculation, these experts concluded that the number of those killed was 'relatively small' but that the number of those wounded was 'unrealistically high'. (Stamatović report, 7166.)

96 *Galić* (Trial Chamber Judgment) §387. The Defence also submitted that the parking lot was not visible to SRK forces. The Trial Chamber responded that if the SRK had indeed launched shells into a residential area at random, without taking feasible precautions to verify the target of the attack, they would have unlawfully shelled a civilian area, an argument confirmed by the Appeals Chamber. (*Galić* (Appeals Chamber Judgment, §309(f).)

97 *Galić* (Appeals Chamber Judgment) §137.

98 *Galić* (Trial Chamber Judgment) §§388, 390.

99 Stamatović report, 7159.

100 *Galić* (Trial Chamber Judgment) §§395-397.

All I was able to observe was blood and the bodies of these children scattered all around.[101]

In a footnote, the Trial Chamber also cited witness testimony to the effect that the area was shelled indiscriminately like the rest of Dobrinja, and consequently, no concentration of fire was discernible.[102] By contrast, Judge Nieto-Navia cited evidence suggesting that military objectives could have been between 30 and 200 metres away from the well. In his view, it could not be excluded that one of these objects was the target of the attack.[103] The Appeals Chamber reaffirmed the Trial Chamber's finding that possible military objectives 'were too far away from the impact to have been the true objective'.[104]

MORTAR SHELLING OF A PARKING LOT IN THE ALIPAŠINO POLJE RESIDENTIAL AREA

Around mid-day on 22 January 1994, children were playing in a parking lot situated among tall apartment blocks in the Alipašino Polje residential area when several mortar shells exploded. The Tribunal established that two 82mm mortar shells and one 120mm mortar impacted in the residential neighbourhood, killing six children and injuring other civilians, including children. It also damaged parked cars and the façades and windows of buildings.[105]

There was a possible military target in the area, which witnesses placed between 150 and 500 metres away from the site of the explosion. Because the shells did not land progressively closer to the possible target and because the shelling ceased after just three rounds had been fired, which all landed wide of that target, the Trial Chamber concluded that the attack was '*at the very least*, indiscriminate as to its target (which nevertheless was primarily if not entirely a residential neighbourghood [sic])'.[106]

MORTAR SHELLING OF THE MARKALE MARKET

Around mid-day on 5 February 1994, many people were shopping at the Markale open-air market in the old town when a 120mm mortar shell landed in the marketplace. The explosion killed over 60 persons and injured over 140 others.[107]

According to one report on the incident, 38% of those killed were women and 31% were over the age of 55. Among those injured, 40% were women and 50% were minors or over 55 years old. The explosion also damaged the stalls, merchandise and the façades of neighbouring buildings—mostly by fragment projection.[108]

In a report on the Markale market incident, Berko Zečević[109] et al., put the explosive mass of a 120mm mortar shell at 2,500 grams and considered that fragments with a mass greater than 0.5 grams and a kinetic energy of at least 100 joules were lethal. He estimated that the shell produced 2,000 lethal fragments (out of a total of 5,000 fragments). In his assessment, the potential destructive power of the projectile in the target environment corresponded with the number of victims and type of injuries suffered.[110]

The Defence experts Stamatović et al. challenged the number of victims caused by the incident on the basis of fragment projection modelling. Based on this, they also raised doubt about the explosive projectile involved and the direction and range from which it was fired.[111] Stamatović et al. considered that the probability of hitting the Markale market was 'extremely small (5% or less) even in ideal firing conditions at a distance of between 3'620 – 3'907 metres from the target'. To achieve a hit probability of 95% or more, even at closest possible range, several shells would have to be fired.[112] In contrast, Higgs, an expert witness for the Prosecution, asserted in his report that 'it is distinctly possible to hit the market with a single initially sighted round', and it is even easier if the target is pre-recorded.[113]

The Trial Chamber found that the shell travelled a distance considerably greater than 2,600 metres and it was therefore fired from within SRK controlled territory.[114] It received evidence suggesting there was a possible military target in the vicinity of the market and an ABiH brigade headquarters about 300 metres away from the market. The Majority of the Trial Chamber

101 Testimony of Refik Aganović, *Galić* (Public transcript of hearing, 24 April 2002) 7723-7724.

102 *Galić* (Trial Chamber Judgment), footnote 1348.

103 *Galić* (Separate and Partly Dissenting Opinion of Judge Nieto-Navia to the Trial Chamber Judgment) §70.

104 *Galić* (Appeals Chamber Judgment) §282.

105 Stamatović report, 7158.

106 *Galić* (Trial Chamber Judgment) §345.

107 *Galić* (Trial Chamber Judgment) §§443, 463.

108 *Galić* ('Official Report on Explosion of Artillery Projectile on "Markale Market"…', P. Exhibit P2365.1) IT-98-29-T (8 April 2002) 268317, 268320.

109 Formerly with the Army of Bosnia and Herzegovina. Today Head of the Defence Technology Department at the University of Sarajevo

110 *Galić* (B. Zečević et al., 'Study of the circumstances and causes of the massacre at the Markale market on 5 February 1994' (7 February 1994], P. Exhibit 3276.1) IT-98-29-T [undated], 3465-3464.

111 Stamatović Report, 7193-7190.

112 Stamatović Report, 7140.

113 Higgs Report, 3249.

114 *Galić* (Trial Chamber Judgment) §482.

Cities should not be fired upon with artillery guns (indirect firing).[122]

considered that ‘a target, such as Markale market, can be hit from a great distance with one shot if the area is pre-recorded’ and concluded ‘that the mortar shell … was fired deliberately at the market’, which is not a legitimate military objective. The Trial Chamber also noted that mortar shells of the same calibre had fallen around Markale market in the months preceding the incident.[115]

Judge Nieto-Navia discussed expert evidence suggesting that the degree of accuracy would be more in the order of 100 metres even if the fire had been pre-recorded. He recalled that a 120mm mortar shell ‘would be affected by day-to-day variations such as changing wind conditions’ and concluded that it was ‘very unlikely’ that the Markale market, which he assumed to cover an area of about 41 by 23 metres, could have been hit intentionally on the day of the incident using only one shot. In his view, ‘evidence concerning the targeting accuracy of a mortar … [did] not establish that the shell … was deliberately aimed’ at the market.[116]

The Appeals Chamber upheld the Trial Chamber’s finding that the attack was unlawful but arrived at this conclusion by a different route. It cited testimony to the effect that ‘an experienced mortar crew could reach to within 200m or 300m of their target on the very first shot’ and stated: ‘whether the SRK was aiming for the market itself or for some other target within the surrounding

115 *Galić* (Trial Chamber Judgment) §§494-495.

116 *Galić* (Separate and Partly Dissenting Opinion of Judge Nieto-Navia to the Trial Chamber Judgment) §§98, 101. The weather was described as ‘sunny, clear, there was no wind, no precipitation and no fog. Visibility was good’ in *Galić* (‘Official Report on Explosion of Artillery Projectile on “Markale Market”…’, P. Exhibit P2365.1) 268319.

300m, it was aiming for a target within a civilian area, and this shelling incident was thus an example of shelling that deliberately targeted civilians. The Trial Chamber was incorrect to find that the shell was deliberately aimed at Markale market, but correct to find that it was deliberately aimed at civilians, and its conclusions will not be overturned’.[117]

‘Area weapons’: inappropriate in an urban setting

In this case, in contrast with the other cases analysed for this report, several parties to the conflict could have launched the attacks under consideration, and there were allegations that ABiH forces had, on occasion, directed fire into Sarajevo.[118] The experts’ and the Trial Chamber’s involvement with crater and ballistic analyses was therefore mostly geared toward establishing the source of the fire and the responsible party, by determining the direction and range the shells were most likely fired from. Nevertheless some experts made more general statements about the appropriateness of explosive weapon use.

The Prosecution’s expert witnesses held different views on the accuracy of mortars and appropriateness of their use. According to Higgs, ‘[t]he modern mortar is no longer the inaccurate weapon of the past, a proficient detachment with training can easily hit targets, throughout its ranges, to an accuracy of less than 40m. … The use of pre-recorded targets reduces the amount of adjustment that has to take place and in some cases removes this need completely’, making it possible for the mortar crew to ‘know exactly where the round is going to land’.[119] This contrasts with the statement made by Pyers Tucker,[120] who deemed it ‘entirely illegitimate … to be using artillery or mortars’ … ‘in order to try and attack so-called military targets consisting of one building or one vehicle … when the ability of artillery or … mortars … to hit that target are negligible and the chances of that artillery or mortars of hitting the surrounding civilian houses is 99.9 per cent.’[121] Based on his experience in the war in Bosnia and Herzegovina, Zečević today believes that any use of unguided artillery, mortar or rocket ammunition near urban areas carries a high risk of causing harm to the population. In his view, ‘[c]ities should not be fired upon with artillery guns (indirect firing).’[122]

117 *Galić* (Appeals Chamber Judgment) §335.

118 See e.g. *Galić* (Separate and Partly Dissenting Opinion of Judge Nieto-Navia to the Trial Chamber Judgment) §6.

119 Higgs Report, 3258. Higgs draws the line at using them to attack a person: ‘A competent military commander would not use a mortar to take out a sniper in a built-up area.’ However, this assessment is not based on concern for civilians in the vicinity, but on effectiveness: ‘the mortar would have little chance of penetrating the cover provided by buildings’. (Ibid., 3251.)

120 British Army officer and military assistant to General Philippe Morillon, UNPROFOR.

121 Testimony of Pyers William Tucker, *Galić* (Public transcript of hearing, 18 June 2000) 10028-10029.

122 Response to questionnaire by Berko Zečević, 17 June 2014, on file with PAX. Similarly Radinović, a military expert for the Defence, considered that ‘mortars are weapons which act by the so-called indirect targeting, and that for any even a little more precise fire it is necessary to have its corrections, which in turn means that it is necessary to fire a previous shot and observe the hit, then make appropriate corrections of the firing elements. It is simply not probable that such a precision of fire could have been achieved by only one or two projectiles.’ (Radinović report, 8375, 8358.)

Some experts focused on the use of MBRLs but the Trial Chamber made no finding as to the permissibility or otherwise of MBRL use in this context.[123] Patrick Henneberry,[124] a military observer with UNPROFOR, described the use of the 32-barrel MBRL which he called an 'area weapon'. According to Henneberry, '[t]his multiple barrel rocket launcher is designed to have a spread pattern of tens of metres, if not hundreds of metres, depending on the type, when the shells land on the ground. It is not possible to fire the weapon and have the shells land in a very small area. They spread out in flight and then land over literally up to a kilometre square'. He considered their use 'inappropriate' 'in an urban setting in terms of areas where there are civilians and military together' because 'it would be impossible … to predict … where the rockets would land'.[125] Another military observer stated that MBRLs 'cannot be trusted to hit specific targets'.[126]

A general pattern of fire leading to severe psychological suffering

The Trial Chamber recognized 'a general pattern of fire into Sarajevo' characterized by shells frequently impacting in civilian neighbourhoods.[127] It understood the scheduled incidents to exemplify the overall situation in Sarajevo, and evaluated them 'within a more general evidentiary context'.[128]

The Majority of the Trial Chamber concluded that a 'campaign' of shelling and sniping had been conducted, characterized by widespread and systematic shelling and sniping of civilians resulting in their death or injury.[129] The Majority believed that such a campaign existed, on the grounds, *inter alia* that '[t]he most populated areas of Sarajevo seemed to be particularly subject to indiscriminate or random shelling attacks'.[130]

The Trial Chamber also found that the aim of the campaign was to terrorize the civilian population. This conclusion was informed by 'the nature of the civilian activities targeted, the manner in which the attacks on civilians were carried out and the timing and duration of the attacks on civilians'.[131] The Trial Chamber noted that the SRK attacked 'men and women, children and elderly in particular while engaged in typical civilian activities or where expected to be found, in a similar pattern of conduct throughout the city of Sarajevo'. In the assessment of the Majority, the primary purpose of the campaign therefore was 'to instill in the civilian population a state of extreme fear'.[132] The Trial Chamber stressed the 'physical and psychological suffering inflicted on the victims' and described the atmosphere in Sarajevo as 'an anguishing environment'. The scale, pattern and virtually continuous repetition of the attacks carried out almost daily over several months, was considered an aggravating circumstance in the sentencing.[133]

Taking account of the 'conditions of urban warfare'

On appeal, the Defence argued that the Trial Chamber should have paid specific attention to 'the real difficulties encountered by a Commander when a war is waged in urban conditions'.[134] The Defence emphasized that a war in an urban setting, 'always includes collateral damages … despite all precautions, it is not possible to control the opening of fire and the firing in urban conditions to avoid civilian casualties'.[135] In its view, the Trial Chamber had, notably, failed to assess the possibility of artillery errors.[136] The Defence argued that 'the mortar … is designed as an area weapon, therefore relatively imprecise and that errors in firing could easily and frequently occur.' It its view, the 'danger radius' was 'equal to or more than 500 metres.' The Defence further argued that the armed forces were using 'old ammunition' which 'could provoke additional errors, i.e. more possible collateral damages.'[137]

The Prosecution replied that the Defence had failed to explain how such errors could be acceptable in the context of IHL considering these problems were known in advance.[138] 'Assuming Appellant is correct, and his mortar crews were not capable of a high degree of accuracy, it was incumbent upon him to ensure that these uncertainties were factored into targeting decisions; *i.e.* when deciding which type of weaponry is appropriate to the target and associated risks. Either it should not have been used at all or, alternately, the commander was required to apply the principle of proportionality.'[139] The Appeals Chamber dismissed Galić's arguments, mainly on the basis that he had failed to specify where in the Trial Judgment the Trial Chamber had erred in applying 'the principles of protection, distinction and proportionality'.[140]

Galić also invoked the 'conditions of urban warfare' as a mitigating circumstance that considerably lessened his criminal responsibility.[141] The Appeals Chamber rejected this argument but the effects

123 The Trial Chamber discussed the use of MBRLs only in connection with Galić's control over the shelling (a question relevant to establishing his responsibility as a commander). With reference to testimony attesting to the 'high level of co-ordination' of the shelling that would in particular be required for the use of MBRLs, the Trial Chamber concluded that *Galić* 'had effective control, in his zone of responsibility, of the SRK troops' (*Galić* (Trial Chamber Judgment), §§644, 663.)

124 Major, Canadian armed forces (Retired) and UN military observer.

125 Testimony of Patrick Henneberry, *Galić* (Public transcript of hearing, 21 May 2002) 8612-8615.

126 Testimony of Jeremy Peter Hermer, *Galić* (Public transcript of hearing, 15 May 2002) 8480-8481.

127 *Galić* (Trial Chamber Judgment) §561.

128 *Galić* (Trial Chamber Judgment) §§188-189, 207-208. The Defence unsuccessfully challenged this approach on appeal.

129 *Galić* (Trial Chamber Judgment) §583.

130 *Galić* (Trial Chamber Judgment) §584.

131 *Galić* (Trial Chamber Judgment) §592.

132 *Galić* (Trial Chamber Judgment) §593.

133 *Galić* (Trial Chamber Judgment) §764.

134 *Galić* (Defence Appellant's Brief) IT-98-29-A (19 July 2004) §207.

135 *Galić* (Defence Appellant's Brief) §11.

136 *Galić* (Appeals Chamber Judgment) §§187, 232. Galić also alleged that the Trial Chamber had ignored the use of civilians as 'human shields' and the presence of 'dual-use objects', objects used concurrently for civilian and military purposes. The Appeals Chamber rejected these arguments. (Ibid., §194.)

137 *Galić* (Defence Appellant's Brief) §208. The Defence explained that targets were often located on the ground floor of civilian buildings and could only be reached by 'non-direct fire'. (Ibidem.) Judge Nieto-Navia stressed that there was a sizeable military presence, 45,000 ABiH troops, in this city of 340,000 inhabitants, which significantly 'increased the likelihood of harming nearby civilians when attacking ABiH targets'. He also noted that the ABiH forces positioned mobile mortars and other military resources in civilian areas. (*Galić* (Separate and Partly Dissenting Opinion of Judge Nieto-Navia to the Trial Chamber Judgment) §9.) This contrasts with Higgs' portrayal of the situation. In his report, he explained that targeting in 'built-up areas' was easier due to the availability of high vantage points for observers and due to the many reference points that can serve to correct fire. In his view, the conditions around Sarajevo (many reference points, stable mortar positions, solid base plates, and probable pre-recorded targets) meant that 'mortars become very accurate weapon platforms.' (Higgs report, 3255-3254.)

138 *Galić* (Appeals Chamber Judgment) §234.

139 *Galić* (Prosecution Response Brief) IT-89-29-A (6 September 2004) §12.19.

140 *Galić* (Appeals Chamber Judgment) §§194, 236.

141 *Galić* (Appeals Chamber Judgment) §423.

Photo credit: Unknown

A 'Sarajevo Rose'. Crater and shrapnel traces in the asphalt caused by the explosion of a mortar shell filled with red resin as a reminder of the blood that was spilled here.

of 'urban warfare' on the civilian population seemed to have weighed heavily in the sentencing. That inhabitants of Sarajevo were killed and wounded during their daily activities and lived in constant fear of death or injury added to the gravity of the crimes. The Prosecution argued on appeal that the victimization bespoke 'an extraordinary brutality':

> *'The particular cruelty of the crimes is shown by the fact that these acts were perpetrated against civilians in the perceived safety of their homes, at hospitals, schools, market places and while commuting through the city'.*[142]

The Appeals Chamber allowed the Prosecution's appeal and imposed the maximum sentence of life imprisonment.[143]

142 *Galić* (Prosecution Appeal Brief) IT-89-29-A (2 March 2004) §2.39.

143 'In judging what is the sentence merited by the gravity of the crimes in this case, regard has to be had to what the appellant did. For 23 months, as the senior officer in actual command, he directed fire on a daily basis at civilians in Sarajevo. They cowered in mortal fear before a constant barrage of artillery and other guns aimed at them from surrounding mountains and hills with the deliberate design of drilling "terror and mental suffering" in them – apart from causing much carnage, killing and maiming. … In my opinion, what is called for by the gravity of the crimes is the maximum sentence.' (*Galić* (Separate Opinion of Judge Shahabuddeen to the Appeals Chamber Judgment) §§39-40.)

Restrictions on the use of 'heavy weapons'

In contrast to the two other cases discussed in this report, the orders given by Galić did not suggest area bombardment (as defined under IHL). On the contrary, several SRK orders placed explicit restrictions on the use of artillery fire into Sarajevo. An order by the 'Serbian Republic BiH' of 20 April 1992, for example, forbade 'artillery and heavy weapon fire' on targets in the city of Sarajevo. The Ministry of Defence could, however, authorize such fire in exceptional cases. Similarly, a military instruction by SRK Command of 23 June 1992 prohibited 'usage of all artillery weapons in Corps zone' and made such use subject to authorization by the Corps Commander. The Corps Command also had to be promptly informed about the effects of artillery fire. Although early instructions were sometimes ambiguous as to their scope, later orders made it clear that fire from all artillery weapons with a calibre of—and exceeding—12.7mm, including mortars, were subject to restrictions.[144]

After the Markale market shelling on 5 February 1994, the Bosnian Serb forces agreed—under threat of NATO airstrikes—to move their 'heavy weapons', 'including tanks, artillery pieces, mortars, multiple rocket launchers, missiles and anti-aircraft weapons' with a calibre of 12.7mm and above, to positions 20 kilometres away from the centre of Sarajevo where they were placed under the supervision of UNPROFOR. Heavy weapons of the Bosnian forces within this so-called 'heavy weapons (total) exclusion zone' (TEZ) were also placed under UNPROFOR control.[145]

Why the line was drawn at a calibre of 12.7mm is not clarified in these documents. It seems that this related to all explosive weapons delivered from a distance into Sarajevo, as even light anti-aircraft systems and heavy machine guns fell within the scope of these measures.[146] In this context, the reference to 'heavy weapons' therefore, arguably, distinguishes between explosive weapons and firearms (small arms), rather than between heavy and light explosive weapons.[147] This is explicit in the cease-fire agreement of 31 December 1994, which stipulates that the parties agree to 'refrain from the use of *all explosive munitions, and the use of weapons used to fire explosive munitions*'.[148]

144 Radinović Report, 8363, 8361, 8016, 7986, 7929, 7876, 7790.

145 'United Nations Protection Force', UN Department for Public Information, September 1996, http://www.un.org/en/peacekeeping/missions/past/unprof_b.htm.

146 Itani, *Weaponry in the Former Yugoslavia*, p. 1. Other explosive weapons, such as, mines or grenades were not included. An order by VRS Main Staff of 5 August 1993 lists types of 'infantry weapons' subject to restrictions, including 'mortars of all kinds, tanks, artillery and anti-tank weapons, anti-artillery pieces and rocket launchers'. (Radinović Report, 8016.)

147 *Cessation of Hostilities* (Annex I to the Agreement on Peace in Bosnia and Herzegovina of 30 January 1993), Report of the Secretary-General on the Activities of the International Conference on the Former Yugoslavia, UN doc. S/25221, 2 February 1993, Annex IV, p. 19. Interestingly, early agreements between the SRK and UNPROFOR on how to define 'heavy weapons' subject to UNPROFOR control concerned a narrower category of weapons. See the Report of the Secretary-General on the International Conference on the Former Yugoslavia, UN doc. S/24795, 11 November 1992, §21. See also the less inclusive definition of 'heavy weapons' in respect of the re-deployment of forces, in T*he Dayton Peace Agreement*, 21 November 1995, Annex 1A: Military Aspects of the Peace Settlement, Art. IV(5)(a).

148 *Agreement on Complete Cessation of Hostilities, signed on 31 December 1994*, Letter dated 6 January 1995 from the Secretary-General addressed to the President of the Security Council, UN doc. S/1995/8, Annex II, §4(b). (Our emphasis.)

Findings

Area weapons: too inaccurate for use in a populated area?

Most experts described mortars and other artillery weapons as ‘area weapons’. The Defence’s case was based, in part, on the assertion that mortars were relatively inaccurate. This view was shared by all but one of the prosecution experts. Whilst most prosecution experts considered that mortars and other artillery weapons should not be used in a place like Sarajevo due to the high risk of civilian harm created by the relative inaccuracy and area effects of these munitions (MBRLs were deemed particularly ‘inappropriate’ for use in such a context), experts for the Defence advanced the exculpatory argument that owing to the inaccuracy of the weapons, in a context such as Sarajevo, harm to civilians and civilian objects was accidental.[149]

Recognizing an explosive weapon-specific pattern of harm to civilians

The Tribunal did not make a legal determination about particular explosive weapon types or about explosive weapons as such,[150] but it deemed the general *pattern of fire* into Sarajevo, characterized by shells frequently impacting in civilian neighbourhoods, impermissible with a view to the impact on civilians. The Majority of the Trial Chamber accepted the Prosecution’s allegation that a *campaign* of sniping and shelling against civilians had been conducted.[151]

The Trial Chamber did not distinguish among different explosive weapon types in its assessment of the permissibility of the shelling. Although a wide variety of explosive weapons were used for shelling attacks on Sarajevo during the indictment period, the scheduled shelling incidents all involved 82mm and 120mm mortars. On appeal, the Defence challenged this global approach to the shelling, but was unsuccessful.[152]

Although the Trial Chamber pointed out that it attached no particular legal significance to the descriptive categorization of the counts into shelling and sniping incidents,[153] the distinction, in this case, between incidents of ‘sniping’—direct fire with small calibre weapons (machine guns or rifles)— and incidents of ‘shelling’—use of explosive weapons, mostly indirect fire—clearly indicates a weapon-specific pattern of harm. Such a pattern was also confirmed by Tabeau’s data on civilian casualties showing that over two thirds of all civilians were wounded or killed by explosive weapons (‘shelling’). In terms of the wider impact of the shelling on civilians, the Trial Chamber recognized the mental suffering caused by prolonged and repeated shelling into a populated area. The impact of explosive weapon use on the provision of health care was also acknowledged, but not dealt with in detail. The Trial Chamber did not discuss the risk of harm to civilians from explosive or toxic remnants of war.

149 Stamatović et al. considered that ‘even under ideal conditions, the probability of hitting the target was very low.’ This led these experts to the conclusion that the targets ‘were hit by accident i.e. that they were not the targets of firing’. (Stamatović Report, 7137.)

150 In another case dealing with shelling in Sarajevo, the *Dragomir Milošević* case, the Trial Chamber found that ‘modified air bombs’ were ‘indiscriminate weapons’. It described the modified air bomb as a ‘highly inaccurate weapon with great explosive power’. (*D. Milošević* (Trial Chamber Judgment) §§ 912, 1001.)

151 *Galić* (Trial Chamber Judgment) §594.

152 The Trial Chamber defined ‘sniping’ but not ‘shelling’ in its judgment. On appeal, the Defence argued that the Trial Chamber should have defined the term ‘shelling’ and that the scheduled incidents only involved mortars. According to the Defence, if shelling also referred to other artillery weapons, it would have been ‘necessary to determine clearly when and in what way’ such weapons were used and with which consequences. (*Galić* (Defence Appellant’s Brief) §§176-177.)

153 *Galić* (Trial Chamber Judgment) §§65, 184.

Arguably, the Tribunal’s attention to the humanitarian consequences of the general pattern of fire accounts, at least in part, for its finding of unlawfulness in this case. As in the *Gotovina* case discussed in later in this report, competing claims were made about the accuracy of the weapons used and about the actual targets of attack. Similar to the *Gotovina* case, the Trial Chamber used the distance between an alleged military objective and shell impact locations as an indicator (among others) the unlawfulness of a specific attack. The distance indicated both the probable target of attack and whether the attack was directed and its effects limited as required under IHL. Judge Nieto-Navia and the Defence suggested that a determination of the legality of an attack required the exclusion, beyond a reasonable doubt, of the possibility that fire could have been aimed at a military objective. Shell impact locations hundreds of metres from such a target would not necessarily indicate that the attack was unlawful, as long as it was not proven to be disproportionate or its effects not limited. The Appeals Chamberb sidestepped these assessments. For instance, it was ultimately irrelevant whether the attacker had aimed at the Markale market itself or at a target within 300 metres of the market. As the attacker was aiming at a target ‘within a civilian area’, the Tribunal considered that the shelling was aimed at civilians. The Majority of the Trial Chamber found that the general pattern of firing reinforced the impression that civilians were ‘directly or indiscriminately attacked’.[154] This approach contrasts with that taken in the Appeal Judgment in the *Gotovina* case, where the general pattern of shelling is not given much weight.

Effectively reducing harm to civilians from explosive weapons

In this case, opinions on the acceptability or permissibility of explosive weapon use relate mostly to accurate or inaccurate weapon delivery. The blast and fragmentation radii of explosive munitions played a subordinate role in determinations about what was appropriate or lawful in this context. Military instructions and agreements placing restrictions on weapons of 12.7mm calibre and above, however, reflect recognition of the risk of civilian harm inherent in all explosive weapons (delivered from a distance). Direct fire explosive weapons, which can be more accurately delivered were also excluded from the TEZ.

In the light of the large number of civilian casualties caused by shelling during the siege of Sarajevo, military restrictions on explosive weapon use were tragically insufficient to reduce civilian harm. In contrast, the establishment of the TEZ led to ‘a considerable diminution’ in attacks, and by the summer of 1994, ‘essential services were being restored, commercial life was returning, the black market was in decline, bars and cafés were again open, people could walk the streets in relative safety’. Sadly, this did not last.[155] But for a while, the TEZ, which had completely barred the use of explosive weapons with a calibre of 12.7mm and above around Sarajevo, effectively prevented civilian harm from shelling. ♦

154 *Galić* (Trial Chamber Judgment) §591. (Our emphasis.)

155 Ninth periodic report on the situation of human rights in the territory of the former Yugoslavia, submitted by the Special Rapporteur of the Commission on Human Rights, Tadeusz Mazowiecki, annexed to UN doc. S/1994/1252, 4 November 1994, §§26-27. From mid-August 1994, attacks with heavy weapons increased again. NATO airstrikes (‘Operation Deliberate Force’) were finally triggered by the renewed shelling of Markale market on 28 August 1995.

Photo credit: UN Photo/John Isaac

A view of Zagreb (1992). ♦

The shelling of Zagreb

Martić (İT-95-11)

'İ was lifting Anamaria, Anamaria is my daughter's name, as İ lifted her in my arms, ... İ heard the window-panes getting smashed ...İ felt as if someone had hit me on my back. ... İ noticed that my child's head was covered in blood. İ was terribly shocked. ... she burst into tears. And as İ tried to hush her, she simply went silent. İ wasn't even sure whether my child was still alive or what her condition was...

İ was wounded in the right shoulder blade so that one part of my back muscle was removed as well as my shoulder blade. My ribs were fractured, my lungs was also injured ... İ had a shrapnel there which was wedged in the stomach muscle ... İ was wounded in the right leg and the left foot ... İ stayed in the hospital until the 16th of June, and then ... İ stayed [in rehabilitation] until the month of August ...

...when İ was eventually discharged, İ couldn't carry my child. ... a good part of my motherhood, was spent at various hospitals in rehabilitation ... There are a lot of things İ am not able to do in my house.'[156]

156 Sanja Risović was injured in the waiting room of the paediatric hospital on Klaićeva Street, Zagreb, where she had a vaccination appointment for her 4 month old daughter on 3 May 1995. Testimony of Sanja Risović, *Martić* (Transcript of public hearing, 14 June 2006) 5581-5588.

Case background

In the course of the fighting between the Croatian army (Hrvatska Vojska, HV) and forces of the self-proclaimed Republic of Serb Krajina (Republika Srpska Krajina, RSK), Zagreb, the capital of Croatia, was shelled with rockets on 2 and 3 May 1995.

Milan Martić, the Accused in this case, was the President of the RSK and commander of its armed forces. He was prosecuted before the ICTY on the grounds of, *inter alia*, his role in the planning and ordering of the shelling.[157]

In its Judgment of 12 June 2007, the Trial Chamber found Martić guilty of several counts of war crimes and crimes against humanity, including the rocket attacks on Zagreb, and sentenced him to 35 years imprisonment. Martić appealed the Judgment. The Appeals Chamber rejected most of Martić's grounds of appeal in its Judgment of 8 October 2008 and upheld the sentence. The case deals with an order to shell the cities of Zagreb, Sisak and Karlovac. For reasons of space, and because the case itself only addresses the type of explosive weapon used in relation to the attacks on Zagreb, this report focuses on the latter.

Unguided rockets with cluster warheads

Zagreb is situated between the southern slopes of the Medvednica Mountain and the northern and southern banks of the Sava River. Today, as in 1995, it is Croatia's largest city with a population of almost 800,000.[158]

The explosive weapon used in the attacks on Zagreb was an M-87 Orkan MBRL firing from a distance of between 47 and 51 kilometres.[159] An Orkan rocket launcher can fire twelve rockets in one salvo. These unguided rockets can carry a variety of warheads. In this case, they were fitted with cluster warheads. One such cluster warhead can hold 288 shaped-charge and fragmentation bomblets (submunitions). Each submunition contains between 420 and 450 steel-pellets ('ball bearings'). The submunitions are ejected from the rocket at several hundred metres above the ground and are dispersed over a wide area.[160]

Around 10.30 a.m. on 2 May, between five and eight rockets impacted in the central areas of Zagreb.[161] At midday on 3 May, Zagreb was again shelled with Orkan rockets. Several rockets struck the centre of the city as well as nearby neighbourhoods and caused damage to vehicles and buildings. According to the Trial Chamber, rockets impacted in streets, on intersections, and in squares. They hit a school building, the Croatian National Theatre, a children's hospital and the village of Plešo near the airport, as well as the airport itself.

157 *Martić* (Amended Indictment) IT-95-11-PT (14 July 2003 [resubmitted on 9 September 2003]).

158 According to the Statistical Department of the City of Zagreb the population was 790,017 in 2011 and 779,145 in 2001, http://www1.zagreb.hr/zgstat/index.html.

159 *Martić* (Trial Chamber Judgment) §463.

160 *Martić* (Trial Chamber Judgment) §462; Poje Report, 4160. This type of rocket falls within the definition of a cluster munition under the 2008 Convention on Cluster Munitions and is banned under that. The convention did not exist at the time of the events.

161 The Trial Chamber does not determine the total number of rockets fired at or impacting in Zagreb. The Prosecution submitted that six rockets were fired on each day. (*Martić* (Public transcript of R61 hearing, 27 February 1996) 271.)

The multiple-barrelled rocket launcher aims at an area and one never knows how large an area will be hit.

The Trial Chamber found that seven people were killed and at least 214 injured as a result of the two-day shelling on Zagreb. It noted that many of the survivors 'still suffer the injuries sustained'.[162]

The Orkan MBRL: unsuitable for use in a populated area

According to the Defence, the attack on Zagreb should be considered in the broader context of the war. In his report, the military expert, Milisav Sekulić,[163] did not deal with questions of weapon choice and associated effects in detail. He justified the attack as a response to attacks by Croatian forces ('Operation Flash' launched on 1 May) aimed at taking control of Western Slavonia. In his view, the attack on Zagreb was a necessary means to 'reduce civilian casualties in the area of Western Slavonia'. He considered that 'the fact that legitimate military targets and civilians are on the same axis of shelling cannot be adduced as an argument "prohibiting the use of Orkan rockets"'.[164]

By contract, Tetsuo Itani,[165] an expert witness for the Prosecution discussed the Orkan MBRL in detail. In his view, it 'is a rather indiscriminate delivery system'. According to Itani, the Orkan system was 'designed as an area weapon' of which one could not expect 'pinpoint accuracy'. He stated that at maximum range 'you can expect an area of as much as 600 metres, plus or minus of the intended target, and to the left and right of it.' According to Itani, a single submunition has a 'lethal radius' of about 10 metres but 'the radius around which casualties can be produced can be as far as 50 metres'. And he stated that even being inside a building would not guarantee protection.[166] Itani went on to say that he 'would not have used an Orkan system to attack a military target in Zagreb' because '[i]t is a built up area'. He held the view that it would have been better to use 'some other system that would have provided … appropriate precision, and appropriate destructive force'. His preference would have been 'to use precision guided munitions of heavy calibre, such as a 250 pound bomb with a laser-guided nose, so that you could take out specific installations.'[167]

Jožef Poje,[168] asked by the Prosecution to provide an expert opinion on the use of the M-87 Orkan MBRL during the attacks on Zagreb, expressed the view that the use of artillery in a populated area should preferably be delivered by direct fire and under observation. This expert stated that targets in parks and squares could be neutralized with mortar fire. In contrast,

162 *Martić* (Trial Chamber Judgment) §§308, 313.

163 Colonel, Yugoslav People's Army, Socialist Federal Republic of Yugoslavia and Army of the Republic of Serb Krajina (Retired).

164 *Martić* (Defence's Submission of the Expert Report of Milisav Sekulić Pursuant to Rule 94*bis*) IT-95-11-T (10 October 2006) 10611. 'The threats and rocket shelling were a result not only of extreme necessity but also the only possibility to prevent the killing of civilians on the Okučani – Bosanska Gradiška road.' (Ibid. 10606-10605.) Sekulić and the Defence also argued that Croatia was responsible for not removing military targets from the city to protect its own civilian population. These arguments raised questions about the legality of reprisals and the obligations of the defender to take precautionary measures. These were addressed by the Tribunal, but are not dealt with in this report.

165 Major, Canadian armed forces (Retired).

166 Testimony of Tetsuo Itani, *Martić* (Public transcript of R61 hearing, 27 February 1996), 225, 219, 214.

167 Testimony of Tetsuo Itani, *Martić* (Public transcript of R61 hearing, 27 February 1996), 216-215. Itani did not go into detail about the likely effects of a 250 pound bomb on civilians in a built-up area', even if accurately delivered. Whether guided weapons were available to the attacker was not discussed at that hearing.

168 Lieutenant Colonel, Yugoslav People's Army (Retired).

Casualty of the shelling of Zagreb (1995)

MBRLs, such as the M-87 Orkan, are ‘intended to carry out powerful, sudden and rapid strikes against targets of exceptional importance and large dimensions … As such, they are unsuitable for firing on targets in populated areas’.[169]

Poje seemed to base his opinion mainly on the large dispersion pattern of Orkan rockets, which increases with increasing firing distance. According to this expert, ‘the maximum impact dispersion pattern of a rocket … represents a very large area’ and for this reason, the M87 Orkan is ‘used against targets of large size … principally outside populated areas, in order to avoid civilian casualties and damage to civilian property and infrastructure’.[170] Considering that the rockets were fired at their utmost range (from a distance of between 47 and 51 km), and with a view to the large dispersion pattern, Poje concluded that the Orkan was ‘not a particularly suitable weapon for use (firing) against populated areas (particularly a large and densely populated area like Zagreb), as there is a high probability that major civilian casualties (both in personnel/people and buildings, etc.) will result.’[171]

169 Poje Report, 4122.

170 Poje Report, 4136. In a VRS firing table for 262mm M-87 Orkan rockets, at a range of 40km, the probable error deflection is given as 173m and probable error in range as 159m. For 8 errors probable in range and 8 errors probable in deflection (representing the area of 100% of impact points) this gives distances of +/- 692m in deflection and +/-636m in range from the mean impact point, thus, covering an area of (692m + 692m) x (636m + 636m). Taking into account this dispersion pattern and errors in preparing the initial firing data, Poje concluded that ‘a populated area is not a suitable location for firing rockets at targets within it.’ (Poje Report, 4119, 4117.)

171 Poje Report, 4145.

Rade Rašeta, who was a Colonel in the Serb Army of Krajina, endorsed the above assessment. Asked about his reaction to the shelling of Zagreb, he answered: ‘My reactions were then and are still now that the persons who were familiar with these artillery pieces knew that they were intended for targeting wider areas and not points, and that as such they could entail a lot of casualties. I did not support such a decision and I stand by that view today.’[172] In his view, ‘the multiple-barrelled rocket launcher aims at an area and one never knows how large an area will be hit. Artillery pieces are one type of weaponry, and multiple-barrel rocket launchers are quite another’.[173]

An indiscriminate weapon with predictable effects

As in the *Gotovina* case discussed below, there were indications of area bombardment (threats to attack cities in Croatia). The Defence argued, however, that the attacks were directed against military targets within the cities, such as the Ministry of Defence, the airport and the presidential palace in Zagreb. The Trial Chamber sidestepped the determination of what the rockets were aimed at. It argued that ‘the presence or otherwise of military targets in Zagreb is irrelevant in light of the nature of the M-87 Orkan’.[174] The Trial Chamber described the Orkan as a ‘non-guided high dispersion weapon’ and concluded that ‘by virtue of its characteristics and the firing range in this specific instance’ it ‘was incapable of hitting specific targets.’ It referred to expert evidence regarding the area of dispersion of the bomblets on the ground (about two hectares), to the ‘lethal range’ of a submunition (10 metres), and to the great distance from which the rockets were fired, and found that ‘the M-87 Orkan is an indiscriminate weapon, the use of which in densely populated civilian areas, such as Zagreb, will result in the infliction of severe casualties.’[175]

The Trial Chamber considered that the civilian harm was the predictable result of the use of the Orkan in this context. It pointed out that by 2 May 1995, ‘the effects of firing the M-87 Orkan on Zagreb were known to those involved’, and that in any event, ‘the full impact of using such an indiscriminate weapon was known beyond doubt’ before the decision was taken to once again launch rockets at Zagreb on 3 May.[176] With a view to ‘the indiscriminate character of the weapon used’ (‘the nature of the M-87 Orkan’) and to Martić’s knowledge of the effects of the weapon, the Trial Chamber concluded that Martić had wilfully made the civilian population of Zagreb the object of attack.[177]

On appeal, Martić challenged the finding that the M-87 Orkan was an indiscriminate weapon. He argued, referring to firing tables, that the Orkan was ‘precise, even from long distance, the targets aimed at were large and similar weapons have been used by many armies in the recent past’.[178] He also pointed out that only ‘a small number of rockets were fired’ and that the full capacity of the M-87 Orkan was not used. In his view ‘it was not possible to fully “observe and

172 Testimony of Rade Rašeta, *Martić* (Transcript of public hearing, 2 May 2006) 3939.

173 Testimony of Rade Rašeta, *Martić* (Transcript of public hearing, 3 May 2006) 3970.

174 *Martić* (Trial Chamber Judgment) §461.

175 *Martić* (Trial Chamber Judgment) §463.

176 *Martić* (Trial Chamber Judgment) §463.

177 *Martić* (Trial Chamber Judgment) §472.

178 *Martić* (Appeals Chamber Judgment) IT-95-11-A (8 October 2008) §239.

analyse" accidental or inevitable errors, especially since artillery fire is fraught with the possibility of such errors'. He also claimed that he did not have the appropriate military knowledge to fully appreciate the nature of the M-87 Orkan and the possible consequences of its use.[179]

The Appeals Chamber rejected all of these arguments. It called Martić's description of the M-87 Orkan as the most sophisticated rocket launcher produced by Yugoslavia 'beside the point',[180] and dismissed his contention that the Orkan was 'precise', arguing that the Trial Chamber had, on the basis of expert evidence, taken account of the many factors affecting accuracy and dispersion. The Appeals Chamber concluded that the Trial Chamber had not erred when finding 'that the M-87 Orkan was an indiscriminate weapon, incapable of hitting specific targets' in this context. It also supported the Trial Chamber's reasoning that 'given its findings on the nature of the M-87 Orkan' it could 'disregard the presence of military targets in Zagreb',[181] and its finding that Marti knew about the effect of the M-87 Orkan when he ordered the shelling of Zagreb.[182]

Explosive remnants and long-term impact on health

The risk of civilian harm from unexploded submunitions (duds) was discussed in detail in this case. The Trial Chamber heard evidence about 'the high failure rate' of submunitions and the reasons for such failure.[183] According to one witness, 'there were bomblets all around the place. They were hanging from trees, bomblets'.[184] According to one testimony, police officers retrieved around 1599 sub-munitions and several officers were killed or injured in the process.[185] Almost three months after the attack, children found an unexploded submunition. They played with it and it exploded, causing severe injury to four children.[186]

Nevertheless, the propensity to leave behind unexploded submunitions did not feature prominently in the Trial Chamber's assessment of the permissibility of using Orkan rockets for attacks on Zagreb.[187] One expert stated that the residual effects of a weapon, including explosive remnants, are among the key considerations when determining the appropriateness of a weapon in a given situation.[188]

The Trial Chamber, when considering harm caused to civilians, took account of the long lasting, and in many cases permanent impairment suffered by persons wounded in the attack. It considered 'that shelling caused serious mental and/or physical suffering to those injured'. In the Trial Chamber's opinion, Martić knew that the shelling was likely to cause such suffering, and 'thus intentionally committed acts which amount to cruel treatment and inhuman acts.'[189] In contrast to the *Galić* case, psychological harm from the shelling was only recognized in relation to physically injured survivors, not others affected by the attack.

Findings

Cluster munitions: predictable and unacceptable civilian harm

Given the wide area effects of cluster munitions, their use in a populated area, predictably results in unacceptable civilian harm, and should, arguably, be presumed unlawful. In this case, the Trial Chamber determined that the M-87 Orkan was an indiscriminate weapon, incapable of hitting specific targets, a finding supported by the Appeals Chamber. Some would object that it cannot be inferred from the judgments in this case that cluster munitions are 'inherently indiscriminate' weapons in all circumstances, or even in populated areas generally, because the Tribunal's finding was based on a number of factors, some of which are specific to the context, such as the long distance from which the rockets were fired.

There is ample evidence, however, that cluster munitions cause severe civilian harm, in both the short and long term. Concerns have been raised for decades about the wide area effects of cluster munitions. States have called for an end to their use in 'concentrations of civilians' on numerous occasions. UN special rapporteurs have stated that 'to blanket an area occupied by large numbers of civilians with small and volatile explosives' would have an impact that would 'obviously be indiscriminate', and cluster munition' use in populated areas has been found unlawful by other judicial bodies.[190] Most importantly, a year after the Trial Chamber rendered its Judgment, a treaty was adopted banning cluster munitions, *inter alia*, because of their 'indiscriminate area effects'.[191]

Wide area effects of MBRLs: an acceptable risk to civilians in populated areas?

The rulings in the Martić case may have implications for the use of MBRLs firing unguided rockets into populated areas in a broader sense. The *Martić* case is often cited as an early judicial recognition of unacceptable civilian harm caused by cluster munitions. It should, however, also be noted that several experts considered that the Orkan was inappropriate for use in a populated area, such as Zagreb, because of its inaccurate delivery and the wide area affected by the dispersion of the rockets themselves, irrespective of the rocket warheads. One witness emphasized that the MBRL affected a much wider area than other artillery weapons. Moreover, the risk to civilians from unexploded submunitions only played a minor role in the Trial Chamber's assessment of the weapon's impermissibility in this case. ♦

179 *Martić* (Appeals Chamber Judgment) §§240, 244.

180 Martić (Appeals Chamber Judgment) §§250-251. Martić also argued that the only available alternative would have been 'the more powerful Luna rocket system'. The Appeals Chamber, however, found that it was 'irrelevant' whether the RSK had another artillery system at its disposal. (Ibid., §247.)

181 *Martić* (Appeals Chamber Judgment) §§251, 255. Note that in one place, the Appeals Chamber refers to the Trial Chamber's conclusion in slightly different terms: 'the M-87 Orkan was used as an indiscriminate weapon', which illustrates the difficulty of qualifying a weapon as 'inherently indiscriminate' under IHL. (Ibid., §247.)

182 *Martić* (Appeals Chamber Judgment) §256. It did so with reference to Martić's involvement in matters concerning the weaponry, his statements about the shelling and his position as President and leader of the SVK.

183 See in particular, Tetsuo Itani's testimony, *Martić* (Public transcript of R61 hearing, 27 February 1996).

184 Testimony of Franjo Tuksa, *Martić* (Public transcript of R61 hearing, 27 February 1996), 266.

185 Testimony of Mario Petrić, *Martić* (Public transcript of R61 hearing, 27 February 1996), 242.

186 Testimony of Franjo Tuksa, *Martić* (Public transcript of R61 hearing, 27 February 1996), 262.

187 Note, however, that the Trial Chamber counts a bomb disposal technician among the persons killed by the attack, who died when trying to deactivate a submunition. (*Martić* (Trial Chamber Judgment) §310.)

188 Summary notes of interview with Tetsuo Itani, 17 April 2014, on file with PAX.

189 *Martić* (Trial Chamber Judgment) §471.

190 W. Viebe, 'For Whom the Little Bells Toll: Recent Judgments by International Tribunals on the Legality of Cluster Munitions', 35 *Pepperdine Law Review* (2008); M. Brehm, 'The Use of Explosive Weapons in Populated Areas in 2012', in S. Maslen (Ed.), *The War Report 2012*, Oxford University Press, 2013, pp. 213-214.

191 See, Art. 2(2)(c) of the 2008 Convention on Cluster Munitions. The Convention entered into force on 1 August 2010. A commentary observes that 'the distribution of explosive force and fragmentation over a wide area was one of the technical characteristics of cluster munitions first identified as problematic'. (G. Nystuen and S. Casey-Maslen (Eds.), *The Convention on Cluster Munitions: A Commentary*, Oxford University Press, 2010, sections 0.93 and 2.122.)

Photo credit: UN Photo/John Isaac

View of Knin (1992). ♦

The shelling of Knin

Gotovina et al.(İT-06-90)

> 'T]here was almost an immediate explosion of everything around us. ... there was glass flying around, there was dust. There was pieces of trees flying around. There was brick flying around. There was a ball of fire that came between me and the vehicle in front of me ... We made our way... into a residential area where we felt the shelling would not be as intense. We were not correct. İt was not as intense, but it was still there... it was almost everywhere....'[192]

Case background

Knin and other towns and villages were shelled in the course of a military offensive ('Operation Storm') launched by the Croatian Army (Hrvatska Vojska, HV) on 4 August 1995 to re-take territory in an area of the Krajina region that, at that time, was the self-proclaimed Republic of Serb Krajina (Republika Srpska Krajina, RSK), largely inhabited by Serbs.

The Accused in this case, Ante Gotovina, Ivan Čermak, and Mladen Markač, were jointly charged with unlawful attacks on civilians and civilian objects as underlying acts of crimes against humanity and violations of the laws or customs of war (war crimes).[193] Ante Gotovina was commander of the Split military district and overall commander of 'Operation Storm'.[194]

On 15 April 2011, the Trial Chamber found Gotovina and Markač guilty of war crimes and crimes against humanity committed, *inter alia*, by way of artillery shelling of several towns, and sentenced them to 24 and 18 years of imprisonment respectively. Gotovina and Markač appealed the Judgment. They submitted that the artillery attacks were not unlawful. On 16 November 2012, the Appeals Chamber found—two judges dissenting—that the evidence was indeed insufficient to support a finding that the artillery attacks were illegal. This led to the collapse of the rest of the case and to the acquittal of the Accused.

The Trial Chamber Judgment in the *Gotovina* case represents the Tribunal's most detailed involvement in targeting decisions and questions of weapons choice to date. The Appeals Chamber Judgment is also relatively recent and one of the Tribunal's most controversial rulings. It is therefore discussed in some detail. A number of villages and towns were put under artillery fire in the course of 'Operation Storm', but the case focuses on attacks carried out on Benkovac, Obrovac, Gračac and Knin. For reasons of space, this report deals only with the shelling of Knin.

BM-21 Grad MBRLs and other heavy artillery weapons

The city of Knin is described both as an ancient Croatian royal town, featuring an impressive medieval fort, and as a bleak industrial town notable mostly for its important railway junction. At the time of the attack, Knin was the capital of the self-proclaimed RSK and the stronghold of RSK's President, Milan Martić.

It is unclear how many civilians were in Knin when the shelling started on 4 August 1995. The estimates vary greatly between 2,000-3,000 and 35,000 civilians. The number is disputed, not least because of population movements, with people fleeing the shelling of surrounding villages and seeking refuge in Knin, and others fleeing the shelling in Knin.[195] Based on the evidence presented, the Trial Chamber determined that there were at least 15,000 civilians in Knin on 4 August 1995 and that 'the vast majority of these civilians were women, children, and elderly men'.[196]

'Operation Storm' involved the deployment of several artillery and artillery rocket units tasked to provide support to infantry brigades at tactical level, and to attack targets in the operational depth, including targets in Knin.[197] The Trial Chamber found that Knin was within the range of at least seven 130mm cannons, five of them located at a firing position at a distance of approximately 25 km, and two at a distance of approximately 27 km; and seven 122mm BM-21 Grad MBRLs located at a distance of approximately 18-20 km.[198] Other explosive weapons

192 Testimony of Andries Dreyer, *Gotovina et al.* (Public transcript of hearing, 16 April 2008) 1723. Dreyer was UN Security Coordinator for Sector South in Knin at the time. He described the effects of shelling while he and his colleagues tried to evacuate UN staff members from Knin on the morning of 4 August 1995.

193 *Gotovina et al.* (Corrected Corrigendum to Prosecution's Notice of Filing of Amended Joinder Indictment) IT-06-90-T (12 March 2008). Unlawful shelling was not charged in the indictment as a separate offence, but allegations of unlawful shelling are implicit in charges of crimes against humanity and violations of the laws and customs of war. Unlawful shelling was the primary basis of Gotovina's conviction by the Trial Chamber.

194 *Gotovina et al.* (Trial Chamber Judgment) IT-06-90-T (15 April 2011) §§69, 1161. Ivan Čermak was commander of Knin Garrison and Mladen Markač was commander of the Special Police.

195 *Gotovina et al.* (Trial Chamber Judgment) §§1227-1233.

196 *Gotovina et al.* (Trial Chamber Judgment) §1233.

197 *Gotovina et al.* (Trial Chamber Judgment) §79.

198 *Gotovina et al.* (Trial Chamber Judgment) §1241. The 130mm guns were located near Ključ, in Drniš municipality, and near Donje Peulje in Bosnia Herzegovina. The 122mm BM-21 MBRLs were located at firing positions North-East of Knin in the direction of the Dinara mountains.

were also used during the attack, including 75mm, 80mm, 120mm, and 128mm mortars, 122mm howitzers, tank guns, rocket-propelled grenades and anti-vehicle mines.[199]

Intense artillery shelling started around 5 o'clock in the morning on 4 August with shells detonating across different areas of the town every few minutes. According to one witness, 'the mass of shells from 7 a.m. onwards on 4 August 1995 landed mainly on residential areas in the centre of town.'[200] Estimates by witnesses of the amount of the shells which impacted on Knin varied widely from 200-300 to tens of thousands. According to reports by the artillery units themselves, 600 projectiles (excluding mortar rounds) were launched at targets in Knin on 4 August alone. The Trial Chamber considered that this number was probably exceeded but it could only establish beyond reasonable doubt that the HV fired at least 900 artillery projectiles into Knin over two days.[201]

In terms of the immediate consequences of the shelling, a number of witnesses testified to having seen dead bodies and wounded persons, some of them in civilian clothes. One witness saw 'a number of injured people being brought in on stretchers, some of which had missing limbs.'[202] While evidence was presented that civilians were killed or wounded as a result of shelling, the Trial Chamber found that it could not be established by whom it had been caused.[203 *]

The Trial Chamber received evidence of artillery shells impacting in civilian residential areas, in the downtown area of Knin, and on an intersection in the town centre. Shells and rockets caused damage to buildings, including residential houses. The railway station and its platforms and tracks were struck by at least 10 shells.[204] At least four artillery projectiles impacted near the Knin hospital, some close enough to cause blast damage to the hospital building.[205]

'Indirect fire weapons': appropriate for use in a populated area?

Although the experts consulted in this case agreed on the considerations that affect weapons choice for attacking targets in a populated area, they differed markedly in their determination of what, concretely, was or was not acceptable and permissible in this context.

199 See e.g. *Gotovina et al.* (Trial Chamber Judgment) §§177, 609, 1294, 1306, 1327. '[D]irect fire from tank guns and infantry mortar fire added to the destruction being inflicted by the artillery'. (Ibid., §1336.) One witness testified to having seen evidence of cluster munition use, but the Trial Chamber was not satisfied that the objects the witness saw were bomblets emanating from a cluster munition. (Ibid., §§1282, 1371.)

200 *Gotovina et al.* (Trial Chamber Judgment) §1278.

201 The Trial Chamber found that at least 300 artillery projectiles were fired into Knin from 5 o'clock on 5 August 1995, at least 100 of which fell during the first hour of the attack, which lasted until approximately noon that day. (*Gotovina et al.* (Trial Chamber Judgment) §§1367, 1368.)

202 *Gotovina et al.* (Trial Chamber Judgment) §1300. One witness saw 'approximately 30-40 wounded persons who were bloody and bandaged, as well as approximately 50-75 persons who were bloody and lying immobile on their backs in a row' outside the Knin hospital. The latter group appeared to be dead. (Ibid., §1292.)

203 For example, the Trial Chamber found that 'on 5 August 1995, between 8 and 10 in the morning, a mortar shell struck and killed a group of five persons' which included 'two or three civilians'. (*Gotovina et al.* (Trial Chamber Judgment) §1395.). In another instance, the evidence did 'not establish where, in Knin or elsewhere, these persons were when they suffered injuries from or died as a result of artillery impacts.' (Ibid., §1390.)

* This sentence has been amended for this version.

204 *Gotovina et al.* (Trial Chamber Judgment) §1270.

205 *Gotovina et al.* (Trial Chamber Judgment) §1389.

Focusing on the permissibility (as opposed to the appropriateness) of the shelling, Geoffrey Corn,[206] a witness for the Defence, argued that the legality of any weapon use is contingent on a case-by-case analysis of 'a variety of factors related to the operational necessity for the use, the availability of alternate methods and means of warfare to achieve the military purpose, the enemy situation, and the risk to civilians'. According to Corn, indirect fire artillery attacks on targets in a populated area can be justified by the high military value of the targets and the reduced risk to own military forces compared to ground assault. With a view to alternate means, Corn considered that the decision to employ indirect fires against targets in Knin was 'reasonable' as the HV's capability 'was essentially limited to indirect fire assets, ground combat assets, and a very limited rotary air capability' and as they did not possess 'the type of precision engagement capability' increasingly used by 'advanced western militaries like the United States'.[207]

Corn rejected any kind of categorical exclusion of artillery, whether observed or unobserved, from use in a civilian populated area.[208] He recalled that there is 'no per se prohibition against tube or rocket artillery, direct or indirect artillery fires, observed or unobserved indirect artillery fires, or conventional … artillery or rocket munitions', nor against 'using rocket artillery, such as a 122 MBRL system, to engage lawful military objectives in a civilian populated area'. In Corn's view, only weapons that 'cannot be controlled once fired', such as 'long range missiles' (like Scud missiles) are not subject to sufficient control to comply with international law, whereas most modern tube and rocket artillery weapons 'are subject to enough fire direction control as to not be considered' weapons that cannot be controlled.[209] Although Corn recognized that rocket artillery was 'generally preferred for area targets', it would in his view be 'impermissibly overbroad to assert that use of [rocket artillery] would always be the more indiscriminate option of attack compared to cannon artillery'.[210]

Corn acknowledged, however, that it is 'not uncommon in contemporary operations for commanders to refrain from launching lawful attacks based on policy driven concerns' and that 'the contemporary practice of U.S. and NATO forces is to place ROE controls on the use of artillery in populated areas'. A common restriction in doctrine of the United States America (US), for example, is the prohibition on unobserved indirect fire in populated areas.[211] Yet such controls and restrictions, Corn was quick to point out, are not required under international law and normally contain an exception to protect forces in contact with the enemy.[212]

206 *Gotovina et al.* (Trial Chamber Judgment) §1389.

207 *Gotovina et al.* ("Expert Report of Professor Geoffrey Corn", Defendant Ante Gotovina's submission of expert report of Professor Geoffrey Corn pursuant to Rule 94*bis*) IT-06-90-T (1 July 2009) 24756 ('Corn Report').

208 Corn Report, 24763-24762.

209 Corn Report, 24762.

210 Corn Report, 24762-24760.

211 Summary notes of the interview with Geoffrey Corn, 9 May 2014, on file with PAX. See also G. S. Corn and G. P. Corn, 'The Law of Operational Targeting: Viewing the LOAC Through an Operational Lens', 47 *Texas International Law Journal* (2012) 369 and footnote 101.

212 'While the contemporary practice of U.S. and NATO forces is to place ROE controls on the use of artillery in populated areas, it is simply improper to characterize these controls as indications of per se prohibitions against such use. In fact, almost all such ROE controls permit the use of artillery fires under certain circumstances, or when authorized by a certain level of command. For example, a prohibition against the use of unobserved indirect fires in populated areas will often provide an exception for "forces in contact", or permit such fires when authorized by "Division command or higher." The variety of control measures is not relevant. What is relevant is that by providing exceptions to these policy-based constraints, ROE indicate that such fires are not prohibited per se by the LOAC, but are instead dictated by METT-T-C considerations.' (Corn report, 24764.)

Even a small number of artillery projectiles can have great effects on nearby civilians.

For Harry Konings,[213] a witness for the Prosecution, 'it is the balance between the importance of the target, the enormous negative effect of causing casualties to the civilian population, the risks of the own forces and the availability of alternatives that will bring a commander to decide to use artillery or not. In practically 100% one will decide not to use artillery.'[214] Konings, focusing on what is considered appropriate rather than on the applicable legal standards, considered that the basic rule was 'not to inflict casualties or damage to civilians or their property'.[215] In his view, the use of high explosive projectiles in an urban environment is only acceptable if 'the civilian population is located on such a distance that collateral damage can not occur'.[216] Konings considered that when military targets are in the direct environment of civilian populated areas this 'makes them not acceptable for attack with any indirect fire support system'.[217]

As accuracy is 'a very crucial aspect' in minimizing the risk of collateral damage, Konings found that 'artillery and especially rockets and mortars will be low on the list' when choosing the best available asset for an attack.[218] Whilst Konings acknowledged that some systems are more accurate than others,–he considered that rockets were generally less accurate than howitzers [219] –, Konings believed that unguided mortars and artillery are area weapons intended for attacks against area targets and are not suited for use in populated areas.[220] He explained that if a point target, typically covering an area of less than 50 by 50 metres were to be attacked with a 155mm projectile from 'a longer range', the probable error would also be 50 metres. A 'substantial number of projectiles' would thus need to be fired, which would create a considerable risk of harm to civilians in the area. In any event, Konings considered that uncorrected fires 'should not be used in a civilian populated area',[221] and that the use of artillery and mortars against targets in civilian populated areas without having these targets under observation by a forward observer 'should not be done, unless the target is beyond the … collateral damage distance and the exact location is known.'[222]

The inaccuracy, respectively, the 'probable range of errors of the artillery weapons' was apparently a matter of concern in the planning of 'Operation Storm'. According to the chief of artillery of the Split Military District, Marko Rajčić, who was involved in the planning of the attacks, 'the HV discussed the protection of the civilian population'. Instructions were 'that civilians were not to be targeted and civilian casualties and damage to civilian property should be minimized', and that 'with regard to using artillery in the civilian-populated areas of Knin, Benkovac, Obrovac and Gračac, maximum precision and proportionality should be respected'. The Trial Chamber summarized the considerations as follows:

> *'Rajčić analysed the possible collateral damage of firing at targets in Knin and concluded that the harm to citizens and material damage to surrounding buildings would be "to a lesser extent". In coming to this conclusion, Rajčić considered the use of contact-fuze shells, which cannot pierce concrete as well as the characteristics of the targets, their area, their surface buildings, area, the surrounding buildings, and the quality of construction. He also considered … that there had been substantial emigration of civilians fromKnin and that there was a curfew in place in Knin, which affected the expected number of civilians on the streets and in buildings at 5 a.m.'*[223]

After considering legal and practical factors and evaluating which weapon would cause the least collateral damage while still achieving the military advantage, '[i]t was decided that the MBRLs were going to fire early in the morning.'[224] In respect of one target, Martić's residence, however, Rajčić considered that 'it would have been unacceptable to fire at the residential complex with 122-millimetre MBRLs, because they would damage the buildings around the target, due to their higher density of projectiles covering a broader area'.[225]

213 Lieutenant Colonel, Royal Netherlands Army (Retired).

214 *Gotovina et al.* (Prosecution Submission of Expert Report of Lt. Colonel Konings Pursuant to Rule 94*bis*) IT-06-90-PT (18 January 2008), 4778 ('Konings Report').

215 Konings Report, 4786.

216 *Gotovina et al.* ('Fire Support during Operation Storm, August 1995', Prosecution's Submission of Addendum to Expert Report of Lieutenant Colonel Konings Pursuant to Rule 94*bis*) IT-06-90-T (30 October 2008) 16410 ('Konings Report, Addendum'). Konings considered that '[a]rtillery assets can only be used in case the safe distance between the expected impacts and the civilian population is big enough to avoid casualties'. (Konings Report, 4786.)

217 Konings Report, Addendum, 16413.

218 Konings Report, 4785.

219 Konings Report, 4785.

220 Konings Report, Addendum, 16410.

221 Konings Report, 4778.

222 Konings Report, 4783.

223 *Gotovina et al.* (Trial Chamber Judgment) §§1183, 1184.

224 *Gotovina et al.* (Trial Chamber Judgment) §1184.

225 *Gotovina et al.* (Trial Chamber Judgment) §1191.

Area bombardment

An order given by Gotovina to 'put the towns under artillery fire' suggested that the Croatian forces had engaged in area bombardment, prohibited under IHL.[226] The Trial Chamber did not receive any finalized lists of targets in Knin composed after June 1995 into evidence, and artillery reports were found to lack details and to contain errors or inaccuracies. The Defence contended, however, that the order was not intended and was not understood to mean that the towns themselves should be treated as military objectives. The Tribunal sought to establish what the HV targeted on the basis of the amount of munitions fired, the types of artillery weapons used, and the manner in which they were used during the attacks, as well as shell impact locations, and it considered evidence regarding the accuracy of artillery weapons and the effects of artillery fire.[227]

In respect of the blast and fragmentation effects of explosive munitions, the Trial Chamber referred to expert testimony about the zone affected by blast and fragmentation, and how that zone varied with different fuzing. For example, it pointed out that according to Konings 'fragments from a 120-millimetre projectile can disperse to a range of 1,600 square metres if burst at the height of the target, within which area anybody present will have a fair chance of getting hit by flying shrapnel, or up to 2,100 square metres if burst at a height of three metres above the ground, by using a variable time fuse'.[228]

Regarding accuracy and dispersion of artillery fire, the Trial Chamber recognized that these parameters can vary in function of many factors, including the range from which a weapon is fired at a target and the coordinate system used to locate the weapon and the target.[229] Expert witnesses provided various estimates of the area of dispersion of 130mm cannons and of BM-21 122mm MBRLs at different ranges. The Trial Chamber noted that 'a BM-21 122-millimetre launcher generally covers a broader area than the 130-millimetre cannon'.[230] Based primarily on Corn's testimony, the Trial Chamber considered that although MBRLs were generally less accurate than howitzers or mortars, 'their use by the HV in respect of Knin on 4 and 5 August 1995 was not inherently indiscriminate'.[231]

226 The order called on forces 'to engage in a vigorous attack with intense artillery and air support, on several axes, directed at the main military and political transportation features in the enemy's operational depth', and to provide artillery support through 'powerful strikes against the enemy's front line, command posts, communications centres, and artillery firing positions and by putting the towns of Drvar, Knin, Benkovac, Obrovac, and Gračac under artillery fire'. (*Gotovina et al*. (Trial Chamber Judgment) §§1185, 1194, 1893.)

227 *Gotovina et al*. (Trial Chamber Judgment) §1892.

228 *Gotovina et al*. (Trial Chamber Judgment) §1168.

229 *Gotovina et al*. (Trial Chamber Judgment) §§1165-1167. The Trial Chamber noted that the Croatian army apparently 'used a ten digit coordinate system, which would enable it to plot its targets with an accuracy of up to one metre'. Had they simply used 300-metre-diameter circles on a map to direct MBRL fire, as some evidence suggested, this would, in the Trial Chamber's view, have yielded 'very inaccurate fire results on a specific target in Knin, when compared to using a ten digit grid system of coordinates'. According to the Trial Chamber, that method would have been 'an inherently inaccurate use of artillery fire', which would show a disregard for directly striking or otherwise effectively using artillery against identified targets in Knin. (*Gotovina et al*. (Trial Chamber Judgment) §1896.)

230 *Gotovina et al*. (Trial Chamber Judgment) §1898.

231 *Gotovina et al*. (Trial Chamber Judgment) §1897. The characterization 'inherently indiscriminate' is usually ascribed to a weapon type or weapon category (e.g. chemical weapons or landmines are often said to be 'inherently indiscriminate'). By definition, inherently indiscriminate weapons are illegal. In this case, the Trial Chamber assessed the use of a weapon in a particular context (Knin on 4 to 5 August 1995), and accordingly it is unclear what is meant by the statement that the use of MBRLs was not 'inherently' indiscriminate in this specific context.

Recognizing that the variation in impact locations of artillery shells 'is difficult to delimit precisely', as it depended on a number of factors on which it had not received detailed evidence, the Trial Chamber considered it 'a reasonable interpretation of the evidence that those artillery projectiles which impacted within a distance of 200 metres of an identified artillery target were deliberately fired at that artillery target'.[232] By contrast, impact locations further away from an identified military target served as an indicator of an unlawful attack on civilians and civilian objects. For example, the Tribunal determined that the Croatian forces fired 'at least four artillery projectiles which impacted in the immediate vicinity of the hospital in Knin, which was approximately 450 metres' from the nearest identified artillery target 'as well as at least one projectile which impacted near the Knin cemetery, which was approximately 700 metres' from the nearest identified artillery target.[233]

Emphasizing that 'even a small number of artillery projectiles can have great effects on nearby civilians', the Trial Chamber noted that at distances of 300 to 700 metres the areas of shell impacts were relatively far away from identified artillery targets, that a significant number of artillery projectiles (at least 50) landed in these areas, and that the areas were spread out across the town. It also recalled that on at least two occasions a unit had reportedly fired at the general area of Knin rather than at a specified military objective, and concluded 'that too many projectiles impacted in areas which were too far away from identified artillery targets and which were located around Knin, for the artillery projectiles to have impacted in these areas incidentally as a result of errors or inaccuracies in the HV's artillery fire'.[234]

With respect to shells fired at Martić's apartment, the Trial Chamber pointed out that it was 'located in an otherwise civilian apartment building' and that the building and another target area nearby were 'in otherwise predominantly civilian residential areas'. Referring to expert evidence 'on the accuracy of artillery weapons' and 'on the blast and fragmentation effects of artillery shells', the Trial Chamber considered that at the times of firing (morning and evening) 'civilians could have reasonably been expected to be present on the streets' near Martić's apartment. In its assessment, firing twelve shells of 130mm at Martić's apartment and an unknown number of shells of the same calibre at the target area, from a distance of approximately 25 kilometres, 'created a significant risk of a high number of civilian casualties and injuries, as well as of damage to civilian objects'. The Trial Chamber deemed this risk 'excessive in relation to the anticipated military advantage'. In the Trial Chamber's view, this amounted to a 'disproportionate attack' that showed that the Croatian army 'paid little or no regard' to the risk of civilian harm when firing artillery at a military target on at least three occasions.[235]

In the final analysis, the Trial Chamber found that the fact that the Croatian army did not limit itself to shelling areas containing military targets (and thus deliberately fired at areas devoid of military targets), and the insufficient regard paid to the risk of civilian harm in the disproportionate firing at two locations where Martić was believed to be present, were consistent with the plain text of Gotovina's orders to put towns under artillery fire. It concluded that the Croatian army, by order of Gotovina, treated Knin and other towns, as targets when firing artillery projectiles. This

232 *Gotovina et al*. (Trial Chamber Judgment) §1898. The Trial Chamber only applied this standard to the relatively small portion of artillery projectiles for which it was able to conclusively determine the precise locations of impact.

233 *Gotovina et al*. (Trial Chamber Judgment) §1905.

234 *Gotovina et al*. (Trial Chamber Judgment) §§1906, 1909, 1911.

235 *Gotovina et al*. (Trial Chamber Judgment) §1910.

The fear of violence and duress caused by the shelling of the towns … created an environment in which those present there had no choice but to leave.

amounted to an indiscriminate attack on these towns and thus an unlawful attack on civilians and civilian objects.[236]

Forced population displacement

The Trial Chamber recognized that the shelling was an important cause of population displacements, with particular reference to the psychological suffering of civilians from the shelling. Several experts emphasized the negative mental health effects of shelling in populated areas. Konings underlined the immense psychological stress caused, in particular, by prolonged or repeated shelling: 'If you don't know where the next round is falling, or if you have to stand at the water collection point, you don't know what will happen. It's an enormous psychological strain. You never get used to it. It wears you out. … Shelling delivers so much stress on the human body, the human mind. It's unbelievable.'[237] The Trial Chamber noted that the artillery attacks instilled great fear in those present in the towns and 'that the fear of violence and duress caused by the shelling of the towns … created an environment in which those present there had no choice but to leave'. It found 'that the shelling amounted to the forcible displacement of persons from Benkovac, Gračac, Knin, and Obrovac'.[238]

Other aspects of the wider pattern of harm associated with the use of explosive weapons in populated areas, although mentioned, did not receive focused attention from the Tribunal. According to one witness, for example, a road was impassable due to 'hundreds of unexploded mortar shells on the road and in the proximity of the road'.[239] Yet the risk posed to civilians by explosive remnants of war was not discussed, except in relation to allegations of cluster munitions use, which could not be conclusively established.

Wide area effects: where to draw the line?

The Trial Chamber Judgment attracted severe criticism from 'operational law' experts.[240] In a proposed Amicus Curiae Brief (not admitted by the Appeals Chamber) a group of experts in this domain expressed concern about the Trial Chamber's 'utilization of a 200-meter radius of error in order to determine which effects were attributable to lawful objects of attack and which

236 *Gotovina et al.* (Trial Chamber Judgment) §1911.

237 Summary notes of the interview with Harry Konings, 16 April 2014, on file with PAX. '[O]ngoing shelling for a prolonged period has, besides the physical effect of killing or wounding of people, a huge psychological effect on any civilian population.' (Konings Report, Addendum, 16409.)

238 *Gotovina et al.* (Trial Chamber Judgment) §§1743-1748. Applegate considered it 'highly likely that the population of the town was put at significant risk of death or wounding, and that artillery fire was explicitly aimed at causing fear and panic in the population in order to drive them from the area'. (Applegate Report, 5665.) For a legal discussion of the charges of deportation and forcible transfer (as crimes against humanity) in relation to the shelling, see P. Akhavan, 'Reconciling Crimes Against Humanity with the Laws of War', 6 *Journal of International Criminal Justice* (2008).

239 *Gotovina et al.* (Trial Chamber Judgment) §621.

240 'Military Operations, Battlefield Reality and the Judgment's Impact on Effective Implementation and Enforcement of International Humanitarian Law', Operational Law Experts Roundtable on the Gotovina Judgment, International Humanitarian Law Clinic, Emory University School of Law, 2012, http://www.antegotovina.com/doc/Gotovina_Meeting_Report.pdf. See also *Gotovina et al.* (Application and Proposed Amicus Curiae Brief Concerning the 15 April 2011 Trial Chamber Judgment and Requesting that the Appeals Chamber Reconsider the Findings of Unlawful Artillery Attacks During Operation Storm) IT-06-90-A (12 January 2012). The brief was not admitted by the Appeals Chamber.

effects were not'. In the opinion of the Amici, 'any judgment encouraging application of this 200-meter standard (or any standard of acceptable error that is not based on the actual realities of artillery and indirect fire employment) in future operations will subject military commanders to a standard of care that is impossible to satisfy and operationally untenable'.[241]

The Amici called on the Tribunal to appreciate 'that even the most scrupulous compliance with IHL cannot produce and does not require absolute perfection in the execution of an attack. Artillery and other indirect fire assets, by their very nature, involve a range of variables that will inevitably produce effects beyond the intended target'.[242] Interestingly, however, the Amici accepted that 'assessing legality of attack effects requires some benchmark of acceptable error', and they invited the Tribunal to consider the consistency between a 400-meter standard and the realities of operational artillery employment.[243]
Additional expert reports submitted by the Defence on appeal (not admitted into evidence) also sought the dismissal of the '200 Metre Standard', notably, on the basis that artillery projectiles and rockets could be expected to impact much further than 200 metres away from a target, without this implying that they were not directed or adequately directed at that target.

In the opinion of Robert Scales[244] the 200 Metre Standard was 'not an appropriate standard of accuracy under the circumstances of this case'. In his assessment, fire missions in this case were aimed at 'relatively small area targets', using a single point of aim and allowing 'the natural wide dispersion' of fires to cover the target. He pointed out that mathematically derived data from firing tables cannot account for all sources of artillery error and that the 200 Metre Standard was not 'an operationally realistic radius of error, as 'a single area target engaged by a single rocket launcher, under ideal circumstances, will cover an area of 375 x 246 meters'. According to Scales, even 'the most competent NATO artillery equipment, planning, and mission execution would be hard pressed [sic] to place 94% of unregistered and unobserved fires delivered at the extreme limits of range inside a 200 meter radius of the intended target'. He outlined other 'inherent shortcomings' of Croatian artillery firing, such as a failure to measure low-level winds (which could have added as much as 1,000 metres to the deflection probable error of MBRL fires) and concluded that the 'tactical doctrine, materiel and firing method used by the HV artillery in fact would result in targeting and firing errors far greater than 200 meters'. With a view to the 'conditions and capabilities of the HV artillery', Scales judged that a radial error of at least 400 metres would be a more reasonable standard in this case.[245]

Similarly, Wilson A. Shoffner[246] stated that the Trial Chamber's 200 Metre Standard was 'inconsistent with the science and practice of artillery and rocket fire'. He described the 122mm 40-tube BM-21 MBRL as having a 'high volume of fire and large area coverage', which is not suited for attacks against point targets. He estimated that 95% of the rockets would land within 900 metres of the aimpoint, and 95% of 300mm projectiles within 495 metres of the aimpoint. Scales considered

241 *Gotovina et al.* (Amicus Curiae Brief) §16.

242 *Gotovina et al.* (Amicus Curiae Brief) §5.

243 *Gotovina et al.* (Amicus Curiae Brief) §17.

244 Major General, United States Army (Retired).

245 *Gotovina et al.* ('Report on Croatian Army ("HV") Use of Artillery and Rockets on Targets based in Knin, Croatia, August 4-5, 1995', Appellant Ante Gotovina's Motion to Admit New Evidence Pursuant To Rule 115, Public Redacted Version, Exhibit 20) IT-06-90-A (4 November 2011) 3550-3545 ('Scales Report').

246 Lieutenant General, United States Army (Retired).

that these were 'very conservative estimates of dispersion' considering that, in this case, 'fires were unregistered with no correction for non standard conditions [sic]'.[247]

Timothy Granville-Chapman[248] likewise stressed that in 1995 artillery was and today still is 'an area weapon'. In his view, the accuracy achieved by the HV was 'remarkable given the age of the equipment, the state of training of the crews and the unsophisticated means, in 1995, of attending to the variables such as meteorological conditions, control of ammunition lots, muzzle velocity measurement etc.' Drawing on his experience in Afghanistan, Granville-Chapman explained that a British gun used in that context typically delivered 'only 90% of its rounds within a 250 metre box at its operational range'. According to Granville-Chapman, in that context, special procedures were applied for the protection of own troops at 250 metres and closer 'in recognition of the dispersed fall of shot of an artillery system'.[249]

Prosecution experts who were asked to comment on the Defence reports generally agreed with the Defence experts on many questions of firing doctrine and practice. For example, Christopher Brown,[250] pointed out that, measured in terms of probable error, 'the 122mm rocket system is inherently more inaccurate than the 130mm gun', and that 'errors of hundreds of metres—greater than the inherent [probable error] of the weapon systems themselves—can build up as a result of failure to address' factors affecting accuracy.[251]

The Prosecution's experts also agreed with the Defence experts that the 200 Metre Standard was not appropriate. Richard Applegate[252] considered that the standard failed 'to take into account the characteristics of the artillery weapon system' and suggested that 400 metres would be 'a more appropriate rule of thumb'. However, Prosecution experts also had more fundamental objections to the standard. Applegate cautioned that any calculation required an understanding of the centre point of aim against which the measurement was taken. He pointed out that whilst this was simple for point targets (targets of small dimensions), it was more difficult when several aimpoints were used to attack a target spread over an area or of irregular shape.[253]

Irrespective of the metric applied, the Prosecution's experts came to the conclusion that the use of 130mm guns and 122mm MBRLs in this context was not appropriate. But rather than base their opinion on the question whether shells fell within 200 or 400 metres of a target, prosecution experts focused on the firing techniques and the measures taken to reduce the risk of harm to civilians in the particular context of a populated area. For Applegate, 'the fact that the town was occupied by civilians at the time demanded greater care in the choice of targets, and the matching

247 *Gotovina et al.* ('Comments by LTG(Ret) Wilson A. Shoffner on The Report by Major General Robert H. Scales on Croatian Army ("HV") Use of Artillery and Rockets on Targets Based in Knin, Croatia August 4-5, 1995', Appellant Ante Gotovina's Motion to Admit New Evidence Pursuant To Rule 115, Public Redacted Version, Exhibit 21) IT-06-90-A (4 November 2011) 3542-3539.

248 General, British Army (Retired).

249 *Gotovina et al.* ('Observations by General Sir Timothy Granville-Chapman in relation to the Croatian Army's use of artillery and rockets on targets at Knin on 4-5 August 1995', Notice of Filing of Public Redacted Version of Appellant Ante Gotovina's Second Motion to Admit Additional Evidence Pursuant to Rule 115, Annex E) IT-06-90-A (31 July 2012) 5405.

250 Lieutenant General, British Army (Retired).

251 Brown Report, 5662.

252 Lieutenant General, British Army (Retired).

253 Applegate Report, 5672.

of weapon and effect to target'. [254] For these experts the inaccuracy inherent in the weapons chosen carried a high risk of harm to civilians, and a range of measures would thus need to be taken to reduce that risk, including:

- articulating explicit and clear rules of engagement (and training in their application) and detailed militarily-relevant target descriptions and description of the effects to be achieved;
- imposing fire control measures, such as the designation of no-fire zones and restricted fire zones, based on a detailed analysis of known residential areas, hospitals, etc.;
- improving accuracy, including, by moving weapons closer to their targets, accurate surveying of target/weapon positions, firing of registration missions, calibration of the weapons prior to firing, incorporation of ballistic and meteorological data, and adjustment of fires through observation;
- assessing the effects of firing in terms of battle damage and 'collateral damage'.[255]

Nicholas Ashmore[256] and Brown stressed the critical importance of observation for improving the accuracy of fires.[257] In Brown's assessment, 'it was incumbent on the HV to observe fires against Knin whenever possible' because '[o]bservation improves accuracy.'[258] If the HV had observed fires, Applegate would have 'expected artillery fire into Knin to have been adjusted and modulated in order to minimize civilian casualties'. If they did not observe fires, 'the widespread and extended use of artillery fire' was, in his view, 'even more indiscriminate and careless of the lives of those within the town'.[259] For Ashmore, the use of unobserved (and unregistered) fire into Knin amounted to a disregard for 'perhaps the most important factor in seeking to minimise civilian casualties in a populated area'.[260] In his view, restricted fire zones are a control mechanism that 'must be applied when using artillery in populated areas'.[261]

Finding no evidence that the Croatian forces had taken adequate measures to address the weapons' inherent inaccuracy, these experts concluded that the use of 130mm guns and 122mm rockets to strike targets in Knin was 'inappropriate'.[262] In Brown's opinion, the combined effect of probable error together with the other factors affecting accuracy made the HV fires on Knin 'reckless and inappropriate',[263] and 'any 130mm gun fires targeted within 600 metres or 122mm rocket fires targeted within 1200 metres of civilians or civilian infrastructure were reckless or indiscriminate with regard to civilian casualties'.[264]

254 Applegate Report, 5670.

255 Brown Report, 5631; Ashmore Report, 5587.

256 Major General, British Army.

257 Brown Report, 5628; Ashmore Report, 5585.

258 Brown Report, 5632.

259 Applegate Report, 5674.

260 Ashmore Report, 5585.

261 Ashmore Report, 5585.

262 Brown Report, 5631.

263 Brown Report, 5636, 5625, 5624.

264 Brown report, 5624. '[T]he weapon systems were inappropriate for use [against] targets in close proximity to civilians/civilian installations in an urban area, especially "relatively small area targets" against which the majority of rounds would knowingly have impacted outside the target area.' (Ibid., 5625.)

A refugee who returned to Knin stands in front of the remains of his house destroyed by bombing (1997)

Applegate found the use of MBRLs in built-up areas particularly surprising, 'in view of the wider dispersal of their rockets'. He pointed out that the MLRS, a US rocket system that he described as 'a superior system to that used by the HV… was not deployed to support UN forces in Bosnia because of its inherently large spread of fire and lack of discrimination when engaging targets in built-up areas occupied by non-combatants.'[265] He regarded 122mm MBRLs as 'inappropriate and disproportionate' for use against targets in a town, 'particularly when there were other weapons available to conduct those missions (namely howitzers) and only limited resistance.'[266] Drawing on his experience in Iraq in 2003, Ashmore came to the same conclusion.[267]

'The Gotovina Omnishambles' [268]

The Appeals Chamber Judgment focused almost exclusively on the '200 Metre Standard' and rejected it. The Majority of the Appeals Chamber considered that the Trial Chamber 'did not explain the specific basis on which it arrived at a 200 metre margin of error as a reasonable interpretation of evidence on the record' and 'failed to justify its decision to apply the 200 Metre Standard uniformly to artillery shelling in all Four Towns.'[269] The Majority of the Appeals Chamber followed the Defence in arguing that increased distance from a target would increase the range

265 Applegate Report, 5678.

266 Applegate Report, 5668. In terms of alternatives, Brown refers to 'mortars and/or smaller calibre and more accurate guns. (Brown Report, 5633.)

267 '[T]he use of MRL in populated areas could be regarded as reckless and indiscriminate.' (Ashmore Report, 5586.)

268 See the blog post by M. Milanović, 'The Gotovina Omnishambles', *EJIL:Talk!*, 18 November 2012, http://www.ejiltalk.org/the-gotovina-omnishambles.

269 *Gotovina et al.* (Appeals Chamber Judgment) §§58, 60.

of error, and that it could therefore not be excluded that some shells in Knin were actually aimed at legitimate military targets.[270] Having rejected the 200 Metre Standard, the Majority found that 'absent an established range of error' it could 'not exclude the possibility that all of the impact sites considered in the Trial Judgement were the result of shelling aimed at targets that the Trial Chamber considered to be legitimate. The fact that a relatively large number of shells fell more than 200 metres from fixed artillery targets could be consistent with a much broader range of error. The spread of shelling across Knin is also plausibly explained by the scattered locations of fixed artillery targets, along with the possibility of a higher margin of error'.[271]

In the view of the Majority, the possible existence of targets of opportunity (mobile targets) in Knin, 'combined with the lack of any dependable range of error estimation' raised reasonable doubt about whether unlawful shelling had taken place.[272] As the remaining evidence did not, in the opinion of the Majority, definitively demonstrate that artillery attacks against the Four Towns were unlawful, the Majority of the Appeals Chamber reversed the Trial Chamber's findings and acquitted the Accused.

Two strongly worded dissenting opinions were attached to the Appeal Judgment. Judge Agius expressed concern that the Majority had lost sight 'of the essential question in this appeals case, being whether, based on the totality of the evidence, it was reasonable for the Trial Chamber to conclude that the attacks on the Four Towns were unlawful'. In his view, the Majority erroneously regarded the 200 Metre Standard as the critical piece underpinning all of the Trial Chamber's findings, patently failed to articulate any legal standard with which to replace the 200 Metre Standard, and instead adopted an 'unacceptably speculative' approach, which in effect, raised the acceptable margin of error *ad infinitum*.[273] Judge Pocar, in his dissenting opinion, considered that the Appeals Chamber had failed in its mission to clarify the correct legal standard and had therefore failed to assess whether the shelling attacks on the towns were lawful or not. Judge Pocar posed a number of critical questions:

> *'Does the Majority consider that the correct legal standard was a 400-metre standard? A 100-metre standard? A 0-metre standard? … Does the Majority consider that a legal standard can be established on a margin of error of artillery weapons? Does the Majority consider that a trial chamber is entitled in law to establish a presumption of legality to assess the evidence of the shelling attacks and the artillery impacts in order to establish the lawfulness of the attack?'*[274]

270 *Gotovina et al.* (Appeals Chamber Judgment) §60. The Appeals Chamber also criticized the fact that the Trial Chamber's finding of a disproportionate attack 'was not based on a concrete assessment of comparative military advantage, and did not make any findings on resulting damages or casualties'. (Ibid., §82.)

271 *Gotovina et al.* (Appeals Chamber Judgment) §65.

272 *Gotovina et al.* (Appeals Chamber Judgment) §66.

273 *Gotovina et al.* (Dissenting Opinion of Judge Agius to the Appeals Chamber Judgment) §§3, 20-21.

274 *Gotovina et al.* (Dissenting Opinion of Judge Pocar to the Appeals Chamber Judgment) §§5, 13-14.

Findings

The Trial Chamber's Judgment is probably the first international judicial decision to comprehensively discuss issues relating to the targeting process and weapons choice in relation to artillery shelling in a populated area. The Appeals Chamber's ruling was widely expected to be of great significance and it was hoped that it would clarify the relationship between IHL and targeting practice, in particular, in the context of populated areas.[275] Arguably, however, the Tribunal's rulings have had the opposite effect. Both judgments in this case are among the most contentious decisions the Tribunal.[276]

What area effects are acceptable in the vicinity of civilians?

All experts in this case agreed that the weapons used were 'area weapons' whose effects could not be confined to a small space. Experts from both sides also acknowledged that the MBRL affected a wider area than cannon artillery. Whilst this made the use of MBRLs particularly inappropriate in the eyes of some prosecution experts, no expert differentiated in his final assessment between MBRLs and tube artillery.

The contradicting expert assessments as to what weapons are acceptable in a populated area demonstrate the different attitudes towards what is deemed an acceptable risk of civilian harm. Experts for the Defence, like in the *Galić* case, invoked the inaccuracy and wide dispersion associated with the chosen weapons and firing methods to justify shell impact locations several hundreds of metres away from a target. These experts deemed the weapons 'suitable' in this context, considering the military value of the targets, the military effects to be achieved, alternative means available and the legal permissibility of some collateral damage.[277] Prosecution witnesses, in contrast, emphasized the high risk of harm to civilians that comes with using weapons with such wide area effects in a populated area, and in light of that risk, deemed the use of 130mm cannons, and especially 122mm MBRLs unacceptable in a place like Knin. For the same reason, these experts considered uncorrected, unadjusted or unobserved fire unacceptable in a populated area.

Drawing a line

As in the in the *Galić* case, the Trial Chamber did not find that the weapons or their use in this context were inherently indiscriminate. In both cases, the difficulty for the Trial Chamber was that it had to determine whether the attacks employed weapons that were directed and whose effects were limited as required under IHL in a situation where there was controversy about the actual targets of attack and where there were indications of area bombardment.

The Trial Chamber's articulation of a metric standard draws a line against wide area effects of explosive weapons in terms of inaccurate delivery. The distance between shell impact locations and possible targets was also used as an indicator of an unlawful attack in *Galić*, but it is probably the first time that an international judicial body has articulated a metric standard to determine

275 *Gotovina et al.* (Amicus Curiae Brief) §1.

276 See e.g., J. N. Clark, 'Courting Controversy: The ICTY's Acquittal of Croatian Generals Gotovina and Markac', 11(2) *Journal of International Criminal Justice* (2013); W. B. Huffman, 'Margin of Error: Potential Pitfalls of the Ruling in the Prosecutor v. Ante Gotovina', 211 *Military Law Review* (2012); D. Vallentgoed, 'The Last Round? A Post-Gotovina Reassessment of the Legality of Using Artillery Against Built-up Areas', 18(1) *Journal of Conflict & Security Law* (2013).

277 Scales, for example, noted that 130mm guns and 122mm rockets were 'well suited' to achieve the effect of neutralization and harassment'. (Scales Report, 4398.)

the permissibility of artillery shelling in a populated area applicable across different weapon types and attacks. Whilst such a metric allows for a certain measure of inaccuracy and dispersion, it creates a presumption that the use of explosive weapons that affect an even wider area has indiscriminate effects. It bears repeating that the authors of the proposed Amicus Curiae Brief accepted that 'some benchmark of acceptable error' was required to assess the legality of an attack.[278] Where that line should be drawn and on what basis is, however, disputed. Unfortunately, it does not emerge from the Trial Chamber Judgment how the Chamber's considerations led it to draw the line at 200 metres.

From a humanitarian standpoint, the suggestion by the Defence, Defence experts and the Majority of the Appeals Chamber that a wider 'error margin' should be accepted due to the inaccuracies of the chosen weapons and firing techniques, is disconcerting.[279] As Judge Agius pointed out, the Majority's reasoning made it practically 'impossible to classify any attack as indiscriminate on the basis of evidence regarding impact sites, in the absence of an established margin of error'. The Trial Chamber was clearly aware of the pitfalls of this approach. In a footnote to its Judgment it remarked:

> *'Had these impacts which were at a distance of up to 700 metres from artillery targets been the result of the inaccuracy of the artillery weapons used…that would require a further consideration of whether such inaccurate weaponry can be used in the context of an artillery attack on specific targets within a town'.*[280]

What is permissible in terms of artillery shelling in a populated area is arguably no clearer today than it was before the Appeal Judgement in this case. The widely differing views held by experts about the appropriateness, acceptability and permissibility of the shelling suggest that the legal rules do not provide much guidance about whether a weapon is sufficiently directed at a target and its effects limited as required under IHL in a concrete case.

It should be borne in mind that civilian harm from explosive weapons is not only a question of inaccurate delivery. The Trial Chamber considered many of the factors that experts deemed relevant in assessing the appropriateness and acceptability of artillery fire on targets in a populated area, including the blast and fragmentation effects of munitions and the number of munitions fired. If, as the Majority of the Appeals Chamber seems to suggest, a legal determination is to be derived from an analysis of the great many parameters that affect weapon effects, what is a court of law to do in the absence of information about these parameters? And what should we expect of explosive weapon users in terms of recording and sharing such information? It is essential that these questions and those raised by Judge Pocar are answered, not only for the effective protection of civilians from harm, but also to provide the best possible guidance to military commanders. ♦

278 *Gotovina et al.* (Amicus Curiae Brief), §17.

279 *Gotovina et al.* (Dissenting Opinion of Judge Agius to the Appeals Chamber Judgment) §21.

280 *Gotovina et al.* (Trial Chamber Judgment) footnote 932 (of vol. II).

Conclusion

> 'Because you could know approximately where … sniper fire was coming from … you would be able to protect yourself… However, … you can't save yourself from projectiles of shells because they come … in an arch, and are then dispersed and their destructive power is much greater than a bullet from a gunshot.'[281]

> '… I would always go accompanied by someone … because I wanted to have somebody with me just in case something happens. … Let's say if I were to be wounded, so that somebody can let my children know. … I was living alone with my children.'[282]

There is little civilians can do to protect themselves against the effects of shelling and bombardment. The cases analysed in this report–*Galić*, *Martić* and *Gotovina et al.*–illustrate that the use of explosive weapons in villages, towns and cities exposes the civilian population to a very high risk of direct death and injury and is associated with a wider pattern of severe harm to civilians. The events discussed above occurred almost 20 years ago. Yet, the same pattern of harm is being repeated today in Gaza, Iraq, Syria, and Ukraine, where populated areas are attacked with explosive weapons that have wide area effects. Such use will continue to be a core challenge to the protection of civilians, given the trend of urbanisation and the tendency of state and non-state actors alike to conduct military operations in urban areas.

281 Testimony of Dr. Milan Mandilović, *Galić* (Public transcript of hearing, 7 December 2001) 1035.

282 Testimony of Rasema Menzilović, *Galić* (Public transcript of hearing, 10 April 2002) 6983.

The expert materials and other documents related to the three ICTY cases discussed in this report provide some insight into military policy and practice in the use of explosive weapons. Experts from different military backgrounds appeared to have a broadly similar understanding of artillery fire doctrine, 'good artillery practice' and about what parameters influence weapon effects and weapons choice in a populated area. Yet, they came to very divergent conclusions about what was appropriate, acceptable and permissible in a concrete case.

Experts described all explosive weapon types discussed in this report, including unguided mortars, cannons and MBRLs, as 'area weapons'. Due to their relatively low accuracy of delivery, resulting from factors related to the weapon and the firing technique, 'area weapons' disperse munitions over an area that can be several hectares wide. As such, they are not suited to attack targets of small dimensions. In part, this is a question of military effectiveness and economy of force. If the area of dispersion associated with a weapon is wider than the dimensions of target, a large number of munitions would be required to have the desired effect on the target. It is also a question of civilian protection, however.

At least in part, differences in what weapons are deemed acceptable for use in populated areas reflect different degrees of tolerance for the risk of harm to civilians. Although experts broadly agreed on the considerations in the targeting process that are relevant to the protection of civilians, they differed in their assessment of what was deemed appropriate and acceptable in concrete cases. Some experts stressed that civilian harm incidental to an attack is permissible under the law, as long as it is not 'excessive' in relation to the military advantage anticipated from an attack. From this perspective, even the use of weapons with very wide area effects in a populated area can be deemed acceptable.[283] Defendants in several cases portrayed harm to civilians as a 'normal' and acceptable (if inadvertent and unfortunate) consequence of artillery fire directed into a populated area, precisely because the weapons used had limited accuracy of delivery. Other experts questioned whether targets in a populated area should ever be attacked with explosive weapons, considering the associated risk of civilian harm. Several experts also expressed a strong preference for using weapons other than indirect fire artillery in such contexts.

Due to the high risk of civilian harm 'area weapons' and 'indirect fire weapons' should generally not be used in a populated area.[284] Most experts believe the risk of harm to civilians is due to the inaccuracy and the relatively wide dispersion area of such weapons, as well as the blast and fragmentation effects of explosive munitions and the high number of projectiles that can be fired with such weapons. Heavy artillery, such as 130mm cannons and, particularly, unguided rockets fired from an MBRL, such as the Orkan or the 122mm Grad rocket systems, were deemed inappropriate for use in a populated area by several experts, even more so if the rockets were equipped with cluster warheads. Many experts stressed that if indirect fire was directed into a populated area, tight controls and restrictions on fires would be indispensable.

283 One expert in the *Gotovina* case argued, for example, that heavy artillery and MBRLs were 'well suited' for neutralization and harassment fire. In that case the fire was directed into a populated area. It is not that this and other experts did not recognize that such fires would affect a fairly wide area but the resulting risk of civilian harm could, according to these experts, be justified by the high military value of the targets, the lack of alternate means available and other factors.

284 In relation to the situation in Gaza, a former member of the artillery corps of the Israeli Defence Forces argues against the use of what he called 'statistical weapons' in a populated area, in I. Barir, 'IDF soldier: Artillery fire in Gaza is like Russian roulette', *+972 Blog*, 8 August 2014, http://972mag.com/idf-soldier-artillery-fire-in-gaza-is-like-russian-roulette/95194/.

To effectively protect civilians in populated areas, a clear boundary must be drawn against the wide area effects of explosive weapons.

The use of uncorrected fire or unadjusted fire into a populated area is generally not acceptable. According to several experts, if 'area weapons' or 'indirect fire weapons' are used in a populated area, a considerable effort must be made to reduce the inaccuracy of these weapons. The use of forward observers and moving the weapon closer to the target can reduce inaccuracy. (Note, however, that MBRLs, for example, have a rather long minimum firing range.) Appropriate fuze settings and other weaponeering measures, spatial restrictions on fires and higher-level authorization requirements can further reduce risk of harm to civilians from explosive munitions, even when accurately delivered.

To effectively protect civilians in populated areas, a clear boundary must be drawn against the wide area effects of explosive weapons. With a view to the protection of civilians, several experts articulated the acceptability of explosive weapon use in a populated area in terms of the relationship between the dispersion area of the weapon and the dimensions of the target the weapon was meant to hit. Some experts deemed the impact of munitions outside of the target area itself unacceptable in a populated area.[285] Others allowed for some shells to impact beyond the target itself, [286] which raises the question what, in terms of shell impact distance from the target, is acceptable in a populated area—a question at the heart of the debate in the *Gotovina* case.

The Trial Chamber in *Gotovina et al.* proposed a distance of 200 metres from an artillery target beyond which shell impact locations would be indicative of an unlawful attack. The precise metric was rejected on appeal, but the articulation of a metric standard was not fundamentally objected to by all experts in this case. Some explicitly recognized that assessing the legality of an attack 'requires some benchmark of acceptable error'. In practice, it is an open question as to how such a metric standard would function (when there are several aimpoints or when the aimpoint is off-set from the target, for example) and whether the same standard could be applied to different weapons, different weapon-munition-fuze combinations and different attacks into populated areas.

It should be borne in mind that such a metric only addresses the impact locations of shells, a function of accuracy of delivery. In practice, a small number of munitions can impact outside of the dispersion area because that area is but a statistical measure. Furthermore, munitions landing at the edge of a dispersion area can still cause injury and damage through blast and fragment projection hundreds of metres away. The articulation of a boundary against impermissibly wide area effects in a populated area should take this into account.

The acceptability of civilian harm from explosive weapon use in a populated area is not only a question of direct casualties. Whilst a metric such as the one proposed by the Trial Chamber in *Gotovina et al.* can help draw the line at unacceptably wide area effects, in terms of

285 This orientation does not categorically exclude use of all 'area weapons' in a populated area. Populated areas can theoretically contain targets of large dimensions. In practice, however, 'indirect fire weapons' are used particularly because they can bring explosive force to bear on a target area from a great distance. The dimensions of suitable targets in a populated area may thus often not be wider than the dispersion area of the weapon. It can also be argued that attackers wishing to avoid this constraint could simply define the target area more widely. This would, however, make it more difficult for them to justify the lawfulness of the attack in terms of military necessity, military advantage, proportionality (regarding civilians and civilian objects within the target area) and the prohibition on area bombardment.

286 Brown, for example, noted that 122mm MBRLs and 130mm cannons, were 'inappropriate for use [against] targets in close proximity to civilians/civilian installations in an urban area, especially "relatively small area targets" against which the majority of rounds would knowingly have impacted outside the target area.' (Brown Report, §§5625, 5624.)

death, injury and damage resulting directly from the inaccurate delivery of munitions, this is but one facet of the wider humanitarian problem caused by explosive weapon use in populated areas.

The wider pattern of severe civilian harm caused by the use of explosive weapons in populated areas should be explicitly recognized. The Tribunal acknowledged the serious psychological suffering of civilians, the negative impact on the provision of health care and the connection between explosive weapon use and population displacements. The risk of harm from explosive remnants of war was also discussed but only in relation to cluster munitions. Today, harm to civilians from explosive remnants of war is increasingly recognized as a foreseeable long-term effect and risk to civilians from the use of any type of explosive weapon, especially in a populated area.[287]

With a view to this wider pattern of harm, the total number of munitions fired, the pattern of fire in terms of intensity, duration, volume and spread, vulnerability of structures to blast (the risk of progressive collapse of buildings), the propensity of munitions to leave behind explosive remnants, and the coping mechanisms available to a civilian population (the capacity to repair damage and alternatives available to civilians to cover their basic needs) are all relevant considerations when assessing the acceptability and permissibly of explosive weapon use in a populated area.

The legal rules appear to leave ample room for differing interpretations of what is lawful in the use of explosive weapons in a populated area. Under IHL indiscriminate and disproportionate attacks as well as 'indiscriminate weapons' are prohibited. Yet, as the cases discussed here illustrate, experts and judges hold contrasting views on when a weapon is directed and its effects limited as required under IHL. Only in one case did the Tribunal make a weapon-specific determination, namely, its finding in the *Martić* case that the M-87 Orkan MBRL was 'an indiscriminate weapon'. Would the Tribunal have come to the same conclusion if the rockets had been launched from closer range, or if they had not been equipped with cluster warheads?

According to the dominant doctrinal view, legal determinations should be made on a case-by-case basis, taking into consideration the circumstances of each individual attack.[288] This does not favour recognition of a wider pattern of harm and makes it difficult to categorically determine what weapons are lawful in a populated area. Because of the context-dependency of the Tribunal's rulings it is also unclear what can be inferred from legal determinations in specific cases regarding the permissibility in general of explosive weapon use in a populated area.

The protection of civilians should be strengthened through more restrictive policy and practice on the use of explosive weapons. As the State Secretary of the Norwegian Ministry of Foreign Affairs recently remarked: 'Sound military tactics employed in the pursuit of strategic objectives tend to restrict the use of explosive force in populated areas.'[289] The use of indirect fire into populated areas, for example, is restricted as a matter of policy in several states.

287 Protocol V (2003) to the 1980 Convention on Certain Conventional Weapons (CCW) reflects recognition that users of explosive weapons have a special responsibility for the long-term effects of the weapons. Many states hold the view that the risk of civilian harm from explosive remnants should be factored into proportionality assessments and be considered in the choice of means and methods of combat. See e.g. B. Clarke, 'Proportionality in Armed Conflicts: A Principle in Need of Clarification?' 3 *International Humanitarian Legal Studies* (2012) 113-114. The risk of harm from toxic remnants of war is also receiving increasing attention. See The Toxic Remnants of War Project, http://www.toxicremnantsofwar.info/.

288 'All weapons are potentially lawfully used in populated areas, and all weapons are potentially unlawful for such use.' (Corn Report, 24762.)

Such policies include exceptions and do not mean that indirect fire is deemed illegal. Yet, such policies show it is possible and, according to some states, desirable to place explicit restrictions on the use of explosive weapons that affect an area in or near populated areas.

Firing restrictions can reduce harm to civilians. No-fire zones are a common measure to protect civilians from the direct effects of explosive weapons. Writing about his experience in Iraq, one expert stated that '[g]iven the heavily populated nature of Basra, and the number of restricted and no fire areas imposed from higher headquarters, I treated the whole of Basra as a restricted fire area'.[290] Among the cases discussed, the heavy weapons exclusion zone around Sarajevo clearly reduced civilian casualties during the time it was observed. Although framed in terms of a control measure on the use of 'heavy weapons', it effectively applied to all explosive weapons fired from a distance into Sarajevo. By contrast, military orders restricting explosive weapon use by requiring higher-level authorization, and which include important exceptions, have proven woefully inadequate in protecting civilians in Sarajevo and in other contexts (and not because the orders were not followed).[291]

In practice, the process of targeting is vital to civilian protection.[292] As the use of explosive weapons in populated areas carries a high risk of harm to civilians, explosive weapons users should be prepared to demonstrate that they took measures to reduce the risk of harm to civilians, particularly if the affected area is wide, as in the case of heavy artillery and MBRLs. They should also be prepared to explain how the risk of harm was assessed, on what basis they considered that the measures taken sufficiently reduced harm to civilians and why residual risk to civilians was deemed acceptable and permissible. This would increase transparency and accountability to the domestic public and affected communities and it would lend greater clarity to what is expected of commanders in terms of precautionary measures. There is clearly scope for clarification and articulation of the interplay between legal rules and military policy and practice in explosive weapon use.

The elaboration of a shared understanding among states as to what area effects pose an unacceptably high risk of harm would strengthen the protection of civilians. Given the large scope for differing interpretations of the legal rules and different attitudes among military experts on what is an acceptable risk of harm to civilians, the collective articulation of a detailed standard against the use, in populated areas, of explosive weapons that affect a wide area would strengthen the protection of civilians and reduce civilian harm. ♦

289 Introduction by Bård Glad Pedersen, State Secretary of the Norwegian Ministry of Foreign Affairs, Expert Meeting on the Use of Explosive Weapons in Populated areas, Oslo, 17 June 2014, http://www.regjeringen.no/en/dep/ud/whats-new/Speeches-and-articles/Speeches-and-articles-by-political-staff/bgd_speeches/speeches2014/weapons-populated-areas.html?id=763828.

290 Ashmore Report, 5587.

291 On the humanitarian consequences in Gaza from exceptions to artillery fire restrictions, see A. Harel and G. Cohen, 'Massive artillery shelling may have caused numerous civilian fatalities in Gaza', *Haaretz*, 15 August 2014, http://www.haaretz.com/mobile/.premium-1.610733?v=448F9B36F8D44E27EE9D6A0E05DAD2E4.

292 Summary notes of the interview with Geoffrey Corn, 9 May 2014, on file with PAX.

Policy recommendations

- **International bodies, including fact-finding mechanisms, commissions of inquiry and UN special procedures mandate-holders, should increase recognition that the use of explosive weapons with wide area effects in populated areas causes unacceptable harm to civilians.**

  Recognizing the weapon-specific pattern of severe harm to civilians in statements on country situations and in thematic reports can contribute to the development of a stronger political barrier against such use and can shape future legal assessments in a manner that strengthens the protection of civilians.

- **Judicial bodies should recognize that the use of explosive weapons with wide area effects in populated areas predictably causes large numbers of civilian casualties and carries a high risk of causing indiscriminate effects.**

  In their determination of the permissibility of the use of explosive weapons in populated areas, judicial bodies should also have due regard to the wider pattern of severe civilian harm associated with such use.

- **States should acknowledge that the use of explosive weapons with wide area effects in populated areas results in a pattern of unacceptable harm to civilians.**

Having regard to this pattern of harm,

- **States should refrain from using explosive weapons with wide area effects in populated areas, and work collectively with others towards an international commitment aimed at preventing such use.**

- **States should strengthen national policy and practice with a view to reducing civilian harm caused by the use of explosive weapons.**

  In particular, states should review military doctrines, tactics, techniques and rules of engagement and articulate what measures and procedures provide the strongest protection to civilians from the effects of explosive weapons.

- **States should engage in multilateral policy discussions aimed at reducing harm to civilians from the use of explosive weapons.**

  States should involve their military experts in such discussions and work together with humanitarian professionals and others towards a shared understanding of how harm to civilians from explosive weapons is most adequately described, how risk of harm is best assessed, and how it is most effectively reduced. ♦

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