

CHAPTER 2

MODELLING ARMED VIOLENCE: A TOOL FOR HUMANITARIAN DIALOGUE IN DISARMAMENT AND ARMS CONTROL

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The use of weapons with intent to cause physical harm can be analysed in terms of health because, ultimately, it affects people's physical, psychological or social well-being.² Analysing armed violence from a health perspective carries the advantage that it permits generic and objective consideration of the effects of armed violence on its victims—frequently a consideration driven by emotion—before entering into discussions of the legal, political or “humanitarian” issues of a particular context. This paper presents a model of armed violence and its effects on the health of the victims; it is proposed as a means to introduce a humanitarian perspective into dialogue about disarmament and arms control.³

MODELLING ARMED VIOLENCE AND ITS EFFECTS

When people suffer the effects of use of a particular weapon, at some previous time, the weapon has to be transferred into the hands of the user; before this it has to be produced and before production it has to be designed and developed.⁴ The activities along the continuum of “design-to-production-to-transfer-to-use” are important potential determinants of the effects of armed violence. It is no coincidence that these activities are precisely those regulated in many multilateral arms control treaties. In public health terms, these determinants translate into “risk factors” for any particular impact on health of armed violence.

The fact that the effects on health of armed violence have identifiable risk factors is the basis of the model. Whatever the nature of armed violence, the risk factors for a given effect are the:

- Potential of the weapon to cause the effect (corresponding to design);
- Number of potential users armed (corresponding to production and transfer);
- Vulnerability of the victim (the potential to suffer the effect); and
- Potential for violence (intentional use of physical force).

Effects of armed violence are only generated as long as the potential of each risk factor has a positive value; each is a necessary but not sufficient cause of the effects in question. This applies to any act of armed violence with any effect in any context.

But is this model valid from a scientific point of view? Research has shown how information from real events about both effects and risk factors can be translated into meaningful data by the model. The same research has shown, in relation to deaths and injuries, that the risk factors independently influence lethality of a context.⁵ This has been tested against three data sets.

Logic tells us that the risk factors interact. But how they do so is complex. The potential for violence using weapons must be influenced by the user's perceptions of the other three risk factors. In other words, the relationship between weapons and violence is played out in the psychology of the user or users. By extrapolation, the weapons themselves and their availability are major determinants of the nature, timing and extent of armed violence. Furthermore, if, from a generic perspective, one can validate the risk factors for a given effect, one can, in a specific context and with a degree of scientific validity, identify the nature of the risk factors. This has important legal implications because it may speak to the perpetrators' intent or the degree of vulnerability of victims when the truth is not forthcoming.

In terms of prevention, addressing only one risk factor may be ineffective in preventing or limiting any given effect of armed violence unless that risk factor is eliminated completely. As will be indicated in relation to chemical and biological weapons, any single preventive measure falls into one of the categories given by four risk factors. This implies that multiple preventive measures, if referable to some or all risk factors, may act in synergy.

Among other uses, the model can serve as a tool for dialogue on any issue related to weapons and armed violence. Most importantly, it forces simultaneous consideration of the victims and their vulnerabilities. Three subjects that are topical issues in the arms control arena indicate how the model could enhance a dialogue by bringing “humanitarian” concerns to centre stage. The first is the availability of small arms and light weapons; the second is so-called “non-lethal” weapons; and the third is chemical and biological weapons. The paper ends with a more philosophical view of the importance given to weapons and armed violence in human affairs and proposes that the model could help us comprehend better the notion of reasonable use of force.

SMALL ARMS AND LIGHT WEAPONS

Considering the availability of small arms and light weapons within this model means that we must first clarify what it is about this issue that concerns us. One way of expressing the effects of concern might be the number of people killed, injured or coerced with military assault rifles outside the context of armed conflict. By referring to the model, it is immediately clear that reducing the availability of such weapons is not the only measure that might prevent this effect; and further, that focusing on transfer (especially on *illicit* transfers only) is one step removed from reducing the effects. There is reason to believe that all those working on small arms issues would agree with this analysis.

Some measures may be more appropriate than others in certain contexts. These include: first, limiting the potential of the weapon to cause the effect by reducing availability of ammunition; secondly, other means to reduce the immediate availability of military rifles such as voluntary submission, forced disarmament, disarmament at demobilization, buy-back programmes, exchanges and encouraging or enforcing safe storage.⁶ Means to reduce vulnerability of unarmed people include ensuring good governance, building an effective police force and preventing the failure of states.⁷ Equipping police forces with handguns only (which are more appropriate for the mission of law enforcement) would lessen the chances of more powerful military rifles being used indiscriminately or with excessive force. In terms of the nature of violence itself, preventive measures range from ensuring that weapons are transferred only to recipients who are likely to respect International Humanitarian Law (IHL)⁸

and human rights (a preventive measure feeding off the link between different risk factors) to insisting commanders foster discipline in their troops. The “culture of armed violence” could be addressed at a school level by educational programmes that espouse non-violence and rejection of the factors that perpetuate such a culture.

Putting these and other possible preventive measures in the framework given by the model emphasizes that no single preventive measure should dominate in every context. Taken together, different measures may act in synergy. Some working on small arms issues would take issue with this analysis but to do so must refute the model.

This model also provides a useful tool for dialogue with those who wish to belittle efforts to address this issue. When discussing the problems caused by small arms in Africa, one frequently hears a counter-argument: “Well if they don’t have guns, they’ll do it with machetes!” The potential of a single military rifle to cause multiple deaths is obviously much higher than a commonly available farm machete. Referring to the model shows that before hundreds of thousands of people can be killed with machetes, there needs to be: first, a very large number of people armed; secondly, they must possess a very high level of intent (driven for example by tribal hatred) and, thirdly, there must be extreme vulnerability of the victims.⁹ In many cases, the extreme vulnerability necessary can be brought by coercion with rifles. The model, by forcing a focus on reality, can preclude unreasonable argument.

“NON-LETHAL” WEAPONS

It is difficult to oppose the development of new means and methods of warfare, which would lead to fewer deaths, injuries, disabilities or deprivation to civilians. However, the term “non-lethal weapons” is applied to a range of old and new weapons the use of which is, purportedly, associated with low lethality. Such weapons can be classified according to how they damage or incapacitate the human body. The following categories of weapon have been cited as having “non-lethal” capabilities: kinetic energy (rubber bullets, sponge bullets, etc.); entangling technologies (nets, sticky foam); chemical weapons; biological weapons; acoustic beams; electric shock technologies; infrasound; and electromagnetic waves of a variety of wavelengths.¹⁰

Lethality is an effect; it means the proportion of people affected by the use of a weapon who ultimately die.¹¹ The model explains how all risk factors play into lethality of a context that can theoretically range from zero to 100%. Therefore, the lethality associated with the use of a particular weapon is an outcome of context; it is not an inherent property of the weapon. This analysis shows how claiming that a weapon is “non-lethal” or even “less than lethal” does not reconcile with an understanding brought by the model. The notion has politically correct or even humanitarian connotations and is, therefore, an effective marketing strategy.

Significantly, blinding lasers were developed in the “non-lethal” paradigm but their use has nevertheless been prohibited in armed conflict.¹²

Furthermore, conventional weapons (firearms, mortars, shells, etc.) are not necessarily “lethal”. In the context of armed conflict, the lethality resulting from the use of conventional weapons as recorded since the Second World War is around 20%. Conventional weapons can be used without any lethality: posturing, threats, firing away from the person are all “non-lethal” options. Other weapons lend themselves to use by, for example, police in law enforcement or riot control; their use in these circumstances can reasonably be expected to result in a low lethality. Deaths are clearly less likely when police or military bodies use tear gas or rubber bullets for law enforcement as compared with the use of firearms.

Therefore, the main question is not about the lethality of weapons. It is about whether a given weapon is appropriate for the mission while knowing the lethality and permanent injury likely to occur in the execution of that mission. This is the central issue when considering the legality of any weapons whether for law enforcement or for military use in armed conflict according to human rights law or IHL respectively. Specifically, states parties to the 1977 Protocol I Additional to the 1949 Geneva Conventions of 12 August 1949 have an obligation to review the legality of any new weapon, means or method of warfare that state is studying, developing, acquiring or adopting.¹³ There is no exception for weapons deemed “non-lethal”.

According to the doctrine of the North Atlantic Treaty Organisation (NATO), “non-lethal” weapons will only ever be a complement to conventional weapons.¹⁴ One major concern, supported by examining the use of “non-lethal” weapons according to the model, is that if such weapons

are used in armed conflict they could increase lethality on the battlefield by simply elevating the vulnerability of combatants to the effects of conventional weapons. It is pertinent that the 1993 Chemical Weapons Convention (CWC) specifically prohibits the use of riot control agents as a method of warfare.¹⁵

For those involved in disarmament negotiations relating to biological and chemical weapons, the term “non-lethal” has introduced considerable confusion. There is a small but growing body of opinion that both the 1972 Bacteriological (Biological) and Toxin Weapons Convention (BTWC) and the CWC will need to be revised to permit the development, production, transfer and use of “non-lethal” biological or chemical weapons. However, as with conventional weapons, use of traditional biological or chemical weapons does not necessarily lead to one hundred per cent lethality. The International Committee of the Red Cross (ICRC) is totally opposed to permitting the use of *any* chemical or biological weapons, whatever their mode of action or “lethality”, as a means of warfare. This would simply be letting poisoning or deliberate spread of infectious disease back onto the battlefield.

Sun Tzu said: “Those who are not thoroughly aware of the disadvantages in the use of arms cannot be thoroughly aware of the advantages in the use of arms.”¹⁶ Unfortunately, the proponents of “non-lethal” weapons give little consideration to the disadvantages.

CHEMICAL AND BIOLOGICAL WEAPONS

Use of chemical weapons has been rare; the use of biological weapons even rarer. But advances in life sciences and biotechnology may bring in an era that sees the use of new biological or chemical weapons. Some of these would conceivably fulfil the definitions of both biological and chemical agents given in the BTWC and the CWC respectively. New agents could be more easily designed, more specific in their effects or more difficult to detect. New ways to deliver “traditional” and new agents could be found in parallel with the means to overcome the targets’ natural or acquired defences. The user could carry out an attack in greater safety. In brief, many of the recognized disadvantages of chemical or biological weapons could be eliminated; new biological or chemical weapons would then become a much more attractive option for anyone contemplating their use.

Approaching chemical and biological weapons with the model in mind forces us to think what this is really all about: it is about minimizing the chances of people suffering poisoning and the deliberate spread of disease. Because the model incorporates the fact that the design and development of weapons, their production, their transfer and their use are prerequisites for victims suffering the effects, it is an appropriate tool for untangling the complexities of preventing the use of chemical or biological weapons.

Any single measure that might prevent poisoning and deliberate spread of infectious disease is referable to one or more of the risk factors. Examples are: how public health preparedness reduces *vulnerability*; the total prohibition and, at a national level, criminalization of poisoning and deliberate spread of disease aims to eliminate *use*; inspections, intelligence and customs regulations impact on *production* and *transfer* to would-be perpetrators; promoting notions of responsibility among scientists would address *design* and *development*. These measures overlap and integrate with states' obligations under the BTWC and the CWC. It becomes obvious how each preventive measure is necessary but not in itself sufficient to minimize the risk of poisoning and the deliberate spread of infectious disease. This approach provides the basis for what the ICRC is promoting as the "web of prevention".¹⁷ Practical aspects of this are communicated in a series of imperatives: recognize the risks! Maximize what you can do in your domain to reduce the risks! Listen to what others are doing! Coordinate your thinking and action!

The model serves to emphasize that minimizing the risks of the advances in life sciences and biotechnology being used for poisoning and deliberate spread of infectious disease is, by necessity, a multidisciplinary and collaborative endeavour.

REASONABLE USE OF FORCE

The majority of international news reports refer to acts of armed violence, threats of armed violence, effects of armed violence, agreements that restrain the capacity for armed violence or means of inflicting armed violence. It is obvious that armed violence and its effects are very much in our collective conscience and determine how international affairs are played out. Anthropologists and historians argue that human cultures and a world built on the notion of the nation state are born of acts of armed

violence, the capacity to inflict armed violence and agreements, which restrain this capacity.¹⁸ In other words, armed violence has always carried a fundamental importance for human existence because the basis of group defence or law enforcement is ultimately about how individuals or groups apply force to each other or threaten each other. This is why most societies recognize that certain of their members should carry weapons legitimately. Whilst this baseline view of militarism and law enforcement by police may appear simplistic, it is safe to say that armed violence and its regulation are somehow profoundly implicated in how all humans live and interact. This is why restraining armed violence and reasonable use of force constitutes the central underpinnings of the United Nations Charter, IHL and human rights.

The model permits a more objective and consistent way to judge whether an act of armed violence is consistent with the notion of reasonable use of force. Whether the victims of the use of a weapon are criminals, rioters, citizens expressing their right to free speech or enemy soldiers, the following series of questions must be answered: given the actual or predicted effects of any form of armed violence, is the type of weapon appropriate for the context? Is the weapon deployed in an appropriate number? Have the victims'—or potential victims'—vulnerabilities been taken into account? Is the use restrained—and if so, how?

It becomes obvious that not only ameliorating the effects of armed violence but also restraining the capacity for armed violence are profoundly linked to a positive and collective human existence.¹⁹ Do not notions of humanity also become relevant here? If the fundamental importance to humanity of armed violence is recognized, referring to the model could have profound implications for how affairs are conducted in the international sphere and how international law, in particular, the United Nations Charter, the international law of arms control and disarmament, IHL and human rights law are developed and applied. Such assertions may seem far removed from the subject of this paper but, at the end of the day, from a public health perspective, these bodies of international law serve primarily to manage armed violence.

CONCLUSION

The model of armed violence presented here takes into account the effects of armed violence and pertinent risk factors. The examples given show how understanding this model could provide powerful tools for dialogue in the domain of disarmament and arms control. But is it “humanitarian” dialogue?

This model permits a consistent and “evidence-based” dialogue about the victims of armed violence and their vulnerabilities. International *humanitarian* law is about protection of victims of armed violence and their vulnerabilities. It follows that this model provides a means (and possibly the only means) to bring a humanitarian dialogue to disarmament and arms control precisely because it provides a consistent and “evidence-based” dialogue about the victims of armed violence and their vulnerabilities.

Notes

- 1 The opinions expressed in this paper are the author’s own. They do not represent the views or policy of the ICRC.
- 2 Definition of violence: the intentional use of physical force or power threatened or actual, against oneself, another person, or against a group or community, that either results in or has a likelihood to result in injury, death, psychological harm, mal-development or deprivation (see J. P. Koplan, M. Rosenberg, E. Krug, *Violence prevention: A public health policy*, Atlanta: Centers for Disease Control and Prevention, 1998. Definition of health: a state of complete physical, mental and social well-being and not merely the absence of disease (World Health Organization, *Preamble to the Constitution of the World Health Organization*, as adopted by the International Health Conference, New York, 19-22 June 1946); a weapon is a material thing designed or used or usable as an instrument for inflicting bodily harm (*Oxford English Dictionary*, 2nd edition, Oxford: Clarendon Press, 1989.
- 3 R. M. Coupland, “Armed Violence”, *Medicine and Global Survival*, Vol. 7, 2001, pp. 33-37.
- 4 *Ibid.*, “The Effects of Weapons on Health”, *The Lancet*, Vol. 347, 1996, pp. 450-451.

- ⁵ N. Taback and R. Coupland, "Towards Collation and Modelling of the Global Cost of Armed Violence on Civilians", *Medicine, Conflict and Survival*, Vol. 21, 2005, pp. 19-27.
- ⁶ Small Arms Survey, *Small Arms Survey 2004: Rights at Risk*, Oxford: Oxford University Press, 2004.
- ⁷ ICRC/Programme for Strategic and International Security Studies (PSIS), *State Collapse and Reconstruction: Lessons and Strategies*, report of a conference held under the auspices of the ICRC and PSIS, Geneva, 7-9 December 2000.
- ⁸ ICRC, *Arms Availability and the Situation of Civilians in Armed Conflict*, Geneva: ICRC, 1999.
- ⁹ D. Grossman, *On Killing: The Psychological Cost of Learning to Kill in War and Society*, Boston: Little Brown and Co, 1995, pp. 97-137.
- ¹⁰ National Research Council of the National Academies of Science, *An Assessment of Non-Lethal Weapons Science and Technology*, Washington, DC: The National Academies Press, 2003.
- ¹¹ R. Coupland and D. Loye, "Legal and Health Issues: International Humanitarian Law and Lethality or Non-Lethality of Weapons", *Non-Lethal Weapons*, London: Jane's Information Group, 2000, pp. 60-66.
- ¹² Protocol IV of the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects.
- ¹³ Protocol I Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), adopted on 8 June 1977, Article 36, which states: "In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party."
- ¹⁴ NATO, "NATO Policy on Non-Lethal Weapons", *NATO Press Statement*, Brussels, 13 October 1999.
- ¹⁵ 1993 Chemical Weapons Convention, Article 1.5.
- ¹⁶ S. Tzu, *The Art of War*, Boston: Shambala, 1988.
- ¹⁷ For more information on the ICRC initiative on Biotechnology, Weapons and Humanity, see www.scienceforhumanity.org.
- ¹⁸ For more information see J. Keegan, *A History of Warfare*, London: Pimlico, 1994, pp. 386-393; N. A. Chagnon, "Life Histories, Blood Revenge and Warfare in a Tribal Population", *Science*, Vol. 239, 1988, pp. 985-992; J. Diamond, *Guns, Germs and Steel: A Short History of*

Everybody for the Last 13,000 Years, London: Vintage, 1998; J. Glover, *Humanity: A Moral History of the Twentieth Century*, London: Jonathan Cape, 1999.

- ¹⁹ R. Coupland, "The Humanity of Humans: Philosophy, Science, Health or Rights?", *Health and Human Rights*, Vol. 7, No. 1, 2003, pp. 159-166.