The review of weapons in accordance with Article 36 of Additional Protocol I

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This article explores the process of the "study, development, acquisition or adoption of a new weapon, means or method of warfare" under Article 36 of 1977 Additional Protocol I to the Geneva Conventions of 1949.[1] It then considers the manner in which the legal review of weapons can take place in practice, including an examination of the evidence that will be available on which to base legal assessments.

Background

In considering the requirement to conduct legal reviews of weapons and methods or means of warfare, there is benefit in exploring briefly the genesis of such an obligation. Historically the approach to the regulation or control of conventional weapons has been "two-pronged". On the one hand it attempts to control the manner in which weapons are used; on the other it addresses particular types of weapons. These methods have been developed in parallel, as they both possess certain flaws. States seeking to circumvent prohibitions against the methods of use of weapons could develop new weapons with different capabilities, thus necessitating new prohibitions. Similarly, it would be possible for States to interpret the characteristics of a weapon in such a way as to exclude it from the definition in a particular treaty.

In the run-up to the negotiations on the Additional Protocols particular types of conventional weapons were discussed, the recent use of which

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had caused some international disquiet.[2] The work of the Ad Hoc Committee of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law applicable in Armed Conflicts (CDDH), created to explore the area of weapons law, was supplemented by two ICRC-organized conferences at Lugano (1974) and Lucerne (1976).

Whilst it was possible to create laws prohibiting or restricting particular effects or types of weapons, without a mechanism to monitor which weapons had developed such law was unlikely to have the impact desired. The proposal that led to Article 36[3] offered a solution: a State would monitor the development of weapons by reference to its obligations under international humanitarian law.

However, there was a feeling that the Additional Protocol had not gone far enough in responding to some concerns about particular weapons. A resolution of the CDDH[4] paved the way for negotiations that eventually led to the adoption of the 1980 United Nations 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 (CCW).[5] So by 1981 there existed both a mechanism for monitoring the legality of weapons and a framework convention to address weapons of particular concern to the international community.

What was lacking was any widespread adherence to either.[6] Some form of impetus was needed to resurrect them. For the CCW that impetus came

1 Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 8 June 1977 (hereinafter Additional Protocol I).

2 ICRC Conference, Tehran, Resolution 88(UK)-0-11, 12 November 1973.

3 Draft Art. 86.

4 The discussions leading to the adoption of the Additional Protocols had resulted in Resolution 22 of 9 June 1977 (Fourth Session of the CDDH), which recommended that a Conference of Governments be convened to reach agreements on prohibitions or restrictions on the use of specific conventional weapons (para. 3).

5 UNGA A/Conf.95/15, 27 October 1980. Background information on the conference is given in UNGA A/AC.206/10, 16 June 1981 and in Y. Sandoz, "Prohibitions or restrictions on the use of certain conventional weapons: Final Act of the Conference", *International Review of the Red Cross*, January-February 1981, pp. 3-33.

6 See R. J. Mathews, "The 1980 Convention on Certain Conventional Weapons: A useful framework despite earlier disappointments", paper presented at the Australian Defence Force Conference held at Melbourne University ("Pushing the Envelope: The ADF Contribution to International & Operations Law" held from 20-22 February 2002). With regard to the number of weapons review processes, see I. Daoust, R. Coupland and R. Ishoey "New wars, new weapons? The obligation of States to assess the legality of means and methods of warfare", *International Review of the Red Cross*, June 2002, Vol. 84, p. 354.

from the landmines issue, which dominated the First Review Conference.[7] The result was Amended Protocol II, followed relatively quickly thereafter by the Ottawa Convention.[8] Current developments within the CCW have seen the continuation of discussions on mines, as well as the emergence of the issue of explosive remnants of war.[9]

As regards the review of weapons, reinvigoration of the process was provided by the ICRC's SIrUS Project.[10]

The SIrUS Project

An ICRC symposium on "The Medical Profession and the Effects of Weapons" held in Montreux in March 1996, recorded a finding that it was important to define in objective terms which weapons were inherently abhorrent and which weapons caused superfluous injury or unnecessary suffering. The symposium was to be the catalyst for the setting up of the SIrUS Project.[11] The name of the project was derived from the prohibition on employing "weapons, projectiles and material and methods of warfare of a nature to cause **S**uperfluous **I**njury or **U**nnecessary **S**uffering".[12]

In essence, the SIrUS Project approached the issue of weapons from the perspective that some effects of weapons are design-dependent and therefore foreseeable. It sought to consider these effects as paramount, taking

7 The First Review Conference took place some 15 years after the adoption of the CCW, indicating the level of priority that the international community had accorded it.

8 Ottawa Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, 18 September 1997.

9 A mandate was agreed at the December 2002 Meeting of Governmental Experts to negotiate an 'instrument' regarding aspects of explosive remnants of war and to explore issues regarding mines other than anti-personnel mines (CCW/MSP/2002/CRP.1 paras 21 & 22).

10 At the 27th International Conference of the Red Cross and Red Crescent (Geneva, 31 October – 6 November 1999), under Final Goal 1.5, States were encouraged to develop weapons review processes and to engage with the SIrUS Project to assist them. Conference Plan of Action (2000-2003), p. 12, para. 21.

11 R. Coupland, *The SIrUS Project: Towards a Determination of Which Weapons Cause 'Superfluous Injury or Unnecessary Suffering*, ICRC pamphlet 1997. See also *The SIrUS Project and reviewing the legality of new weapons*, ICRC, January 2000.

12 Art. 35(2) of Additional Protocol I (capitalization added). This is derived from Art. 23(e) of the Regulations respecting the Laws and Customs of War on Land, Annex to the Hague Convention (IV) respecting the Laws and Customs of War on Land, 18 October 1907. The English translation of Art. 23(e) of the authentic French text uses the term, "calculated to cause unnecessary suffering". The wording in Art. 35(2) of Additional Protocol I, which includes "superfluous injury", is considered to be a better rendering of the French text ("propres à causer des maux superflus").

precedence over the nature, type or technology of the weapon. From an analysis of the data collected by the ICRC from its hospitals it proposed four criteria to determine whether the design-dependent effects of a weapon would be of a nature to cause superfluous injury or unnecessary suffering, i.e. when they resulted in:

a. a specific disease, specific abnormal physiological state, specific abnormal psychological state, specific and permanent disability or specific disfigurement; or
b. field mortality of more than 25% or a hospital mortality of more than 5%; or
c. Grade 3 wounds as measured by the Red Cross wound classification scale; or
d. effects for which there is no well-recognized and proved treatment.

There were several flaws in the solely scientific approach of the proposals. At a meeting of government experts in Jongny-sur-Vevey, Switzerland,[13] criticism ranged from the medical[14] to the legal.[15] The legal concern caused the greatest unease. The proposal in the SIrUS Project ignored the requirement to balance such medical factors as those contained in the criteria above against the military necessity to use a particular weapon. Without determining what is militarily necessary it will not be possible to establish whether injuries are superfluous or the suffering unnecessary. It therefore provided only half the equation.

There was a general view, however, that the initiative was broadly welcomed as focusing attention on the need to consider the legality of weapons and on the importance of factoring into that consideration the available scientific evidence. This provided the impetus needed to bring about closer consideration of the issue of weapons reviews and the mechanisms under Article 36.

13 Expert Meeting on Legal Reviews of Weapons and the SIrUS Project, Jongny-sur-Vevey, Switzerland (29-31 January 2001).

14 There was criticism of the Red Cross wound classification on the basis of the data within the SIrUS Project.

15 Some of the legal criticism of the SIrUS Project is well summarized by A. Koch in his article "Should war be hell?", *Jane's Defence Weekly,* May 2000, p. 23. For an ICRC perspective on the meeting see I. Daoust, "ICRC Expert Meeting on Legal Reviews of Weapons and the SIrUS Project" *International Review of the Red Cross*, No. 842, June 2001, pp. 539-542.

The process of acquiring[16] weapons

Before examining the manner in which legal reviews can be conducted it is first important to understand the process by which weapons are acquired. If the legal review of a new weapon is to have any impact on the acquisition process of that weapon, then it must not only be cognizant of the process of acquiring it, but also be a part of that process. The acquisition process is complex but can be broken down generically into several distinct phases:

a. *Concept*: The system will first assess what the "capability gap" is that they wish to fill, i.e. what it is that the military wants to do that its current equipment does not allow it to do. Thereafter a concept for the weapon, weapons system, platform or equipment will be developed. The acquisition process will deal with the whole spectrum of equipment to be acquired for military use, from beds to sophisticated weaponry.[17]
b. *Assessment*: After the concept has been developed, it is further refined and its characteristics delineated. If the equipment being acquired is being purchased "off the shelf", it may be possible to seek data on its performance from the manufacturer.
c. *Demonstration*: The refined concept will be tested. Once initial testing has proved the concept to be viable, further more rigorous and extensive testing will take place.
d. *Manufacture*: Production of the successful equipment will follow, but always with further testing being conducted as new "batches" of the equipment are produced.
e. *In-service*: During the service life of the equipment monitoring of its effectiveness will take place.
f. *Disposal*: At the end of its service life the equipment will be disposed of.

It is important to note that this is not a legal process. Decisions will be taken throughout the acquisition process on the basis of military requirements

16 Although Art. 36 uses the terms "study, development, acquisition or adoption", in the present article the term "acquisition" will be used to reflect all four terms unless otherwise stated.

17 The extent of the requirement for legal review under Article 36 is considered below. However, to avoid confusion the term "equipment" will be used to cover the acquisition of all types of weapons and weapon systems.

and commercial prudence. The development and acquisition of weapons is a costly exercise and it will therefore be closely managed. In addition, in accordance with project management tenets there will be points during the acquisition system at which key decisions will be taken regarding the future development or purchase of the equipment.

These decision points represent important stages for the input of formal legal advice. Whilst it is clearly advantageous for legal opinion to be sought as early as possible (i.e. on the development of the concept of the equipment), it is important that the provision of formal written legal advice be synchronized with the acquisition process. If it is not, then there is a real danger that the legal advice will not be considered adequately in key decisions regarding the future acquisition of the equipment.

Furthermore, it is important that legal advice be provided at each of the key decision points. The development of the equipment itself may require that initial legal advice is given and then refined as the actual capabilities of the equipment become more apparent following testing. Yet even if the legal advice remains unchanged, there is still benefit in legal advice being provided so that it can form a part of the decision process.

The time scale for the acquisition process may be years or months, depending on the nature of the equipment and the imminence of the identified capability gap that the equipment will fill. It will be important, however, to ensure that no matter what the time scale legal advice is sought and evidence upon which that advice can be based is provided.

Legal advice will always need to be sought by those acquiring the equipment. It therefore necessarily follows that they will need to be aware of the requirement to seek legal advice. Advertisement of the requirement for legal review within the acquisition process is essential, in particular when initially developing a system of legal reviews. Moreover, the advertisement needs to be repeated regularly, as within the system there may be project managers who, as either military officers or civilians, are posted on a 2-3 yearly cycle. The advertisement will consequently need to take this into account to ensure that newly posted officers are aware of the need to seek legal advice. The insertion of a note on the requirement for legal reviews into any standard manual will also aid widespread awareness.

Different systems of weapons review[18]

It is acknowledged that the manner in which legal advice can be provided within the acquisition process can differ. While it is not proposed to consider the processes of different States in any detail here, certain aspects of the types of approaches will be briefly considered in light of the process described above:

Committee:[19] The review of weapons by committee has the advantage of ensuring that several experts from different fields are present to assess a weapon. However, the higher the level of representation on the committee, the less likely it is that it will be able to meet frequently. In circumstances in which additional evidence may be required this relative inflexibility may entail a considerable delay in the acquisition of equipment.

Individual "reviewer":[20] The use of a specific individual to conduct legal reviews can give rise to delay depending on the number of weapons that he is required to review. However, it does retain the flexibility to allow for ad hoc meetings with experts to discuss issues concerning the weapon's performance or use. Ensuring that the "reviewers" from each of the armed services are co-located allows for the evolution of uniform approaches to dealing with emerging technologies.

Executive power versus advice: It will be noted that the term used above has been "legal advice". In some legal review processes, those conducting the legal review possess an effective veto.[21] The possession or otherwise of such a veto will be heavily influenced by the manner in which legal issues are incorporated into executive decisions within the military in a particular country.

18 For a detailed summary of the various approaches of States see the Report of the Danish Red Cross, *Reviewing the Legality of New Weapons*, December 2000. This is expanded upon slightly in Daoust, Coupland, Ishoey, *op cit.* (note 6).

19 For example, Sweden's Delegation for International Humanitarian Law Monitoring or Arms Projects and Norway's Department of Defence's Committee. These are discussed in the Report of the Danish Red Cross, *op cit.* (note 18), paras 6.2 and 6.3. It was proposed by some delegates to the CDDH that an international committee to assess the legality of weapons be set up by the Protocol itself. See Y. Sandoz, C. Swinariski and B. Zimmerman (eds), *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*, ICRC/Martinus Nijhoff, Geneva, 1987 (hereinafter *Commentary on the Additional Protocols of 8 June 1977*), p. 422, para. 1463, esp. footnote 3.

20 For example, the United States of America. See Report of the Danish Red Cross, *op cit.* (note 18), para. 6.4. See also Paper presented by W. Hays Parks, Special Assistant to the Judge Advocate General of the Army, Washington DC, USA, to an informal technical meeting hosted by the Government of Switzerland, Darlingen, Switzerland, 12-14 June 2002.

21 Parks, *op. cit.* (note 20).

What must be reviewed?

The requirement in Article 36 of Protocol I is that "new weapons, methods or means of warfare" be reviewed. Whether the weapon is *new* will be determined by two factors. Firstly, by reference to the State intending to use it. The fact that a weapon has been in service with one State for some time before being sold to another State would not prevent the receiving State from considering the weapon as "new" for the purposes of Article 36. Secondly, new weapons are determined by reference to the date upon which the weapon came into service. On ratification by a State of Additional Protocol I, those weapons already in service could not be considered "new" within the terms of Article 36. It may be prudent for a State to conduct a review of those weapons which are subject to international scrutiny so as to be able to defend its possession and use of them more robustly, but this is not a requirement under Article 36.[22]

However, a weapon may well be subjected to an upgrade throughout its life. Whether this was a planned upgrade or an upgrade to exploit new technology, it may render the weapon "new" in terms of its particular characteristics.[23] But the impact upon the capabilities of the weapon would need to be determined. If, for instance, the upgrade's sole purpose was to reduce the weight of the weapon to allow for easier mobility and this did not affect the weapon's capability, then it could not reasonably be considered "new" within the meaning of that term in Article 36.

The term "weapon, means or method of warfare" is not defined. A reasonable interpretation has therefore to be applied. Deciding whether an item of equipment is a weapon will be a relatively straightforward process. The term connotes an offensive capability that can be applied to a military object or enemy combatant. Where greater difficulty arises is in defining the term "means or method of warfare".[24] It has been suggested that "method of warfare" is usually understood to mean the way in which weapons are used".[25] It has

22 This interpretation is consistent with the comments in the *Commentary on the Additional Protocols of 8 June 1977*, *op. cit.* (note 19), para. 1472, which states "[w]ithout necessarily being 'new' in a technical sense, (...) arms are new for the State which is intending to acquire them after becoming a Party to the Protocol".

23 See Daoust, Coupland, Ishoey, *op. cit.* (note 6), p. 352.

24 See H. Meyrowitz, "The principle of superfluous injury and unnecessary suffering", *International Review of the Red Cross*, March-April 1994, p. 103.

25 Daoust, Coupland, Ishoey, *op. cit.* (note 6), p. 352.

been further stated that "it is unclear how the term 'weapon' differs from 'means of warfare'".[26] It is submitted that the terms, "means" and "methods of warfare" can, in practice, be read together. In that way they will include those items of equipment which, whilst they do not constitute a weapon as such, nonetheless have a direct impact on the offensive capability of the force to which they belong. An example would be a mine clearance vehicle. Its characteristics may be uncontroversial from a legal perspective, but it would reasonably fall within the scope of the term "means or methods of warfare" as providing a direct contribution to the offensive capability of a military force.

It is important to distinguish, however, between equipment and its use and the tactics, techniques and procedures adopted by armed forces. Such aspects cover a wide range of areas not all concerned with the employment of weapons or methods or means of warfare. Indeed, they provide a framework within which to conduct operations tailored to the myriad circumstances facing "troops on the ground". These aspects do not fall within the scope of Article 36. Similarly, the control exercised over the use of a weapon by way of Rules of Engagement (ROE) will form no part of the legal review process. ROE are necessarily operation-specific and cannot be anticipated in the preparation of a legal review of a weapon, means or method of warfare.[27]

Communications provide a good example of the manner in which the terms in Article 36 can be applied in the face of emerging technologies. There can be no doubt that communications systems are becoming ever more complex. Not only do they pass information, they have the capacity to collate, analyse, disseminate, store, retrieve and display information produced in preparation for and in the prosecution of military operations. The digitization of the battle space will further enhance the networked capability that such technology allows for. In deciding upon the application of Article 36 it is necessary to understand how the communications systems actually work. This involves not just an understanding of the science but of the military use of that science. Only then will it be possible to establish whether the system possesses an offensive capability and, if so, the manner in which it is intended to be used. Will the system for instance be used to analyse target data and then provide a target solution or profile? If so, the role of the

26 *Ibid.*, footnote 19.

27 It will always be possible, however, in the preparation of a legal review to make comments regarding future ROE to cover the weapon if the characteristics warrant it.

system would reasonably fall within the meaning of "means or method of warfare" as it would be providing an integral part of the targeting decision process. However, if it simply collates data in such a way as to configure a graphic representation of the locations of military formations without altering the nature or content of the data, or if it simply passes the data from one location to another, then it would not be considered as falling within the scope of "means or methods of warfare".[28]

Review criteria

In considering the compliance of the weapons, methods or means of warfare with a State's legal obligations under international law, five areas need to be considered.[29] By way of preface it is important to acknowledge the balance that must be ensured between military necessity on the one hand and the level of suffering on the other. This is generally referred to as the principle of proportionality.[30] In considering the criteria this balance is paramount. It will impact upon the types of evidence required to conduct a legal review.

Treaty obligations

The present article will not consider in any detail the types of treaties that could be appropriate for consideration. What is required is an assessment of the compliance of the weapon system with the terms of the treaty, taking into account any reservations that the State may have entered upon ratification of the treaty. It will necessarily involve an assessment of the restrictions that a treaty may place on types of weapons, as well as prohibitions. The imposition of restrictions will make legal advice necessary on how they might affect the legality of the weapon *per se* or its intended employment. In such a case the earlier the involvement of lawyers in the acquisition process, the sooner such potentially costly alterations can be factored into the process.

28 There are also issues concerning the use of communications equipment with encryption devices vis-à-vis hospital ships. See Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, 12 August 1949, Art. 34.

29 The first four to be discussed are also referred to in Daoust, Coupland, Ishoey, *op. cit.* (note 6), pp. 347-350.

30 The principle of proportionality requires belligerents to refrain from an attack on a legitimate military target if it is expected to cause incidental loss of civilian life, injury to civilians, or damage to civilian objects which would be excessive in relation to the concrete and direct military advantage anticipated from that attack.

Prohibition on the employment of weapons of a nature to cause superfluous injury or unnecessary suffering[31]

The principle that a combatant may not use weapons of a nature to cause unnecessary suffering or superfluous injury is well established in international law.[32] Attention has already been drawn to this within the context of the SIrUS Project. The prohibition clearly accepts that some level of suffering and injury in conflict is inevitable. The issue is finding the point at which the amount of suffering and injury inflicted is considered to exceed that necessary to achieve the military objective.

There are two aspects to the level of suffering or injury: qualitative, and quantitative. The first, or qualitative, aspect relates to the nature of the suffering itself, i.e., does the method of injury that the weapon uses increase the level of suffering caused to the individual. In the development of a new type of weapon such information may be difficult to assess. However, in the development of any system it is often prudent to consider the potential impact of the use of such systems on one's own forces. Thus there may be some data available from studies undertaken that will indicate anticipated levels of suffering.

The second, or quantitative, aspect relates to the scale of the suffering, i.e., will there be greater numbers of victims injured by the weapon. This latter aspect is clearly related to the issue of distinction considered below. To some extent this illustrates the inter-relationship of the criteria. The analysis of the legality of a weapon, means or method of warfare will involve consideration of all the criteria, weighed against the military advantage to be gained from its employment

The test requires consideration of whether the weapon is *of a nature* to cause superfluous injury or unnecessary suffering. Most weapons could be misused in such a way as to cause unnecessary suffering. What is needed is an assessment of whether, in the normal intended use of a weapon, it would be of a nature to cause such injury or suffering. How the weapon will be used is therefore also important to establish, as this will indicate whether it will be used in an anti-material or anti-personnel capacity.

31 See Meyrowitz, *op. cit.* (note 24), for an examination of this principle.

32 Hague Convention (IV) respecting the Laws and Customs of War on Land and its Annex: Regulations respecting the Laws and Customs of War on Land, 18 October 1907, Art. 23 (e); Additional Protocol I, Art. 35; 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, 10 October 1980, Preamble, para. 3.

Capability of distinction

It is well recognized that international humanitarian law[33] seeks to provide protection from attack for the civilian population during times of conflict by requiring that those engaging in attacks choose their methods in such a way as to take all feasible precautions to avoid, and in any event to minimize, incidental loss of civilian life or damage to civilian objects. When conducting a review, the issue in respect of distinction is whether the weapon is capable of being used in a manner in which it can be directed against military objectives, i.e. which is not indiscriminate.

The judgment as to whether it possesses this capability clearly centres in the first place on its accuracy. The accuracy of a weapon will be central to its concept. After all, it is militarily pointless to purchase a weapon at great expense if it is unable to hit the targets at which it is fired. There is here, as in other areas of international humanitarian law, a correspondence of military and humanitarian objectives.

However, the accuracy will be dependent on the purpose of a weapon. For instance, the same pinpoint accuracy required of a sniper rifle could not reasonably be expected of an artillery shell. Indeed, the "killing range" of an artillery shell is significantly greater than a sniper's round. Accordingly the type of weapon is an important consideration. The balance therefore must be found between the military necessity of using the particular type of weapon and the latter's ability to be directed against military and not civilian objects. The availability of suitable alternative weapons will also need to be considered. The intended use of the weapon will be a key factor. The artillery shell, for instance, will be used in a different manner from the sniper's round and the use will account for their different effects. The manner of use of a weapon could well minimize any potential for that weapon to cause damage to civilian objects, etc.

One area that will need careful consideration is the application of the criteria of distinction to the employment of "autonomous" weapons. Such weapons have the capability, to varying degrees, to make decisions without any human involvement on the identification and attack of targets. This absence of what is called a "man in the loop" does not necessarily mean that the weapon is incapable of being used in a manner consistent with the principle of distinction. The target detection, identification and recognition

33 See in particular 1977 Additional Protocol I, Articles 51 and 57.

phases may rely on sensors that have the ability to distinguish between military and non-military targets. By combining several sensors the discriminatory ability of the weapon is greatly enhanced.

In addition to such technological and integral safeguards, the methods laid down for the use of the weapon may provide further safeguards regarding its use with due discrimination. The weapon may be "overwatched" and controlled remotely, thereby allowing for it to be switched off if considered potentially dangerous to non-military objects. Further, the release of such a weapon may only be authorized under ROE when clear of non-military objects.

Environmental considerations[34]

The impact of environmental standards on developing military equipment is now considerable. The criterion applied within the legal review process is whether the weapon is likely to have a long-term, widespread or severe impact on the natural environment.[35] With the interpretation of "long-term" being measured in years rather than months and the greater levels of distinction being expected of modern weaponry, the main concern is likely to be that of toxic components of weapons.

Future legal issues

As mentioned above, the acquisition process may take decades from the concept of a new weapon to its final disposal.[36] Whilst it is therefore important to assess the compliance of the new weapon with the State's current international humanitarian legal obligations, it would be folly to omit consideration of possible future trends in the law.

As with all assessments of the future, consideration of the past is important. Of similar import is the involvement of those conducting the weapons reviews on ongoing treaty negotiations. This ensures both a contemporary understanding in respect of developments and a feel for possible issues of the future.

34 For an examination of the legal framework regarding environmental aspects of conflict see A. Bouvier, "Protection of the natural environment in time of armed conflict", *International Review of the Red Cross*, November-December 1991, No. 285, pp. 567-578.

35 Article 35(3) of 1977 Additional Protocol I.

36 One example is that of the B52 bomber which is still in service. See for example the discussion of the continued use of the B52 in Afghanistan in *Jane's Defence Weekly*, Vol. 37, No.1, p. 27.

Some issues will be driven by technology as it advances. The Blinding Laser Weapons Protocol is an example of such an issue. Nonetheless, despite the inherent flexibility of the UN Convention on Conventional Weapons[37] the law tends to react to developments rather than pre-empt them. The weapons review process provides an opportunity for States to anticipate legal challenges based on the core principles of international humanitarian law and to take them into account in the development of characteristics of new weapons and military equipment.

Review procedure

As mentioned above, it is essential that the requirement for a legal review of weapons be incorporated into the system of acquiring or procuring weapons. Without such integration there is a danger that it will be overlooked in the pressures that the weapons project teams will be under. In addition, by incorporating a legal review into the weapons acquisition system, the review will be able to make use of the evidence, documentation and data produced by that system. A wide range of information is assembled during the acquisition process of an item of equipment.

Operational analysis

In the era of tightening military budgets, the decision to purchase new equipment is rigorously scrutinized. The improvement that an item of equipment represents over that which it will replace will be investigated in detail. An effective way to assess the level of advantage that the new equipment represents is operational analysis. In this process the new equipment is modelled on a computer and tested in a series of scenarios to assess its effect on the battle when compared to the equipment it will replace. The number of scenarios will vary with the type of equipment, but it is possible to model several different scenarios across different terrains.

The validity of the operational analysis will depend on the nature of the computer modelling. Care should be taken to ensure that the model draws upon validated data and uses current tactics of one's own forces and those of potential adversaries. From a legal perspective this is important as it provides an indication of the military utility of the equipment, i.e. how great an impact the equipment will have on the battle. This impact will be weighed against any increase in the levels of injury that could be caused.

37 CCW 1980.

Concept of use

Closely linked to any operational analysis conducted on the weapon will be its "concept of use", i.e. the declared manner in which the weapon will be incorporated into the battlefield "toolset" available to a commander. The "concept of use" will draw upon the operational analysis in order to maximize the weapon's utility whilst catering for any perceived vulnerability. Furthermore, by using studies on the nature of future conflicts the concept of use can most effectively integrate the equipment into the future battlefield.

Close inspection of the concept of use for the equipment will disclose the safeguards in its use that will demonstrate, for instance, that it can be used in a manner consistent with the test of distinction. It may lay down the manner in which targeting information can be utilized by an artillery system or how integrated obstacle plans can be optimized by "overwatch".

Manufacturer's documentation

The documentation produced by weapons manufacturers inevitably concentrates on the positive aspects of a weapon system. It may well make impressive assertions concerning accuracy, effect or even legality of a weapon. As discussed, the obligation to review the legality of a weapon rests with the State seeking to "study, develop, acquire or adopt" the weapon. Accordingly, claims by a manufacturer that a particular weapon is "legal" must be separately ascertained by the interested State.

Scientific reports

In the case of a weapon being developed by the State conducting the legal review, a number of scientific reports dating from the earliest stages of concept and development of the weapon will probably exist. The evolution of the weapon's technology can give an indication of the likely performance of a weapon, as it will disclose the parameters of the weapon's potential. More up-to-date reports on the testing of the weapon in its final configuration will be essential to demonstrate that the predicted performance is matched by the results of tests.

However, where a weapon is being purchased from another State, for understandable reasons[38] the same amount of scientific documentation may

38 For example, the need to protect intellectual property and reasons of national security may prevent a State from making a full scientific disclosure.

not be available. Nonetheless, commercial prudence will require that some testing of the claims of the manufacturer is undertaken. Some scientific reports will therefore be available, although they too are likely to concentrate on the positive characteristics of a weapon. Such reports will be sufficient basis for a legal review, provided they take the criteria discussed above into account.

A further constraint on the testing of weapons is the cost. Where the testing of the effectiveness of a weapon will require testing its ability to cause some destruction, cost may become an inhibiting factor. In such a case computer modelling can assist. By entering the expected characteristics of the weapon into a computer program and subjecting them to computer-generated "field conditions", the anticipated performance of the weapon can be predicted.

Whatever the source of the scientific material available, a meeting will generally have to take place at some stage between the legal reviewer and the scientists concerned. This exchange can have several benefits, not least of which is the avoidance of any misinterpretation of legal and scientific "jargon". It may also result in the production of further scientific reports as a basis for the legal review. Also, having scientists check the interpretation of scientific data in a draft legal review avoids inaccuracy and misunderstanding.

Medical reports

The causing of injuries by fragmentation has long been an acknowledged method of warfare.[39] But as new methods of injuring combatants are investigated, close consideration of the test regarding superfluous injury or unnecessary suffering will be required. The difficulty in conducting the legal review when a new method of injury is being assessed will be the absence of any medical evidence upon which to make an assessment of the balance between the military utility and the nature and amount of suffering expected to be caused. It is likely, though, that the military developing a new method of warfare will have explored ways of protecting their own personnel from the effects of such weapons. This study will have involved some medical research, which could form part of the legal analysis.

39 The nature of the fragment has been the source of some debate; see for example the Protocol on Non-Detectable Fragments (Protocol I) of 10 October 1980 annexed to the CCW, *op. cit.* (note 31). However, the method of using fragments to kill or injure has been uncontroversial.

Alternatively, if such technology is available in other countries then some evidence of its effects may be obtainable from those sources. Either way, some evidence regarding the nature and extent of the expected injury will be required. Also important will be information on the treatment available for such injuries.

Reviewing the review

With the acquisition process ordinarily being measured in terms of years rather than months, any legal review provided at the earliest stages will need to be revisited. Not only may the legal position have altered in the course of time,[40] but the legality of the weapon itself may have changed significantly. The review is therefore iterative in nature. The key decision-making junctures in the acquisition process will necessitate a legal review, but that does not preclude additional legal advice being sought in the interim.

Once the equipment is in service legal reviews may be deemed appropriate. Such reviews would normally be prompted by a change in the law. Since some weapons systems remain in service for more than 15-20 years, changes in legal obligations under treaty or customary international humanitarian law may well affect some of the older systems. Continued legal monitoring therefore needs to be instituted.

Effectiveness of the legal review process

The effectiveness of a legal review process is dependent on several key factors:

1. incorporation of legal reviews into the acquisition system process at key decision points;
2. an understanding of current and possible future trends in international humanitarian law by those conducting the reviews;
3. the availability of documentation on all aspects of the equipment to be procured which covers its military utility, its concept of use, capabilities and medical impact on the victim;
4. the possibility for updating the legal review as the information on the equipment develops.

40 The purpose of having future legal issues as one of the criteria is to avoid being taken by surprise by international legal developments.

Self-regulation

In the negotiation of the Additional Protocols to the Geneva Conventions of 1949 there was much discussion on the creation of a central agency to conduct the legal reviews envisaged under what became Article 36 of Additional Protocol I. Such an approach has been widely viewed as flawed.[41] However, the proposal has not completely disappeared.[42] It is submitted that such an approach would undermine the effectiveness of those legal review processes currently being operated. It has been shown that the manner in which countries approach their obligations under Article 36 differs markedly. In this sense, each State is able to determine how such a process can best be integrated into its own weapons acquisition process. To impose a uniform system would undermine the value of State-specific integration processes, often a key factor for the successful implementation of Article 36.

A further and more obvious problem with a central reviewing agency is that of security. At a strategic level the development of new weapons, means or methods of warfare is inextricably linked to future armed forces' structures and capabilities. Such information is closely guarded by States as being vital for the effectiveness of its fighting forces. At the operational and tactical levels the performance of weapons at the disposal of commanders is similarly sensitive, as it discloses the limitations on "reach" which in turn can reveal options and restrictions in carrying out armed operations. For legal reviews to be conducted by an international agency, information of a highly sensitive nature would therefore need to be disclosed. In short, such disclosure at an international level simply will not happen, so the information upon which to conduct any assessment of the compliance of the equipment with the legal obligations of a State would be incomplete.

Once any legal review has been conducted it may remain subject to a security classification. If the legal review has properly examined all the

41 See *Commentary on the Additional Protocols of 8 June 1977*, *op. cit.* (note 19), para. 1470, which states: "[h]owever, it should be added that a State which respects the obligation provided for in Article 36, and determines that a new weapon is prohibited, is not automatically obliged to make public its finding. This reservation is quite understandable, as modern strategy very often relies not on deployment of military means in the traditional ways, but on new possibilities resulting from research and which consists of creating an imbalance of military strengths vis-à-vis the enemy precisely by means of superior technology in the form of new weapons".

42 Report of the Danish Red Cross, *op. cit.*, (note 18), para. 5.1 (regarding a clearing house) and para. 5.2 (regarding a depository).

available evidence, applied the criteria to it and reached a conclusion, it will contain details of exactly the type of sensitive information that has been discussed above. Thus the same problems would stand in the way of its release. The alternative would be to produce such a sanitized version of the review that it would be worthless in terms of providing an audit of the legal review process, because the information required to assess the rigour of the process would have been omitted for security reasons.

Conclusion

Article 36 is one of the few mechanisms in international humanitarian law that allows for the regular assessment of the equipment of the military with regard to the legal regime within which it has to operate. This assessment is best conducted in a rigorous manner which examines all available evidence from a variety of sources. For security reasons, such a thorough process necessarily precludes its being completely transparent. Nonetheless, for those countries conducting it, its impact is keenly felt and this must be considered a measure of its success.

The answer to the need to widen implementation of the legal review process is not the creation of an international agency to conduct or monitor such reviews, but the strict adherence of States to the obligation imposed under Article 36.