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THE ACADEMY LECTURE SERIES

A lecture will be delivered

by

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Security Policy and Chairman of the Editorial Board of the UK's
official Manual of the Law of Armed Conflict (2004)

**The Developing Law of Weapons:
Humanity, Distinction and the Need
for Proportionality**

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**The Academy Lecture Series treats multiple aspects of
international law in armed conflict.
Each lecture will form a chapter in a future *Oxford Handbook of International
Law in Armed Conflict* to be published by Oxford University Press in 2011**

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OPENING REMARKS

Just over a couple of weeks ago, on 26 March, I was early at my desk in GCSP enjoying my morning coffee and croissants and surfing through my standard set of news sites. One light hearted item caught my eye. Apparently, there is an annual award for books with the oddest of titles. The winner had been announced the previous day. It was a volume entitled: 'Crocheting Adventures with Hyperbolic Planes'. The runner up was a volume on 'Collectible Spoons of the Third Reich'. The other shortlisted volumes were: 'Afterthoughts of a Wormhunter'; 'The Changing World of Inflammatory Bowel Disease; and 'What kind of Bean is this Chihuahua'. What sort of people actually read these books I wondered – and then I caught sight of the last title on the shortlist.....a volume by Ron Arkin – Governing Lethal Behaviour in Autonomous Robots - which I just happened by one of those weird coincidences to be half way through reading – doing so, it has to be said, partly in preparation for this lecture!

I am not at all sure how serious the other titles on the prize shortlist are, but I know for sure that Arkin's work is profoundly so, not least because the arguments the book presents offer a potentially significant challenge to current International Humanitarian Law, especially that part of it relating to weapons. Nowhere is that body of law taken more seriously than here in Geneva, the global centre for the contemporary development of international agreements relating to weapons – and this leads me to acknowledge how privileged I feel to have been asked by Andrew Clapham to deliver this lecture this evening. It is a singular honour and I hope that I can meet the challenge – a not inconsiderable one given the fascinating and highly pertinent comments made by the impressive range of distinguished speakers who have preceded me in this series. It is a great initiative and I have learnt a lot from being in the audience for several of those.

INTRODUCTION

I am going to cover seven key issues which I believe will provide a reasonable overview of the current state of weapons law:

- First I will briefly define what I mean by 'weapon';
- Second, I will say something about how weapons law relates to some other relevant bodies of law.
- Third, because the bulk of the law dealing with weapons is to be found in various treaties and conventions, I will summarise the applicable treaty law.
- Fourth, making reference to those treaties, I will run through the basic principles of the law that effectively define its nature.
- Fifth, I will then offer some comment about what I believe to be the current state of customary law in this area.
- Sixth, I will talk about examples of new and emerging technologies that will present challenges to the existing body of law.
- Finally, I will make a prediction or two about what may realistically happen in the near term

DEFINING 'WEAPONS'

We must start with an understanding of what is meant by the word 'weapon'. In fact, the terminology used today refers not simply to 'weapons' but to 'weapons, means and methods of warfare'. In this phrase a 'weapon' is an offensive capability that can be applied to a military objective or an enemy combatant. The 'means' consists of a device, a munition, an implement, a substance, an object or a piece of equipment. 'Method' is the way in which a weapon is used during hostilities. There is an important distinction between the 'means' and the 'method' which will become more obvious in things that I shall be saying a little later. Essentially though, legality is questioned on two levels. First, is the weapon itself inherently lawful or unlawful, for whatever reason? Second, is the way in which a particular weapon is used compliant with the law?

Finally, I ought to stress that I am dealing here with the law relating to weapons in the context of armed conflict. Weapons may also have utility in law enforcement, for example, but that is not an application that is of concern to the body of law I am dealing with this evening

WEAPONS LAW IN CONTEXT

I tend to the view that there are effectively three bodies of law – possibly four - dealing specifically with weapons in the round, only one of which I am concerned with this evening.

The first two of these bodies of law are about reducing or eliminating the possibilities of war. On the one hand there are disarmament agreements, on the other there are arms control agreements. The two phrases are not synonymous. The first body of law – disarmament agreements - is predicated on a degree of idealism based on optimistic assumptions about the nature of the human condition. Essentially, it is assumed by the most enthusiastic advocates of disarmament that it is possible to eliminate warfare by the simple expedient of banning the implements by which wars are fought. No weapons – no wars. The theory of arms control, in contrast, is predicated on pessimistic assumptions about human nature. War is a natural condition that is only avoided by the effective management of the strategic relationships between potential adversaries. Arms control agreements are essentially a mechanism for managing strategic relationships, the aim not being the elimination of war through the elimination of weapons but rather the reduction of the risk of war through the maintenance of an effective balance of power. If two sides in a strategic relationship mutually control the level of armaments, neither side is left with the military potential to give it a competitive advantage in war-fighting terms. This is a fundamentally important mechanism for the effective management of what came to be referred to as strategic deterrence – not exclusively about atomic or nuclear weapons but undoubtedly especially associated with them. For the International Relations theorists amongst you, disarmament is favoured by those idealists whom Martin Wight referred to as Revolutionists. Arms

control as a method of strategic management is a tool favoured by pessimistic Realists. For those of you who are Rationalists, neither overly optimistic nor unduly pessimistic, there is, of course, a middle way that recognizes both the value and shortcomings of both approaches.

But this is a topic for another occasion. The weapons law that I am talking about this evening is something else altogether. It is a part of the law governing the conduct of conflict – that is to say, International Humanitarian Law. This body of law is based on the understandable and pragmatic assumption that war is an enduring – and probably a permanent - feature of the international system. All we can realistically do – indeed, the very least we can do - is mitigate its worst effects by putting in place pragmatically arrived at regulations enshrined in law.

Having said that there are at least three bodies of law dealing with weapons, I must now caveat this by saying that at times it is difficult for many to determine in which of the three categories a particular agreement belongs. In common perception, they overlap to some degree. Periodic arms control agreements may appear to be leading eventually to full disarmament and the official rhetoric of political statements made at the time of agreement may even state this as the ultimate aim. I strongly advise taking some of these statements with a pinch of salt and I for one would be somewhat concerned if they were all actually based on a true belief in disarmament, especially in the nuclear context. The very recently signed New START agreement between the United States and Russia dealing with numbers of strategic nuclear warheads I regard as an arms control agreement – not as a disarmament treaty, despite frequent references in that context to a desire to move towards the complete elimination of nuclear weapons – the so-called ‘zero option’. You will gather from what I have just said that I am probably not an idealist, or a Revolutionist in Martin Wight’s terminology. Of course, total bans on specific weapons, means or methods of warfare may well be referred to as a form of disarmament, even though they are more appropriately regarded as a part of International Humanitarian Law. For me the three bodies of law are distinct, but I do have to acknowledge that terminology is not always precisely defined as I have suggested it should be.

The final, fourth, body of law to which I briefly alluded earlier is that which is developing in order to place some measure of control on the arms trade and proliferation. The proposal for an Arms Trade Treaty, for example, is a case in point. If eventually agreed it will presumably contain some definition of what constitutes ‘arms’ in relation to the treaty. Instruments dealing with the proliferation of weapons and such measures as UN Security Council resolutions dealing with arms embargoes might also fall into this category. I will not be dealing with this body of law at all tonight, except to say that some weapons law treaties that ban specific weapons also contain provisions dealing with weapons transfer.

So weapons law for me tonight is that which forms an integral part of the *jus in bello* – that is to say, the Laws of War, more appropriately known these days as the Law of Armed Conflict – or, especially here in Geneva, as International Humanitarian Law. It is on this which I shall now focus my attention.

CONVENTIONAL SOURCES OF WEAPONS LAW

It is important to acknowledge that weapons law is not a new body of law. Ancient bans on the use of poison are frequently mentioned to illustrate this fact. In my own latest leisure time reading, on the medieval history of Europe, especially the constant rivalry between the French and English crowns, the issue is by no means absent. Weapons were a source of controversy even then. The longbow and the crossbow were both effective – indeed, often decisive – weapons at the time. While in a comparison of rates of fire, the longbow wins by a substantial margin, the sheer power generated by the crossbow's winding mechanism, and the resultant speed of flight of the bolts or arrows, meant that the armour worn by the mounted knights and esquires was very easily penetrated. The Lateran Council in 1139 is generally assumed to have declared the crossbow un-Christian for this reason. While, in the prevailing and influential thinking of the day, it was perfectly permissible for knights and esquires to butcher the longbow or crossbow wielding common man, the idea that the advantage might rest with the common man to the detriment of his social superiors was pretty hard to swallow in noble circles.

The point is that there have undoubtedly been norms of behavior relating to the use of weapons, means or methods of warfare from ancient times onwards – although you will be very pleased to hear that things have certainly moved on since the 12th century. The middle of the nineteenth century was, and remains, a good starting point in the modern study of this subject, with the *1868 St Petersburg Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes in Weight* being regarded as very much the founding document of reference. This was followed by an attempt six years later to move the law on. Unfortunately, the *1874 Brussels Declaration* never entered into conventional force.

Undoubtedly, the first major attempt to develop the law on weapons took place in the context of the two Hague Peace Conferences of 1899 and 1907. In 1899 there were declarations on asphyxiating gases and on expanding bullets. The most relevant outcome of the 1907 conference was the *Fourth Hague Convention, Respecting the Laws and Customs of War on Land*, although in relation to sea warfare one might also mention the *Eighth Hague Convention Relative to the Laying of Automatic Submarine Contact Mines*. As a result of the work conducted in The Hague, that part of International Humanitarian Law dealing with weapons, means and methods of warfare came to be referred to as 'Hague Law' – distinguished from 'Geneva Law' which owed its label to the development of the series of Geneva Conventions that were about the treatment of victims of war. Somewhat confusingly, however, the *1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare* (clearly an example of Hague Law) was actually signed in Geneva and is known as the *Geneva Protocol*.

In 1972 agreement was reached on the *Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and their Destruction*. Over twenty years later, in 1993, agreement was also reached on the

similarly titled *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and their Destruction*. Referring back to what I said earlier about the different bodies of law dealing with weapons, these two conventions create a clear overlap between disarmament agreements and the law of weapons forming part of IHL.

Certainly in the sphere of conventional weapons, by the 1970s the apparent distinction between so-called Hague and Geneva categories of law was looking increasingly inappropriate, not least because weapons are regulated principally for reasons of humanity and to reduce the suffering experienced by those caught up in war, principally combatants as these are the category of individuals against whom weapons may legitimately be targeted. Accordingly, the two separate bodies of law were effectively joined as one in the context of the *1977 Additional Protocols to the 1949 Geneva Conventions*. Although one still occasionally hears reference to the distinction between Hague law and Geneva law, that distinction is now effectively moribund – and I personally prefer not to use it.

Following the *Additional Protocols*, an extremely important development was the *1980 UN 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* – frequently referred to by the acronym ‘CCW’. The convention itself is a very brief document. The most important provisions are contained in a series of additional protocols: *Protocol I on Non-Detectable Fragments* (1980); *Protocol II on Mines, Booby Traps and Other Devices* (1980); *Protocol III on Incendiary Weapons* (1980); *Protocol IV on Blinding Laser Weapons* (1995); and *Protocol V on Explosive Remnants of War* (2003). An *Amended Protocol II on Mines, Booby Traps and Other Devices* was also agreed in 1996.

Although the CCW was intended to become the main means of regulating or banning specific conventional weapons, and through the mechanism of negotiating Protocols remains a ‘live’ convention, there have been two important conventions negotiated separately. The *1997 Ottawa Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and their Destruction*, was followed by the *2008 Oslo Convention on Cluster Munitions*. One of the key political issues in relation to conventional weapons law is the extent to which the CCW should remain the principal means of achieving regulation. The continuous process of negotiation under its auspices is, of course, a state-centric process with the agenda and outcome clearly driven by governments. What both the Ottawa and Oslo conventions have demonstrated is the extent to which civil society and interest groups can mobilise opinion to the point at which many states agree to go along with the process. Of course, since we are after all dealing with treaty law, the final outcome must still be a formal agreement ratified by states.

BASIC PRINCIPLES OF WEAPONS LAW

The basic principles of weapons law are reflected in the range of treaties to which I have just referred. As I said, the starting point for considering how the modern law has developed is the *1868 St Petersburg Declaration*. It is worth quoting its preamble:

“Considering that the progress of civilization should have the effect of alleviating as much as possible the calamities of war;

- ***The only legitimate object which states should endeavour to accomplish during war is to weaken the military forces of the enemy;***
- ***For this purpose it is sufficient to disable the greatest possible number of men;***
- ***This object would be exceeded by the employment of arms which uselessly aggravate the sufferings of disabled men, or render their death inevitable***
- ***The employment of such arms would therefore be contrary to the laws of humanity...”***

While the later *1874 Brussels Declaration* never entered into conventional force, it made two important points. First, it stated very clearly that ‘The Laws of War do not recognize in belligerents an unlimited power in the adoption of means of injuring the enemy’. Second, it went on to add that it was especially forbidden to employ ‘arms projectiles or material calculated to cause unnecessary suffering’.

The failure of the Brussels Declaration to obtain the force of law was largely overcome by the two Hague Peace Conferences in 1899 and 1907. *Hague Convention II* of 1899 and *Hague Convention IV* of 1907 were both concerned with the Laws and Customs of War on Land. Article 22 was common to both: it confirmed that the right of belligerents to adopt means of injuring the enemy is not unlimited. Both conventions also stressed that issues relating to tactical or strategic necessity cannot be used as a justification for an effective departure from weapons law – that is to say, the plea of necessity by a state, occasioned by the likelihood of an inevitable defeat in conflict, could not be used to justify resort to banned weapons in extremis.

The Hague Conferences also enhanced the wording restricting the effects of weapons. At first sight, Article 23 appears similar in both. There are, however, two important differences in the wording. The 1899 convention states thus:

“.....it is especially prohibited.....to employ arms, projectiles or material of a nature to cause superfluous injury...”

In contrast, to quote the 1907 convention:

“.....it is especially forbidden.....to employ arms, projectiles or material calculated to cause unnecessary suffering...”

One difficulty has arisen because of the two different phrases ‘of a nature to cause’ and ‘calculated to cause’. Although this difference in wording (a consequence of a

difference in the translation into English from the original and authentic French text, itself identical in 1899 and 1907) has caused difficulty, it would be manifestly absurd to stress the 1899 rather than the 1907 version. The reason for this is simple to explain and goes back to what I said earlier about what is meant by ‘method of warfare’ as distinct from ‘means’. What is important in assessing the inherent lawfulness of a weapon is not what that weapon is ultimately capable of inflicting by way of unnecessary suffering and superfluous injury, but what it is actually designed and intended to do. Any weapon can be used inappropriately. A basic service pistol can be used to inflict absolutely atrocious and profoundly unnecessary permanent injury and suffering. One could, for example, deliberately and callously fire rounds into a victim’s knee joints, destroying them in the process – so-called ‘knee-capping’. A pistol is, therefore, of a nature to cause such suffering; but it was far from being designed with that particular purpose in mind. If weapons law were to be interpreted as being bound by the erroneous 1899 English wording, the whole body of weapons law would simply be an ass. The problem remains with us, despite its manifestly absurd consequences, for the simple reason that the English text of Article 35(2) of *Additional Protocol I* preserves the 1899 wording rather than utilizing the more obviously appropriate 1907 English terminology. Largely for that conventional reason, the *ICRC Customary Law Study* repeated this absurdity in its Rule 70, despite the fact that state practice in those states in which formal weapons review processes take place, applies the 1907 wording. Or perhaps one should as a matter of course interpret ‘of a nature to cause’ as really meaning ‘of a nature to cause as a result of its designed purpose.....’ I point this out this evening in the hope that the *ICRC Study* authors will consider reviewing their existing Rule 70 in any future edition.

Superfluous Injury and Unnecessary Suffering

The use of the two different phrases ‘superfluous injury’ and ‘unnecessary suffering’ arguably enhanced the obligations in relation to the limiting of a weapon’s effects. The two phrases are now as a matter of course employed together as, for example, in both Article 35(2) of *Additional Protocol I* and the third preambular paragraph of the CCW. That is not to say that they are not problematic, however.

While the words themselves are not in dispute, it is by no means entirely clear what they mean. As Antonio Cassese pointed out in the mid-1970s, as both the *Additional Protocols* and the CCW were being conceived, neither phrase is defined. What exactly is suffering that is unnecessary? And what sort of injury might be regarded as superfluous? Against what are these being tested? Military necessity is the obvious response, given that injury must presumably only be necessary if it is inflicted in pursuit of a military purpose that is itself judged to be necessary under the circumstances. How exactly does one go about comparing the necessity of suffering or the superfluity of injury against an equally subjective assessment of military necessity, however? What might be regarded as necessary in one instance, may not be in another. Surely this means that any test would only be feasible at the point of decision on weapon use, or even retrospectively when the extent of injury and suffering will be known and the resultant military advantage revealed. If that is even remotely true, how can we possibly use such a principle to determine the inherent lawfulness of a weapon that is not yet

fully developed, let alone not in service? That is what states are under an obligation to do – to review legality during the process of weapons development and procurement in accordance with Article 36 of *Additional Protocol I*.

There have been attempts to objectivise these assessments. One such was the ICRC's SIrUS project which attempted to use medical data to gauge effect. One suggestion, for example, was that any weapon producing field mortality of more than 25% or hospital mortality of more than 5% should be outlawed. The problems with this sort of calculation are that it is only really possible after use and it does not, therefore, allow for any relation to military necessity. Laudable attempt though it arguably was, the SIrUS project was strongly criticised by states and abandoned in 2001 at a meeting here in Geneva.

We are, therefore, left with the conclusion that the superfluity of injury and the necessity of suffering can only ever be matters for subjective judgement, regardless of the time or circumstances in which we are obliged to consider them. I do not regard this as fundamentally problematic. I am not one who believes in the absolute desirability for objective over subjective decision-making. There are some issues about which it is impossible to be other than subjective. Attempts to somehow objectivise the analytical process in relation to them are intellectually flawed. We have to rely on judgement, therefore, although it must be judgement influenced by a reasonable understanding of what will be generally acceptable and understood in humanitarian terms.

Despite the difficulties associated with assessments of superfluous injury and unnecessary suffering, the principle arising from the desire to eradicate them is important because it is a permanent customary backdrop to weapons law.

The Principle of Distinction

Before I move on to deal with customary law, I should spend a short time dealing with the principle of distinction. This has not emerged purely from within what I have defined as weapons law, but is a fundamental principle of IHL in the round. Essentially, belligerents are forbidden from targeting either civilians or civilian objects. Fundamentally, therefore, this is a rule of targeting law. It is surely dependent on the existence of weapons that enable such distinctions to be made in attack. Ultimately, therefore, it must be the case that a weapon quite incapable of being used in a manner consistent with that principle – a weapon that was inherently indiscriminate – would be unlawful.

While this would seem to be a perfectly logical and reasonable corollary of the general principle of distinction, it has been argued very recently that no rule existed in either conventional or customary law prohibiting inherently indiscriminate weapons prior to the entry into force of *Additional Protocol I*. While it is certainly the case that treaty law prior to 1977 did not address the issue of distinction in a manner directly related to weapons, at the time the draft of the *Additional Protocol* was being agreed Antonio Cassese, for one, believed that its ban on indiscriminate weapons was simply a codification of a prior customary ban. I can only agree. I am not at all sure how one can square the fundamental principle of distinction with the lawful existence of weapons and means of

warfare the use of which would lead inevitably to the breach of that principle. Indeed, this conclusion would seem to rely to a degree on the unfortunate assertion that weapons not the subject of specific treaty bans cannot be unlawful, a view with which I would not be fully in sympathy. The only inherently indiscriminate weapon that I believe remains lawful is the strategic nuclear weapon (for not uncontroversial reasons related to the strategy of nuclear deterrence and the role of the threat of reprisals in that context).

Today, the principle of discrimination is dealt with in Article 51(4) of *Additional Protocol I*. Having said that, it only deals with indiscriminate attacks - not with weapons that are themselves indiscriminate. It links means of warfare to the particular circumstances in which they might be used, stating that weapons incapable of being directed at a specific military objective will probably result in an indiscriminate attack in relation to those specific objectives. It certainly does not refer to weapons that would be indiscriminate against any target – implying that a weapon's discriminatory capacity is ordinarily related to particular targets and is not something that is likely to be an inherent feature of any weapon.

In fact, this is going too far. Bacteriological weapons, for example, would not be capable of discriminating between combatants and non-combatants, both being equally vulnerable to disease. Poisons, designed to be deployed in certain ways (into a water supply, for example), would not discriminate. Actual examples of weapons that were incapable of discrimination in relation to their designed target (London) were the German V1 and V2 rockets that were deployed towards the end of the Second World War. A contemporary example with similar indiscriminate effect is the Katyusha rocket, used by Hezbollah against Israeli controlled territory (although this might be explained by reference not to designed purpose but to inappropriate use).

Clearly, most weapons are more capable of discrimination than these examples, although it is also the case that virtually any weapon can be used indiscriminately. Once again we are in the realm of the difference between means and methods – between designed use and inappropriate use. Even a precision guided munition (PGM), designed for very precise targeting of particular military objectives, could be rendered indiscriminate by its use in wholly inappropriate circumstances. An air to surface PGM might accurately pinpoint aircraft hangars and other such buildings on the ground but could prove to be profoundly indiscriminate if it were employed in urban warfare. Cluster munitions might be accurately targetable at the point of use but can leave numerous unexploded and potentially lethal bomblets lying around for long periods following an attack. These 'left over' munitions (or lethal remnants of war) often kill or severely injure civilians, especially curious children who stumble across them. This might be an unintentional indiscriminate consequence of this type of weapon, but it is an unlawful consequence nevertheless. The nature of these weapons is the reason why they have been the subject of a highly motivated attempt to eliminate them altogether.

The Need for Proportionality

The need to apply the proportionality principle has traditionally not been regarded as a part of weapons law. Technology that opens up the possibility or expands the use of remotely operated weapons platforms raises one important weapon related question, however. Is a remotely operated weapon system able to facilitate the degree and quality of data collection and analysis necessary to inform decision-making in relation to potential civilian casualties when targeting a military objective. The capability of sensors and data links, for example, will certainly need to be a consideration during a weapon review process for any weapon controlled by remote operators. In many ways this is not a new issue (it has long been a factor with any weapon capable of being fired at targets beyond the visual horizon) but it is certainly assuming an increasing importance as the development of unmanned weapon platforms (including unmanned aerial vehicles) proceeds apace. As an extreme example of this, UAVs deployed in Afghanistan are being controlled by military personnel sitting in offices in the United States. The quality and quantity of data flow will be crucial in relation to both the principle of distinction and that of proportionality.

Summarising the Principles Affecting Weapons Law

Before moving on, let me just list the principles affecting weapons law that I have mentioned, merely to clarify the picture. There are three longstanding principles that are well established and which are today largely accepted without substantial dissent:

- The means and methods of warfare are not unlimited
- The principle of humanity requires that weapons should not inflict either superfluous injury or unnecessary suffering
- Weapons should not be indiscriminate.

To these three I would add three further principles:

- Neither tactical nor strategic necessity may be used as a justification for non-compliance with weapons law
- The inherent lawfulness of a weapon is related to its designed purpose and not its potential to cause either superfluous injury or unnecessary suffering, or indiscriminate effect if used inappropriately
- Weapon systems, in particular those involving remote targeting, must include adequate provision to enable judgements to be made about the potential for disproportionate effect in attack.

Of this second group of three, the first and second contribute to making weapons law meaningful. The third is a consequence of technological developments that may become increasingly influential as time moves on. I shall return to this issue later.

Customary Weapons Law

Now I turn to comment on customary law as it relates to weapons. Inevitably, what I am about to say will be a critique of the *ICRC Customary International Humanitarian Law Study's* treatment of weapons law. In saying this I am acknowledging that the study has

achieved status as the obvious starting point when considering the current state of customary law in IHL. We either agree with the relevant rules contained therein or we critique them – certainly, we cannot ignore them.

There is an almost symbiotic relationship between conventional and customary law in this particular body of law. The basic principles I outlined a few minutes ago – all reflected in conventional law - are certainly ones that I believe have already achieved or are close to achieving the status of customary law. The best established of these are clearly the humanitarian principle dealing with superfluous injury and unnecessary suffering and the principle of distinction. These are already reflected in ICRC Rules 70 and 71. I have already mentioned my belief that Rule 70 should be amplified to clarify that it is the intended and designed use of a weapon that should form the basis of a review of its legality, not its potential to produce unlawful results if used inappropriately. I have previously argued that the rule was on first sight sound but could have been a more accurate reflection of custom if it had contained two clauses, one referring to a weapon's actual designed properties related to purpose and the other referring to the inappropriate use of weapons. But this was a relatively minor point. I have also been largely content with Rule 71 dealing with discrimination.

In the ICRC Study it is only rules 70 and 71 that deal with basic principles of weapons law but, as I have argued, they are not the only ones that provide the framework for the development of weapons, means and methods of warfare. There is sufficient prima facie evidence to support serious consideration of the customary status of the additional four principles that I have identified. It is not for me to say definitively whether or not they have achieved that status; I merely offer them up as serious contenders in the hope that the customary law review process taking place in relation to the *ICRC Study* might consider this approach.

The way that weapons law is now developed is the key to understanding my position in relation to the status of customary weapons law. It seems very sensible indeed to accept that there are certain principles underpinning the law of weapons that provide an essential framework for the development of conventional law on the subject. It has to be admitted that, with the possible exception of poison, the accepted customary principles alone have not led directly to any ban on a specific weapon or means of warfare. For such a ban to be achieved seems to require formal international agreement in the form of a treaty. This leads me to suggest a very close relationship between custom and convention. The customary framework of principles is what prompts the additional effort required to ban specific weapons. Without specific weapon bans incorporated in treaty law, no effective progress in banning of weapons for humanitarian reasons is possible. While the customary basic principles provide the framework, the detailed technical details need to be included in treaty law. It is the treaty law that gives real effect to the principles enshrined in custom. For this reason I believe it to be important that we recognize the essential relationship between these two aspects of the law. They each need each other and cannot exist independently.

My reaction to the *ICRC Study's* approach to weapons law has been prompted by a desire not to see that essential relationship undermined. The study's methodology seemed to be to regard treaty law as having evolved into custom, especially in relation

to the CCW protocols, unless there was significant actual dissent that effectively denied customary status. The Ottawa Convention is not converted into a customary ban on anti-personnel land-mines, for this reason. It is a notable exception, with significant states withholding support, and it would have been extremely controversial to suggest that it either had already or was about to achieve customary status.

By adopting an approach which seemed a little too keen to convert treaty law into custom, the study may have endangered that custom/treaty relationship by undermining the integrity of custom, one consequence of which might be effectively to render states a deal more cautious about entering into treaty commitments about specific weapons.

It is possible that the failure to achieve agreement under the CCW on cluster munitions may be attributable to this factor. This very week, a group of government experts is meeting here in Geneva in an attempt to move forward with a protocol on cluster munitions that will complement the Oslo Convention. If the Oslo process had not proceeded as it did, might we be closer to a cluster munitions protocol to the CCW? The Oslo Convention has arguably rendered such a protocol less urgent. In doing so it has threatened the delicate balance between custom and conventional weapons law. We shall, of course, only know if this is the case with the benefit of much greater hindsight than we have at present. While on the one hand it is laudable that determined civil society activists achieved success with the *Oslo Convention on Cluster Munitions*, it might be sensible to regard the current situation with some caution.

New and Emerging Technologies

Let me turn now to new and emerging technologies. Weapons law has the potential to be significantly affected by the development of technologies that might lead to new means and methods of warfare or to the weaponisation of otherwise benign platforms.

A key question here is to do with the relationship between law and technology. Which should be the most influential in relation to the development of the other? Should the law shift as technology produces new possibilities or should technology only be used to develop new weapons within the parameters laid down in existing law? It is by no means uncommon to hear it argued that weapon technology should advance within pre-existing guidelines. Indeed, the weapons review process, in accordance with article 36 of *Additional Protocol I* effectively prescribes this relationship between law and technology, by insisting that at every stage in the process of evolving new weapons – at the initial conceptual phase, during development and testing, at the production stage, and prior to entry into service – they should be checked against existing law. If contrary to it, the evolution of a new weapon should be halted. I am not advocating at this stage that we should necessarily depart from this approach; merely that we might consider the possibility that entirely new technologies might render it appropriate to consider an alternative way forward.

I am not a scientist and I am not about to claim scientific knowledge and understanding that I lack, but it does seem to me that it is at least possible that we might be increasingly challenged in this way as the century proceeds. What are the full consequences, for example, of developments in nano-technology? Will these cause us

to reassess precisely what we mean by chemical and biological weapons? If new technologies, currently constrained by the law, were to provide added humanitarian benefit, would it be right effectively to prevent their development?

I have just mentioned nano-technology and the possible impact of it on our understanding of both chemical and biological agents. One important reason for the ban on bacteriological and chemical weapons is clearly humanitarian concern for their effect on people. The resultant bans effectively proscribe the development of weapons under either heading. But what if a technology (perhaps based on nano-technology) emerged that could have a positive influence on the ways that people are affected (through some form of less-lethal weapon), would that need to remain banned or would there be a case for allowing it to proceed to development? A less-lethal weapon based on quasi chemical/biological development could in theory have very positive humanitarian effect. While I fully appreciate the concerns that such a comment will give rise to amongst mainstream opinion on IHL, technology is challenging and the directions in which it might develop could surprise us.

One area of emerging or developing technology that is already having an impact on armed conflict is that producing remote effect. That is to say, remote vehicles are being used (controlled at great distance from the conflict zone) to track and analyse potential targets and also to provide platforms for weapons that are then activated from similar distances. Unmanned aerial vehicles (UAVs) are a common feature of the so-called war against terrorism and modern hybrid conflict. It is still early days for the development of unmanned vehicles/platforms, but UAVs provide a significant capability and they can and do carry weapons. Unmanned ground vehicles, in contrast, are still restricted to doing the so-called “dull, dirty and dangerous” jobs that do not involve attacks on combatants or military objectives. They are not weaponised to any significant degree. The most obvious weaponised ground vehicles are those used for mine clearance – robots used to investigate and detonate mines. The fact that weaponisation is possible means that weaponisation is inevitable.

With unmanned weaponised vehicles the questions of concern relate to the role of humans – the so-called “man in the loop” issue. Remote control implies control from a distance by an operator. Semi-Autonomous implies a degree of automaticity in the processes of data capture, data analysis and target acquisition. Autonomous means just that – the unmanned vehicle is in a position to make targeting ‘decisions’. Such technology on the horizon raises a number of concerns related to the ability of a weapon and its operator to comply with the requirements of weapons law. Can the technology distinguish between combatants and non-combatants (including in hybrid forms of warfare where it is difficult to distinguish between civilians and insurgents, for example)? Can it judge the degree of suffering and the nature of likely injury to those targeted? Can it make any sort of judgement in relation to what is a proportionate level of civilian casualties against the necessity of targeting a particular military objective? There are those who believe that this is either possible already or that the computational technology is on the brink of achieving that ability.

This is where Ron Arkin’s book *Governing Lethal Behaviour in Autonomous Robots* comes in. Arkin believes that the speed of data capture and analysis that computers

achieve (far exceeding that of the human brain) combined with complex sophisticated programmes creating something that might well be digital but which achieves a result remarkably similar to human judgement, may well produce humanitarian benefit. The decision output of a machine or robot could be more humane than the decision made by a human. Humans are not only slower at data analysis, they are also subject to emotional effect and under stress may well commit a breach of the law when a well programmed machine simply would not. At least that is the argument. A key ethical question is to do with the extent that we ought to remove humans from the process of combat. I personally have problems with going too far down that route. War is a moral activity and those who are conducting it are moral actors. I cringe at suggestions that we can take 'humans out of the loop' altogether.

Ron Arkin and I shared a panel at a conference in London earlier in the year. I argued with him that human judgement should not be taken out of warfare for moral reasons – he asked, very simply, why not? My rather weak answer at the time was that machines cannot be moral agents. At that point, the third member of the panel piped up and said “my robots might surprise you”.

From that point I and the rest of the audience were presented with an insight into the latest research being undertaken by Professor Kevin Warwick, Professor of Cybernetics at Reading University in the UK. He has created small machines that are capable of making very basic decisions. The decision-making element in them is not simply computer technology. He has taken neurons from the brains of mice, cultured them in the laboratory and created mini-biological brains that he has then inserted into the circuitry of his machines – it is those mini-brains that 'decide' what the machines will do. In the video he showed, they were carrying out the simple task of avoiding obstacles while navigating around a test area. Very basic, of course, but continue developing the brains, or substitute human neurons for those of mice, and we are moving towards the development of what science fiction refers to as 'androids' – fully autonomous machines endowed with some measure of human judgement. I find this scary – but we cannot afford to be frightened by it for the simple reason that we have to confront this sort of science. What impact would genuinely autonomous robots have on the battlespace. Who would be responsible if such a robot 'committed' a war crime due to malfunction. If, as I am assured, robots will be capable of sophisticated assessment of such issues as the identity of targets (even those in disguise) and what constitutes a reasonable proportion in relation to the targeting of military objectives close to civilian population, how will the law deal with this?

I have to admit that I do not know what the answers to such questions are. We are already 33 years on from the agreement of the 1977 *Additional Protocols*. Wind forward the same period to 2043 and I am not sure what technology will be out there for military professionals and IHL lawyers to grapple with. If I am still around I will be 91 years old and, even with remarkable developments in medical care, I am by no means certain that I shall still be concerned with such things – but many in this audience may well have to be. Watch this space as technology can move very fast and surprise us all.

IMMEDIATE ISSUES

But what of the easily foreseeable future. As I said, a group of governmental experts is here in Geneva this week to look into CCW issues, especially the elusive protocol on cluster munitions. I have no idea what the result of that meeting is going to be – perhaps someone else here is closer to these discussions than I am. I suspect that we will continue to see some sort of struggle between the CCW regime and activities outwith its processes. Civil society, having succeeded with anti-personnel landmines and cluster munitions, will certainly be looking for its next target. This might be white phosphorous. It could be weapons utilizing depleted uranium. White phosphorous is not banned under either the chemical weapons provisions or under the incendiary protocol of the CCW. I do not think there is any doubt at all that it produces superfluous injury and unnecessary suffering – causing the flesh to melt as it does – when targeted at people.....but that is not, of course, its currently designed purpose (hence it remains lawful). As for depleted uranium, there is a clear public perception that it is the cause of illness but as far as I am aware there remains no convincing scientific data that key states acknowledge to support that contention. We shall see what transpires.

Certainly, I believe that for the immediate future, developments in weapons law will be more to do with specific weapons and their banning or restriction in treaty law, than about basic principles and the development of customary law. It would be my personal wish, as I have already stated, that the ICRC review its assessment of customary weapons law along the lines I have proposed.

Let me say finally, that what I have said this evening is a work in progress. I will further work up what I have said in preparing the chapter arising from this lecture. In doing so, I might shift my view on one or two things. Perhaps the questions or comments I am now very happy to take will have that effect.

Thank you.