



# The Paradox of Precision and the Weapons Review Regime

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# The Paradox of Precision and the Weapons Review Regime

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## **Abstract**

*As aerial weapons become more accurate and precise, they paradoxically expose civilians to greater harm. They make the use of military force feasible where previously it had not been. While these weapons are subject to legal review to certify that they are capable of being deployed in a discriminate manner, weapons review practice in the US and UK lends cursory approval to weapons that are as likely to harm civilians as enemy combatants. This article argues that a robust contextualized review of weapon's effects on civilians and combatants is both legally required and in states' strategic security interests.*

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## **Introduction**

Developments in weapons technology have promised “surgical” precision, a greater ability to distinguish between combatants and civilians, and far less harm to civilians. Unmanned aerial vehicles, or drones, are a paradigm case in point. Given their long loiter times and ability to deliver relatively light payloads, they have become the weapon of choice for targeting terrorists and insurgents, particularly when they are found in densely populated areas. The assumption, often made explicit, is that drone strikes against terrorists and insurgents produce less civilian harm than other weapons. The problem with this claim, as I have shown elsewhere, is that there simply are no alternative aerial assault weapons to drones in many of these contexts.<sup>1</sup> The hypothetical alternatives, such as cruise missiles, would be far too destructive and thus both unlawful and politically unacceptable. More precise weapons like drones do not reduce civilian harm. They paradoxically introduce new harm into areas where strikes had previously been thought infeasible.

This article focuses on the role played by weapons review law in regulating the introduction of new lethal technology to the battlefield and thus limiting or facilitating harm to civilians.<sup>2</sup> While weapons review law could play the role of a crucial gatekeeper on weapons

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<sup>1</sup> Joshua Andresen, “Putting Lethal Force on the Table: How Drones Change the Alternative Space of War and Counterterrorism,” *Harvard National Security Journal* 8 (2017): 426-472.

<sup>2</sup> A discussion of non-lethal weapons, to which weapons review obligations also extend, is beyond the scope of this article. For more on the review of non-lethal weapons, see William H. Boothby, *Weapons*

that increase harm to civilians, several of the most militarily active states, such as the US and the UK, have applied the law in a truncated fashion, particularly with respect to the prohibition on indiscriminate weapons. As a result, current weapons review obligations do not meaningfully work to decrease threats to civilians. On the contrary, current obligations are more likely to lead to the approval of weapons that increase potential harm to civilians.

The minimalist approach to reviewing weapons for their capacity to be used in a discriminate manner depends on an untenable distinction between the legal review at the weapons review stage and the legal analysis bearing on an actual attack. W. Hays Parks and William Boothby each argue for a strict separation of the two legal domains such that virtually all of the legal analysis pertaining to a weapon's impact on civilians is left to the legal adviser in the field. While it is true that legal advisers in the field are the only ones with responsibility to advise on the legality of a particular attack, that does not mean that weapons reviewers cannot and should not robustly analyse a weapon's likely impact on civilians. While the US and the UK have resisted a more robust weapons review, the plain language of the legal obligation to determine whether a weapon's use would, "in some or all circumstances," be unlawful appears to require precisely such a review.

The main question that thus emerges in the debate over the extent of weapons review obligations is whether or not states must perform a contextualized analysis of a weapon's effects at the weapons review stage. I argue that not only is a contextualized analysis the only coherent way to determine whether a weapon's intended use will strike civilians and combatants without distinction, but also that the weapons review stage is the only occasion when such a review is actually legally required. Once a weapon is approved for use, its ability to be used in a discriminating manner is unlikely to be reassessed. For the only requirement with respect to distinction at the attack stage is to intend to strike military objectives. Thus, as long as a weapon is directed at military objectives, it will be deemed to satisfy distinction, even if its effects are as likely to be lethal for civilians as for combatants. The only limiting factors on the weapon's harm to civilians will flow from proportionality and precaution in attack, each of which presume the discriminating nature of weapons used for the attack. A non-contextualized approach to weapons review thus enables the approval of weapons that increase harm to civilians, leaving limitations on the lethal effects for civilians to be determined in relation to the military advantage of a particular attack rather than the weapon's ability to be used discriminately in the first place. If weapons review law is to succeed in regulating weapons for their indiscriminate effects on civilians, weapons reviewers must make a robust contextualized assessments of new weapons technology.

The more robust contextualized approach I defend calls for significantly changing the state practice of the US and UK. The approach would give states a better picture of the nature of the weapons they are using and correct the potentially false impression that a weapon is necessarily discriminating if it is more accurate and less destructive than other weapons already in use. While the approach I defend will likely lead to legal restrictions on the use of aerial and other weapons in civilian populated areas, I argue that those restrictions are actually in states' strategic security interests.

The argument of the article will be divided over three parts. In the next part, I will discuss the roots of the current inadequacies in weapons review law, particularly as exemplified by the US' and UK's minimalist approach to reviewing weapons and how the effects of their approach are exacerbated by contemporary asymmetrical conflicts. In the third part, I will look closely at the legal prohibition on indiscriminate weapons and show why a more robust

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and the *Law of Armed Conflict* (Oxford: OUP, 2009), 246-250 [hereinafter Boothby, *Weapons*]; and W. Hays Parks, "Conventional Weapons and Weapons Review," *Yearbook of International Humanitarian Law* 8 (2005): 126 [hereinafter Parks, "Conventional Weapons"].

and contextualized approach to weapons review is legally required. In the final part, I examine how the approach to weapons review law would impact state practice and explain why it is in states' strategic interest to embrace a more robust weapons review regime even if it leads to restrictions on the kinds of weapons they have come to use against terrorist and insurgent threats. The current state of weapons review obligations are a poor response to both military necessity and humanitarian concerns. Better law in this area is in everyone's interest.

## **I. Weapons Law and Its Application**

Despite shortcomings in weapons review law, the regulation and prohibition of weapons has been the most active site of law of war regulation over the last twenty years and, quite possibly, one of the busiest in the history of the law of war altogether.<sup>3</sup> The lion's share of the progress has taken place through the Certain Conventional Weapons Convention (CCW) and its series of Review Conferences. The CCW process has achieved undeniable progress on anti-personnel mines, cluster munitions, and incendiary weapons. However, rather than regulating or banning weapons by reference to the basic legal prohibitions against weapons that are indiscriminate or that cause unnecessary suffering, weapons regulation has proceeded largely piecemeal on the basis of political opposition to specific weapons. Parks, who has been a participant for the US at several of the conferences, notes that during that process, "governments did not conclude that any weapon considered caused superfluous injury or had indiscriminate effects as such."<sup>4</sup> While this may well be the correct outcome from a legal point of view, it also underscores the limitations of the weapons review obligation, at least as it is currently understood, to limit harm. For Parks, the CCW process demonstrated that "law of war issues relating to military weapons and ammunition have been more as to use (battlefield employment and protection of the civilian population) than legality or illegality as such."<sup>5</sup> Parks thus argues that the law of war has relatively little to say about the legality of weapons, with most of the legal burden and impact being carried by specific arms control treaties that have the effect of banning certain weapons.<sup>6</sup>

### *A. The Legal Obligation*

Although weapons review law has thus far played a limited role, one of the most fundamental principles of modern warfare is that the means and methods of war are not unlimited.<sup>7</sup> While most of the rules regulating conduct in war relate to *how* a weapon is used, e.g. whether it is employed discriminately, proportionately, and with the requisite precautions,<sup>8</sup> Article 36 of Additional Protocol I to the Geneva Conventions places an obligation on states to determine which weapons can be adopted in the first place:

In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be

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<sup>3</sup> Parks, "Conventional Weapons": 104. Parks in 2005 went so far as to say the that "the CCW process has been the busiest in the history of law of war development."

<sup>4</sup> Parks, "Conventional Weapons": 104.

<sup>5</sup> *Ibid.*, 111.

<sup>6</sup> *Ibid.*, 75.

<sup>7</sup> Protocol Additional (I) to the Geneva Convention of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), June 8, 1977, Arts. 35(1) [hereinafter AP I].

<sup>8</sup> See AP I, Arts. 48, 51, and 57.

prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.<sup>9</sup>

In light of Art. 36, it is generally acknowledged that states are under some obligation to subject new weapons to legal review prior to their adoption and use.<sup>10</sup> There is also broad agreement that the legal review must screen weapons for their ability to adhere to the prohibition on inflicting unnecessary suffering or superfluous injury on combatants and indiscriminate use against civilians.<sup>11</sup> However, even claiming agreement on those two points belies deeper disagreement. By design, the obligation to review “a new weapon, means or method of warfare” was left up to individual states to apply.<sup>12</sup> Complicating matters even further is that Art. 36 does not establish any universal standards of what states are supposed to do.<sup>13</sup> It is thus left up to states themselves to decide whether a particular weapon is lawful.<sup>14</sup> As a result, we find a predictable spectrum of application and understanding of the obligation, with the United States representing a minimalist approach and non-governmental organizations like the International Committee of the Red Cross (ICRC) advocating a far more robust legal review.

### *B. The ICRC Approach*

The ICRC’s “Guide to the Legal Review of New Weapons, Means and Methods of Warfare” is very clear that legal requirement stemming from Art. 36 involves a review of both “the means of warfare and the manner in which they are used.”<sup>15</sup> As the ICRC explains,

A weapon or means of warfare cannot be assessed in isolation from the method of warfare by which it is to be used. It follows that the legality of a weapon does not depend solely on its design or intended purpose, but also on the manner in which it is expected to be used on the battlefield. In addition, a weapon used in one manner may “pass” the Article 36 “test”, but may fail it when used in another manner. This is why Article 36 requires a State “to determine whether its employment would, in some or all circumstances, be prohibited” by international law.<sup>16</sup>

As the official commentary on Art. 36 makes clear, the requirement to determine a weapons conformity with the law of armed conflict in “some or all circumstances” is to be understood as some or all circumstances of the weapon’s “normal or expected use.” The US and UK agree with the ICRC that a weapon cannot be assessed in isolation from its intended use. They also agree that only analysis of the weapon in its “normal or expected use” is

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<sup>9</sup> AP I, Art. 36.

<sup>10</sup> Although the United States is not a state party to Additional Protocol I, it was one of the first states to review weapons for their legality beginning in 1974 and now takes itself to be in compliance with the requirements articulated in Art. 36. For further discussion, see Parks, “Conventional Weapons”: 113-23.

<sup>11</sup> AP I, Arts. 35, 36, 48, 51.

<sup>12</sup> AP I, Art. 36. Two proposals at the negotiating conference of the Additional Protocols to establish centralized mechanisms for the review of weapons failed. For further discussion, see Parks, “Conventional Weapons”: 73.

<sup>13</sup> Perhaps as a result, it is known that of the 174 states parties, only a small handful have actually instituted formal weapons review regimes. See Parks, “Conventional Weapons”: 57-58.

<sup>14</sup> Parks, “Conventional Weapons”: 71.

<sup>15</sup> International Committee of the Red Cross, “A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977,” *International Review of the Red Cross* 88 (2006): 935, 937 [hereinafter ICRC, “Guide”].

<sup>16</sup> ICRC, “Guide” : 938.

required. They diverge sharply, however, about how the context of intended use should inform the review, as well as the role to be played by design intent. Parks gives the impression that, for the US, intended use is understood in the most general and abstract terms, such as anti-personnel or anti-material use. Any further analysis of use in context is, for Parks, reserved for operational legal advisers and is not appropriate at the weapons review stage. By contrast, the ICRC suggest a more robust contextual analysis of a weapon and its mode of use is required to determine whether acquisition and adoption of the weapon for that purpose would be lawful. The ICRC thus views weapons review law as requiring both an analysis of the “general rules of IHL applying to all weapons, means and methods of warfare, and particular rules of IHL and international law prohibiting the use of specific weapons and means of warfare or restricting the methods by which they can be used.”<sup>17</sup>

The ICRC acknowledges that several of the rules they believe are applicable to weapons review are “primarily context-dependent, in that their application is typically determined at field level by military commanders on a case-by-case basis taking into consideration the conflict environment in which they are operating at the time and the weapons, means and methods of warfare at their disposal.”<sup>18</sup> The ICRC nevertheless takes the position that “these rules are also relevant to the assessment of the legality of a new weapon before it has been used on the battlefield.”<sup>19</sup> The ICRC thus argues that the weapons review must robustly assess “the characteristics, expected use and foreseeable effects” of a weapon. For it is only by assessing a weapon’s foreseeable effects in context that the review will be able to “determine whether or not the weapon will be capable of being used lawfully in certain foreseeable situations and under certain conditions.”<sup>20</sup> As an example, they state that if a weapon’s blast radius is very wide, then it may be difficult or impossible to use it against military targets located in civilian populated areas without violating “the prohibition on the use of indiscriminate means and methods of warfare and/or the rule of proportionality.”<sup>21</sup> If that were the case, then the ICRC suggests that the reviewing authority should “attach conditions or comments to the approval, to be integrated into the rules of engagement or operating procedures associated with the weapon.”<sup>22</sup>

### *C. The US and UK Critique and Truncated Approach*

For the US and the UK, the ICRC’s approach conflates two legally distinct domains. Taking the ICRC’s example of a weapon with a large blast radius and intended use in a civilian populated area, Boothby argues that while the ICRC’s advice may appear sensible, “the problem is that any weapon is capable of disproportionate use.”<sup>23</sup> He argues that the ICRC’s reference to proportionality improperly applies operational criteria to a review of the weapon’s *per se* legality. He states, “[t]his is why a distinction must be made and maintained between the criteria to be employed in the legal review of weapons and the rules that must be applied when deciding upon attacks.”<sup>24</sup> Boothby believes that maintaining this distinction is necessary in order not to confuse the proper legal criteria to be applied at the review stage. For Boothby, although the reviewer should take the intended use into account, it is ultimately

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<sup>17</sup> Ibid., 938.

<sup>18</sup> Ibid., 943.

<sup>19</sup> Ibid., 943.

<sup>20</sup> Ibid., 943.

<sup>21</sup> Ibid., 943.

<sup>22</sup> Ibid., 943.

<sup>23</sup> Boothby, *Weapons*, 347. Boothby does not comment on the possibility that the weapon may violate the prohibition on indiscriminate means and methods of warfare.

<sup>24</sup> Ibid., 347.

not controlling for the legal review. For he argues that “if a weapon is being procured with a specific use in mind, for example aerial attack in complex urban areas, that intended use must be considered, but the legal criterion then remains whether the weapon is capable of being used in a discriminating way . . . , not whether a particular attack would be discriminating.”<sup>25</sup>

Although Boothby allows that the intended use must be considered, that use does not inform the legal analysis because the prohibition against indiscriminate weapons comes down to the decontextualized question of whether a weapon is capable of being directed at a military objective and nothing more. Both Boothby and Parks seize on the statement in the official Commentary on Additional Protocol I that “A state is not required to foresee or analyse all possible misuses of a weapon, for almost any weapon can be misused in ways that would be prohibited.”<sup>26</sup> They take this statement to support their position that all contextual consideration is reserved for legal advisers in the field and is not appropriate for weapons reviews. However, the Commentary’s statement that instances of misuse need not be analysed does not imply that a robust review of the circumstances of intended use is not required either. Moreover, the legal adviser in the field does not reassess whether a weapon is likely to strike civilians and combatants without distinction. The adviser in the field ensures that the weapons is being directed at a military objective and then evaluates whether the impact on civilians is anticipated to be excessive in relation to the anticipated military advantage of the attack. The weapon deployed is never evaluated for its ability to be discriminating in context. Following the US and UK approach, a weapon that can be expected to impact equally on civilians and combatants can be used as long as that use is justified by military advantage. By denying any place for the review of a weapon’s effects in context at the weapons review stage, the US and UK approach precludes a legal review of weapons for indiscriminate effects.

The denial of a place in the weapon’s review for an assessment of a weapon’s effects in context is reinforced by the US’ and UK’s emphasis on design intent. Indeed the second central problem with the ICRC’s approach for the US and UK is that it privileges the effects of weapons in context over the design intent of the weapon.<sup>27</sup> In contrast to the ICRC’s position, Parks argues that “in determining a weapon’s legality, governments look to design intent rather than wounding effects as such.”<sup>28</sup> For example, the ban on “any weapon the primary effect of which is to injure by fragments which in the human body escape detection by X-rays” found in Protocol I of the CCW,<sup>29</sup> is, according to Parks, not understood to ban the use of plastics in exploding weapons or munitions. The crucial factor thus is not whether the weapons is likely to result in undetectable plastic fragments in the bodies of soldiers or civilians. Rather, the crucial factor is whether the design purpose of the weapon is to produce that result. If a weapon incidentally produces that result but is designed to incapacitate by

<sup>25</sup> Ibid., 347.

<sup>26</sup> Y. Sandoz, C. Swinarski, B. Zimmerman (eds.), *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949* (Geneva: ICRC, 1987), para. 1469.

<sup>27</sup> A significant part of US’ and UK’s resistance to the “effects based approach” stems from the ICRC’s now abandoned SIrUS project which proposed to determine whether a weapon produced “superfluous injury and unnecessary suffering” by looking at a weapon’s effects only through the lens of medical criteria, wholly without regard to the military advantage produced by the weapon or by comparing its effect to available alternatives. See Robin M. Coupland (ed.), *The SIrUS Project: Toward a Determination of Which Weapons Cause “Superfluous Injury and Unnecessary Suffering,”* (Geneva: ICRC, 1997). For criticism of the SIrUS project, see Boothby, *Weapons*, 65-66; Parks, “Conventional Weapons”: 86-88.

<sup>28</sup> Hays Parks, “Conventional Weapons”: 77.

<sup>29</sup> The Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects as amended on 21 December 2001, Protocol I on Non-Detectable Fragments.

other means, then Parks suggests the focus should be on the intended injury, not the incidental effects of the weapon.

Parks comes to a similar conclusion with respect to the prohibition on expanding bullets. He postulates that hollow point expanding bullets could have the effect of sparing more civilians when used in counterterrorism operations because such bullets would be less likely to ricochet or pass through the target and strike a bystander. Parks argues that if that were the case, then hollow point expanding bullets should not be found to cause superfluous suffering although they may increase the suffering of the targeted terrorist. Parks concludes that such an outcome would be consistent with an intent based approach to evaluating the bullet's legality.<sup>30</sup> It is odd to claim that design *intent* is driving the analysis, however, when the basis for the bullet's legality is entirely contingent upon its effects. The question is not, is the bullet designed to spare civilians. The relevant question is rather, is the design intent to spare civilians actually borne out by the effects it produces. If the design fails to produce the intended effects, then it will produce unnecessary suffering and should therefore be found unlawful. As Parks acknowledges, "it is unlikely increased suffering without some legitimate military necessity, such as increased range or improved accuracy, would be legally defensible."<sup>31</sup> Only if the intended effects actually obtain is there a tenable argument that the increased suffering is not, in fact, superfluous.

There is thus a false dichotomy between focus on design intent and effects based approaches to weapons evaluation. Design intent will never carry the day if a weapon's actual effects make it indiscriminate or the cause of unnecessary suffering. Despite the US' and UK's emphasis on design intent, the ICRC is much more persuasive when it maintains that "the legality of a weapon does not depend solely on its design or intended purpose, but also on the manner in which it is expected to be used on the battlefield."<sup>32</sup>

The US and UK approach tightly restricts the reach of weapons review law and its ability to regulate indiscriminate weapons by drawing a strict partition between a weapon's review and its analysis in context and then emphasizing design intent over the weapon's actual effects. Directing the weapons review away from the full spectrum of its effects and focusing on design intended effects militates for a truncated approach to the weapon's actual impact on civilians and combatants. A failure to evaluate a weapon's impact on civilians is particularly problematic when the weapon's intended use is in civilian populated areas, as is frequently the case in counterterrorism and counter insurgency operations. The shortcomings of the US' and the UK's approach are thus further aggravated by the increasing number of urban asymmetrical conflicts and the technological response that has exposed civilians to more harm.

#### *D. The Role of Asymmetric Conflicts*

Although radically asymmetric conflicts are not new, current developments in technology together with a decontextualized approach to weapons review make for a lethal combination for civilians. As we have seen with Al Qaeda and most recently with ISIS, terrorist and insurgent groups fighting with rifles, rudimentary rockets, and improvised explosives simply cannot meet heavily equipped state militaries on open battlefields. Defeating these enemies

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<sup>30</sup> Hays Parks, "Conventional Weapons": 90.

<sup>31</sup> Parks, "Conventional Weapons," 133. The UK *Joint Service Manual of the Law of Armed Conflict* also refers to balancing the military utility of a weapons against the harm that it imposes. See *Joint Service Manual of the Law of Armed Conflict*, Joint Service Publication 383, 2004 Edition, UK Ministry of Defense, 102, para. 6.1.2.

<sup>32</sup> ICRC, "Guide": 938.



militarily has been thought to require targeting them even when they are sheltered among civilians. This context is an active driver of weapons technology development. As Boothby argues, “improvements in the accuracy and reliability of munitions are sought by the military customer and are designed to enable the military forces to continue to engage the enemy in the increasingly difficult and urbanized contexts which the asymmetric adversary, through his breaches of accepted legal principles, effectively imposes.”<sup>33</sup> As Boothby goes on to argue, the possession of such technology becomes an active “enabler.” “The possession and use of precision weapons . . . allows the prosecution of certain complex targets [in urban areas] the attack of which, in the absence of such munitions, might be expected to breach the discrimination principle.”<sup>34</sup>

The fact that advances in technology may allow lawful pursuit of an adversary where it would have otherwise been unlawful is certainly not in itself a negative outcome. Technology has many virtues, including increased force protection and far more accurate and precise targeting, often with lower payloads. However, with increased accuracy and lower impact weapons, we have seen an increased deployment of aerial weapons in civilian populated areas. Given a decontextualized process of weapons review, a new weapon that promises greater precision and a narrower blast radius will be approved almost automatically, without a great deal of scrutiny of its new context of intended use. Civilians are thus at greater risk with the development of more precise weapons technology than they were when less precise and more destructive technology effectively prevented the deployment of aerial weapons in civilian populated areas.

The truncated approach to weapons review together with the push to use aerial weapons in civilian populated areas allows the introduction of new harm to civilians without an adequate review of new technology’s capacity for discriminate use. However, the US’ and UK’s minimalist approach to weapons review, which focuses on design intent over a weapon’s effects in context, is not the only approach that weapons review law can take. We have already seen that the ICRC advocates a significantly more robust contextualized approach to weapons review. If the review of a weapon’s capacity for discrimination is to be anything other than a rubber stamp, something much more like the ICRC’s approach is needed. I will now look more closely at the discrimination requirement to show how a proper understanding of the requirement would both make for a more meaningful weapons review process and work to prevent at least some harm to civilians.

## II. A Robust Weapons Review

As with the weapons review obligation generally, there is considerable debate and divergence over what the prohibition against indiscriminate weapons entails at the weapons review stage. Although Parks clearly acknowledges the prohibition against indiscriminate weapons, he presents the issue as one of little relevance for US weapons reviewers unless there is a question of a weapon’s accuracy.<sup>35</sup> While Boothby acknowledges a more central place for a discrimination assessment for UK weapons reviewers, he presents the test as aimed primarily

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<sup>33</sup> Boothby, *Weapons*, 71.

<sup>34</sup> *Ibid.*, 355. While, for Boothby, the review of weapons for their capacity to be discriminate is supposed to come down merely to whether the weapon can be aimed, by acknowledging that less precise weapons might be indiscriminate in a given context, Boothby implicitly indicates that we must also look to a weapon’s effects in order to determine whether it obeys the prohibition on indiscriminate weapons.

<sup>35</sup> Parks, “Conventional Weapons”: 129.

“at munitions entirely incapable of direction at an objective.”<sup>36</sup> As we have seen, the approach defended by Parks and Boothby minimizes the role of weapons review law in assessing a weapon’s effects, and thus whether the weapon actually will strike civilians and military objectives in a discriminate or indiscriminate manner. By analysing the legal requirements flowing from the prohibition on indiscriminate weapons in Additional Protocol I, we will see that, contrary to what Parks and Boothby argue, a weapon’s ability to be discriminate cannot be assessed without closely examining the weapon’s effects in the context of its intended use.

### *A. Directing a Weapon’s Effects*

The positive law foundation of the prohibition of indiscriminate weapons is found in Additional Protocol I, Art. 51(4). In addition to prohibiting attacks that are not directed against a specific military objective, Art. 51(4)(b) prohibits attacks

which employ a method or means of combat which cannot be directed at a specific military objective; . . .

and consequently . . . are of a nature to strike military objectives and civilians or civilian objects without distinction.<sup>37</sup>

As straightforward as these provisions may appear, there are a variety of understandings and applications of them. The US and the UK adopt an intent based understanding such that the only real criterion of review is the ability to aim the weapon at a specific target. We also find views that are more effects or results based insofar as they emphasize a required level of accuracy for the weapon. For example, the study headed by Timothy McCormack parses the rule as the requirement that “the weapon must be capable of being used in a manner in which it can be directed against military objectives (this assessment requires an examination of the weapon’s accuracy, in light of its intended use).”<sup>38</sup> Although Parks assigns little importance to reviewing a weapon’s capacity for discriminate use, his definition of “discriminate weapons” also invokes a conception of accuracy or reliability by defining indiscriminate weapons as “those that are as likely to hit civilians and non-combatants as they are to hit combatants and other lawful targets.”<sup>39</sup> I suggest that any coherent notion of a discriminating weapon must appeal not only to its accuracy in a particularly targeting context, but also to the weapon’s blast radius and range of expected injuries.

If we read Art. 51(4)(b) literally as prohibiting only those weapons incapable of being directed at a specific military object without adding any notion of accuracy or reliability, then the prohibition is almost certainly empty. It is difficult to imagine, let alone conjure examples of, any weapon in the history of the world that was incapable of being aimed or directed at a target. There have been dreadfully inaccurate weapons, such as the V1 and V2 rockets, as well as Scud missiles.<sup>40</sup> However, even with terribly inaccurate weapons, given a military objective

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<sup>36</sup> Boothby, *Weapons*, 81. On Boothby’s account, simply aiming the weapon may not be sufficient to satisfy the rule if the weapon is incapable of striking the target. Nevertheless Boothby rejects the idea that a weapon must “reliably” strike the target in order to be considered discriminate.

<sup>37</sup> AP I, Art. 51(4)(b & c).

<sup>38</sup> T.L.H. McCormack et al., *Report on States Parties’ Responses to the Questionnaire: International Humanitarian Law and Explosive Remnants of War* (Melbourne, Asia Pacific Centre for Military Law, University of Melbourne Law School 2006), 35-36 [hereinafter McCormack, *Report on States Parties*].

<sup>39</sup> Parks, “Conventional Weapons”: 129.

<sup>40</sup> The V1 is reported to have had a mean deviation from its target of 6 miles for every 100 miles of travel. See R.J. Backus, “The Defense of Antwerp Against the V-1 Missile,” Master’s Thesis at the U.S. Army Command and General Staff College, 1965, 9.

sufficiently large and remote, such as a large military base or weapons testing facility,<sup>41</sup> the V1 could be aimed at the objective. Moreover, it could also be expected to reliably hit it. Of course, such weapons could be used indiscriminately if a military fails to aim them at military objectives that they could be expected to hit, as was the case with the V1 and V2 during the Second World War and the Scud during the 1991 Gulf War. However, even the most accurate weapon, such as a sniper rifle, can be used indiscriminately simply by failing to aim it or by aiming it at both civilians and combatants. If the prohibition against using a weapon that cannot be directed at a specific military objective is to have any content at all, the rule must be applied to a weapon's accuracy in the context of intended use, as made explicit in McCormack's formulation above.

Establishing the need to look at a weapon's accuracy in the context of its intended use does not, however, settle the matter of what a weapon reviewer must find in order to verify that the weapon is not indiscriminate. Thinking of accuracy in terms of a sniper rifle will often be misleading in this context. Whereas a sniper will prove completely ineffective if he does not directly hit his target, with explosive munitions, the bomb or missile need not hit the target directly in order to destroy it. Even very accurate missiles, such as cruise missiles or hellfire missiles, have predicted accuracy of only within 10 meters and 2 meters respectively of the intended target. The former could be a large enough margin of error to miss a stationary object, such as a small building, and the latter large enough to miss a mobile object, such as a passenger vehicle.<sup>42</sup> If the target is an enemy combatant, as is frequently the case with Hellfire missiles, the munition may rarely strike the target directly. Nevertheless, given that the blast radius of each missile far exceeds its margin of error,<sup>43</sup> positioning the missile "close enough" will generally be sufficient to successfully "prosecute the target." Since the reliability of an attack can always be increased by increasing the blast radius of the attack, reliably destroying the intended target cannot be sufficient to render a weapon discriminate.

I suggest that we must look not only at the weapon's accuracy, understood as its ability to destroy the intended target in a given context, but also more finely at the proposed context of use. For Art. 51(4)(b) says not only that indiscriminate weapons are those "which cannot be directed at a specific military objective," but also adds, "and consequently . . . are of a nature to strike military objectives and civilians or civilian objects without distinction." Parks glosses the latter clause as referring to weapons which are "as likely to hit civilians and non-

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<sup>41</sup> For example, Fort Hood Military Base in Texas is "spread across 340 square miles." See <https://www.army-technology.com/projects/forthoodmilitarybase/>. We might also consider the Nevada National Security Site which is "larger than the state of Rhode Island," comprising 1360 square miles. See <https://www.nnss.gov/pages/about.html>. For the purpose of this example, I am assuming that the targeted base or weapons facility does not contain any protected objects, such as a military hospital.

<sup>42</sup> Anwar Al-Aulaqi, for instance, is known to have survived at least one drone strike before later being killed. See Mark Mazzetti, Charlie Savage & Scott Shane, "How a U.S. Citizen Came To Be in America's Cross Hairs," *New York Times* (Mar. 9, 2013), [www.nytimes.com/2013/03/10/world/middleeast/anwar-al-awlaki-a-us-citizen-in-americas-cross-hairs.html](http://www.nytimes.com/2013/03/10/world/middleeast/anwar-al-awlaki-a-us-citizen-in-americas-cross-hairs.html).

<sup>43</sup> Atypical Tomahawk cruise missile carries a 1,000-pound warhead with a blast radius of several hundred feet, while drones typically fire Hellfire missiles with just a 20-pound warhead and a blast radius of 50 feet. See Thomas Gillespie, Katrina Laygo, Noel Rayo & Erin Garcia, "Drone Bombings in the Federally Administered Tribal Areas: Public Remote Sensing Applications for Security Monitoring," *Journal of Geographic Information Systems* 4 (2012): 139, available at [www.scirp.org/journal/PaperInformation.aspx?PaperID=18766](http://www.scirp.org/journal/PaperInformation.aspx?PaperID=18766) [hereinafter Gillespie, "Drone Bombings"]. See also United States Navy Fact File, Tomahawk Cruise Missile, [http://www.navy.mil/navydata/fact\\_display.asp?cid=2200&tid=1300&ct=2](http://www.navy.mil/navydata/fact_display.asp?cid=2200&tid=1300&ct=2).

combatants as they are to hit combatants and other lawful targets.”<sup>44</sup> Given that all aerial weapons have some margin of error and that they destroy not simply on the basis of a direct strike, but rather on the basis of their blast radius, when we talk about weapons “striking” or “hitting” military objectives and civilians without distinction or with equal probability, we cannot literally mean the missile landing on or hitting the target in the way that a sniper’s bullet must hit its target. The rule must rather refer to the effects of the weapon’s destructive explosion and whether those effects can be expected to befall military objectives and civilians in equal measure. Of course, the answer to that question will be entirely context dependent. If the intended use of the weapon is only against remote military targets where civilians are not likely to be present, then the weapon, in that context, will be perfectly discriminate. If the intended use of the weapon is against relatively sizeable military objectives, such as military bases or fortifications where civilians may be close, but generally not close enough to be within the weapon’s blast radius, then there too the weapon can be expected to be discriminate. If, however, the weapon is intended to be used in densely populated urban areas against terrorists or insurgents, then the weapons could be expected to be indiscriminate. Even a Hellfire missile, which is exceptionally accurate and much less destructive compared to most aerial weapons, is expected to kill everything within a blast radius of 15-20 meters.<sup>45</sup> In addition to death, Hellfires produce a wide range of serious injuries at considerably greater distances, including injuries from “incineration, shrapnel, . . . the release of powerful blast waves capable of crushing internal organs . . . as well as vision and hearing loss.”<sup>46</sup> One U.S. government study concluded that exploding Hellfires are expected to cause permanent or temporary hearing loss in humans at a radius of up to 385 meters from the blast site.<sup>47</sup> Despite euphemistic talk of “surgical strikes” and “pinpoint accuracy,” Hellfires are nothing like sniper bullets.

Given the secondary effects of weapons beyond their initial blast radius, there is a question of where to draw the line on a weapon’s destructive reach when determining whether it is as likely to strike civilians as military objectives. Two ready alternatives are either to draw the line at the weapon’s expected blast radius in context, or to extend it all the way out to the radius at which we can expect civilians and combatants to experience any injury at all. A weapon’s blast radius may, however, be too narrow to account for serious, but non-fatal, injuries, while the farthest extent of expected injury may stretch far beyond the range in which a weapon could be expected to have any disabling effect on enemy combatants. I thus suggest a useful middle ground based on the radius at which a weapon can be expected to render enemy combatants *hors de combat*<sup>48</sup> through severe or permanent injury, or inflict serious injury on combatants such that, while they may not necessarily be immediately incapacitated, they would require medical attention and recovery before returning to combat. Examples of this latter type might be fractured ribs, temporary deafness, second degree burns, or cuts and wounds requiring stitches. Injuries that would not fall into this category would include bruising, transient hearing impairment, first degree burns, and minor abrasions. While the set

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<sup>44</sup> Parks, “Conventional Weapons”: 129.

<sup>45</sup> Gillespie, “Drone Bombings”: 139. See also International Human Rights and Conflict Resolution Clinic (Stanford Law School) and Global Justice Clinic (N.Y. Univ. School of Law), *Living Under Drones: Death, Injury and Trauma to Civilians from US Drone Practices in Pakistan* [hereinafter *Living Under Drones*] (Sept. 2012), available at [https://law.stanford.edu/sites/default/files/publication/313671/doc/slspublic/Stanford\\_NYU\\_LIVING\\_UNDER\\_DRONES.pdf](https://law.stanford.edu/sites/default/files/publication/313671/doc/slspublic/Stanford_NYU_LIVING_UNDER_DRONES.pdf).

<sup>46</sup> *Living Under Drones*, 56 (internal citations omitted).

<sup>47</sup> R. A. Efroymsona, W. Hargrovea, D. S. Jones, L. L. Pater, and G. W. Suter, “The Apache Longbow-Hellfire Missile test at Yuma Proving Ground: Ecological Risk Assessment for Missile Firing,” *Human and Ecological Risk Assessment*. 14 (2008): 898–918.

<sup>48</sup> AP I, Art. 41(2).

of injuries excluded from review are nevertheless real injuries, they are not of the sort that would render any intended or actual military advantage. They are thus not the relevant kind of combat injuries that should count as equally striking combatants and civilians at the weapons review stage. While such minor injuries need not bear on a weapon's review, they should be counted, along with more severe injuries and death, in the field by the legal adviser and commander when the proportionality of an attack is assessed.

More than a cursory examination of a weapon's ability to be aimed needs to be assessed in order to determine whether the weapon is capable of being directed at specific military objectives with discrimination. The weapon's accuracy, reliability in hitting its target, and, perhaps most importantly, the actual injuries the weapon can be expected to produce in the context of its intended use must be evaluated. Weapons that, in a given context, are likely to injure civilians in equal or greater measure to combatants, both in terms of severity of injury and numbers of persons affected, should be found to be indiscriminate in that context and barred from such use. In that context, such as a dense urban area, the immediate effects of the weapon would strike military objectives and civilians without distinction.

### *B. Containing a Weapon's Effects*

Although, for Parks, a test of a weapon's compliance with distinction will only arise if "there is a basis for considering the weapon or munition's accuracy,"<sup>49</sup> a number of other commentators and the ICRC recognize an additional aspect of the distinction requirement bearing on the ability to contain the effects of certain weapons, means or methods of warfare.<sup>50</sup> Such a requirement would seem to follow directly from the plain language of AP I, Art. 51(4)(c), which defines an additional category of indiscriminate attacks as those

which employ a method or means of combat the effects of which cannot be limited as required by this Protocol;

and consequently . . . are of a nature to strike military objectives and civilians or civilian objects without distinction.<sup>51</sup>

In contrast to the prohibition on weapons that cannot be directed at a specific military objective, the prohibition on the use of weapons whose effects cannot be limited appears to have a more straightforward application to weapons that have actually been used. Although biological weapons are prohibited under the Biological Weapons Convention, they are still commonly cited as the standard example of weapons whose effects cannot be contained.<sup>52</sup> While biological weapons may, in the first instance, be aimed at military objects and thus pass the first test of discrimination, with time their effects are likely to spread beyond the intended military objectives. As time passes, their effects may be as likely to harm civilians as combatants.<sup>53</sup> Other weapons with such characteristics may include cyber-attacks like the

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<sup>49</sup> Parks, "Conventional Weapons": 129.

<sup>50</sup> Parks directly criticizes McCormack's inclusion of an effects containment requirement, stating that McCormack offers no "legal basis" for the requirement. Parks, "Conventional Weapons": 131n249. See McCormack, *Report on States Parties*, 35-36.

<sup>51</sup> AP I, Art. 51(4)(b & c).

<sup>52</sup> The development, production and stockpiling of biological weapons are regulated by the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, to which 182 states are party. See <https://www.un.org/disarmament/wmd/bio/>.

<sup>53</sup> Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law* Vol. 1 (Cambridge: CUP, 2005), 43, citing the US Air Force Pamphlet..

Stuxnet virus aimed at an Iranian nuclear facility but eventually infecting computers worldwide,<sup>54</sup> as well as weapons that leave behind a great deal of unexploded ordinance, such cluster munitions with a high fail rate.

As straightforward as this prohibition may appear, even weapons whose effects paradigmatically cannot be contained depend, for that effect, on where and how they are used. If biological weapons were used against remote and truly isolated military objectives, then their effects could be contained. A similar logic would follow for cluster munitions and the same is perhaps even more true of computer viruses. If a cyber-attack were launched against an isolated network, such as a military's classified network that has no connection to the civilian internet, such an attack would pose no containment risks. Whether the effects of a weapon can be contained will depend as much on the design intent of the weapons as on the manner and context of its use.

There are at least two further question that arise in relation to assessing whether a weapon's effects can be limited or contained. First, which effects are we interested in? Second, with weapons like cluster munitions where the reliability of the weapon is the main issue, where and how do we set the threshold of an unacceptable rate of failure such the weapon will strike civilians and combatants without distinction? With respect to the effects that are relevant, we may face a similar challenge to the one we saw with explosive weapons. There we saw that the intended injuring effects rooted in the design of the weapon may not be the only relevant effects when considering whether the weapon is as likely to strike civilians as combatants in a given context. Although the dangerous effects likely to escape containment for biological weapons and cluster munitions are essentially the same as the design intended effects, that may not always be the case. While the Stuxnet computer virus was designed ultimately to damage centrifuges at the Natanz nuclear enrichment facility in Iran, it went on to cause very different kinds of damage to computer systems around the world. The question of what kinds of uncontained effects will make a weapon indiscriminate is particularly interesting in the context of nuclear weapons and other weapons that cause the natural environment to degrade over time, perhaps by releasing toxins into the soil or water supplies. A weapon that replicates the initial danger, as in the case of infection from a biological weapon, will certainly count as indiscriminate. However, lesser dangers that are still serious enough to require medical attention and recovery for civilians, or that destroy or disable civilian objects, should count as well. If, in the short, medium, or long term, the weapon can be expected to cause as much or more injury and damage, of a serious enough nature, to civilians and civilian objects as to combatants and military objectives, then it should count as indiscriminate for that reason.

If we apply a similar standard to weapons with significant fail rates, such as cluster munitions, we might be inclined to think that a 50% fail rate will set the threshold. However, allowing a 50% fail rate to pass legal muster is probably overly permissive. The portion of the weapon that explodes in the first instance will itself have an anticipated effectiveness. For example, if a cluster munition consists of 100 sub-munitions and 60 of them explode on delivery, only 30 of them may be anticipated to actually strike and do damage to the intended military objective. If, of the 40 remaining unexploded munitions, 30 or more can be expected to harm civilians, that would make the weapon at least as likely to strike civilians as military objectives, even though it only has a 40% fail rate. It may be the case that it is difficult or impossible to assess with great precision impact on civilians without an actual context in mind. However, the weapons reviewer could still judge a weapon with a significant fail rate to be

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<sup>54</sup> John Markoff, "A Silent Attack, but Not a Subtle One," *New York Times* (Sept. 26, 2010), available at <https://www.nytimes.com/2010/09/27/technology/27virus.html>.

indiscriminate when used in a variety of areas, from urban to rural, in which civilians are likely to encounter and be injured by unexploded munitions.

An assessment of a weapon's ability to be discriminate will depend entirely on an evaluation of its use and effects in the intended context. The distinction that Parks and Boothby try to draw between the responsibility of the weapons reviewer and the legal adviser in the field is both misleading and inaccurate. Although the legal adviser in the field is the only person who should advise on particular attacks, the weapons reviewer, if they are to assess a weapon's ability to conform to distinction at all, must analyse its effects, including anticipated injuries to both civilians and combatants, in its intended context. Only by conducting a robust contextualized weapons review can we ensure that weapons technology does not introduce new indiscriminate harm to civilians.

### **Conclusion: Tactical and Security Choices**

A closer examination of the prohibition on indiscriminate weapons demonstrates that there is no principled way to limit the kind of effects we are concerned with to "design" effects or immediate effects. Explosive munitions will have incidental effects that still might be deadly or severely injuring, and weapons designed to be self-replicating or which have significant fail rates may have long lasting effects that come to strike civilians and combatants without distinction. A robust contextual analysis is required to assess a weapon's capacity for discriminate use. Only through such an analysis will states meet their legal obligations to remove indiscriminate weapons from the battlefield.

A robust contextual analysis at the weapons review stage will have dramatic consequences, both for the impact of weapons review law and for restrictions on weapons use. A genuine test of weapons' capacity for discriminate use may return the result that existing aerial weapons, even those thought to be highly accurate and minimally destructive, are simply not discriminating in most urban environments. If existing weapons do not pass legal muster in at least some urban environments, states may find themselves faced with difficult security decisions in the face of real threats and tactical restrictions. If legal restrictions on, say, Hellfire missiles were taken seriously, a state may have to adopt extensive restrictions on their use, not as a matter of policy or for exceptional environments,<sup>55</sup> but as a legal restriction in urban areas of active hostilities. The state may also have to consider alternative tactics, such as the use of ground troops and the attendant risk to compatriot soldiers that would bring. More generally, states may believe their ability to defend themselves has been compromised by weapons restrictions, a concern which states have been vocal about<sup>56</sup> and which seems to have been ratified by the International Court of Justice in its *Nuclear Weapons* advisory opinion.<sup>57</sup>

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<sup>55</sup> The Obama Administration in the United States adopted policy restrictions on targeted killing of terrorist targets outside of areas of active hostilities. The restrictions were only a matter of policy and did not apply within areas of active hostilities. See Presidential Policy Guidance, Procedures for Approving Direct Action Against Terrorist Targets Located Outside the United States and Areas Of Active Hostilities (document dated May 22, 2013; release date Aug. 5, 2016).

<sup>56</sup> For example, France repeatedly expressed concern about provision of Additional Protocol I that might restrict its exercise of self-defense. See *Official Records of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts: Geneva (1974- 1977)* Vol. VII (Bern: Federal Political Department, 1978): 196-197.

<sup>57</sup> *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion of 8 July 1996, [1996] ICJ Reports, at 263, § 97.

Although self-defence and troop protection concerns are real, the strategic costs wrought by civilian harm are real as well.<sup>58</sup> As the recent battle for Mosul demonstrates, claims to be fighting with unprecedented precision ring hollow for the civilians whose families and lives have been destroyed by aerial weapons.<sup>59</sup> If states like the US or UK are to win the hearts and minds that are so crucial in the radically asymmetric conflicts they face today, using discriminating weapons, means, and methods of warfare is crucial.<sup>60</sup> Rather than being an impediment to our security, restrictions on indiscriminate weapons, if understood and applied as I have suggested, have the potential to increase our appreciation of battlefield conditions and demand the development of better technology that truly minimizes harm to civilians. Embracing a more robust weapons review regime is the only way to ensure that law, technology, and our strategic interests in peace and security align.

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<sup>58</sup> See, for example, C. Kolenda et al., Open Society Foundation, *The Strategic Costs of Civilian Harm* (2016); and Jason Lyall, "Bombing to Lose? Airpower, Civilian Casualties, and the Dynamics of Violence in Counterinsurgency Wars" Yale University (March 27, 2015), [www.du.edu/korbel/sie/media/documents/research\\_seminar\\_papers/lyall-airstrikes-apr2015.pdf](http://www.du.edu/korbel/sie/media/documents/research_seminar_papers/lyall-airstrikes-apr2015.pdf).

<sup>59</sup> Azmat Khan and Anand Gopal, "The Uncounted," *New York Times* (Nov. 16, 2017), <https://www.nytimes.com/interactive/2017/11/16/magazine/uncounted-civilian-casualties-iraq-airstrikes.html>.

<sup>60</sup> Ibrahim Mothana, "How Drones Help Al Qaeda," *New York Times* (June 13, 2012), [www.nytimes.com/2012/06/14/opinion/how-drones-help-al-qaeda.html](http://www.nytimes.com/2012/06/14/opinion/how-drones-help-al-qaeda.html).



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