

# *Uncertainty in the law of targeting: towards a cognitive framework*

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## ARTICLE

## Uncertainty in the Law of Targeting: Towards a Cognitive Framework

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## Abstract

This article offers a cognitive framework for thinking about the confluence of uncertainty and the IHL rules governing targeting. In abstract discussions, the tendency has been to understand the requisite level of certainty for engaging a target as a particular threshold, that is, as “certain enough” to satisfy the requirement to confirm a target as a military objective, qualify harm as collateral damage or military advantage that must be factored into the proportionality calculation, or require the taking of feasible precautions in attack to minimize harm to civilians and civilian objects. In our view, this approach neither reflects targeting practice, nor adequately operationalizes the balance between humanitarian considerations and military necessity that all “conduct of hostilities” rules must reflect.

We suggest that the issue is more nuanced, that dealing with uncertainty involves a multifaceted situational assessment when planning, approving or executing attacks. The article is our attempt to widen the aperture of discussion about battlefield ambiguity and doubt. To do so, we consider target confirmation, proportionality and precautions in attack, offering a way to think about uncertainty with respect to each.

Our approaches to uncertainty are represented in the form of mathematical formulae. We have employed this mechanism to better capture the connected and interdependent relationship of the variables that are at play in a targeting decision, for targeting is a dynamic process characterized by situation-specific decision-making. The formulae should not be viewed as an attempt to reduce targeting decisions to mechanical deterministic calculations. The goal is to spark discussion about how to consider the uncertainty that infuses many targeting operations in a way that reflects the reality of, and practice on, the battlefield; we do not hope to definitively settle the matter.

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## I. Introduction

The fog of war has been a persistent reality of warfare for millennia.<sup>1</sup> Despite extraordinary technological advances that render the battlespace ever more transparent, such as night vision capabilities, satellite imagery and remotely piloted aircraft equipped with complex sensor suites, that fog is unlikely to lift anytime soon. On the contrary, as the means to address battlefield uncertainty advance, the development of methods for countering them, some quite simple, march on in lockstep. For instance, organized armed groups that are asymmetrically disadvantaged in terms of conventional warfare have grasped that failing to distinguish themselves from the civilian population complicates their enemy's targeting, especially when that enemy is committed to compliance with the international humanitarian law (IHL) principle of distinction.<sup>2</sup> Similarly, disadvantaged groups intentionally fight in proximity to civilians, thereby frustrating both their adversary's target verification<sup>3</sup> and its assessment as to the proportionality<sup>4</sup> of prospective attacks. Sometimes, it is the mere nature of armed conflict, rather than the actions of its participants, that produces the fog of war. Of particular note in this regard is the global trend towards urbanization, which means that future conflict will increasingly be conducted in densely populated battlespaces that are fertile environments for uncertainty.<sup>5</sup>

Those who have experienced combat, especially in recent conflicts like the ones underway in Afghanistan, Iraq and Syria, understand the reality of uncertainty all too well. As explained in the US Department of Defense's *Law of War Manual* (DoD Manual):

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<sup>1</sup> KARL VON CLAUSEWITZ, ON WAR 101 (Michael Howard & Peter Paret eds., trans., Princeton Univ. Press indexed ed. 1984) (1976).

<sup>2</sup> Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts art. 48, June 8, 1977, 1125 U.N.T.S. 3 [hereinafter AP I]; Michael N. Schmitt, *Asymmetrical Warfare and International Humanitarian Law*, 62 THE A.F. L. REV. 1, 14 (2008). With respect to customary law, see 1 CUSTOMARY INTERNATIONAL HUMANITARIAN LAW, rr. 3–8 (Jean-Marie Henckaerts & Louise Doswold-Beck eds., 2005) [hereinafter CIHL STUDY]; see also OFF. OF THE GEN. COUNS., U.S. DEP'T OF DEF. L. OF WAR MANUAL § 2.5 (rev. ed. 2016) [hereinafter DOD LAW OF WAR MANUAL]. U.S. positions on the law are especially relevant to the customary status of AP I provisions as the United States is not a party to AP I. Moreover, the United States generally accepts the AP I provisions cited in this article as reflective of customary international law; substantive departure will be highlighted.

<sup>3</sup> AP I, *supra* note 2, art. 57(2)(a)(i); 1 CIHL STUDY, *supra* note 2, r. 16; DOD LAW OF WAR MANUAL, *supra* note 2, at § 5.6.

<sup>4</sup> AP I, *supra* note 2, arts. 51(5)(b), 57(2)(a)(iii), 57(2)(b); 1 CIHL STUDY, *supra* note 2, r. 18; DOD LAW OF WAR MANUAL, *supra* note 2, § 5.12.

<sup>5</sup> See U.S. DEP'T OF THE ARMY, THE U.S. ARMY OPERATING CONCEPT: WIN IN A COMPLEX WORLD 12 (2014), <https://www.army.mil/e2/c/downloads/367967.pdf> [<https://perma.cc/JB96-36DD>]; U.K. MINISTRY OF DEF., STRATEGIC TRENDS PROGRAMME: FUTURE OPERATING ENVIRONMENT 2035 25 (2015),

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/607612/20150731-FOE\\_35\\_Final\\_v29-VH.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/607612/20150731-FOE_35_Final_v29-VH.pdf) [<https://perma.cc/3BE3-5MQ4>].

The special circumstances of armed conflict often make an accurate determination of facts very difficult. For example, combatants must make decisions while enemy forces are attempting to attack them and while enemy forces are seeking to deceive them. In addition, the importance of prevailing during armed conflict often justifies taking actions based upon limited information that would be considered unreasonable outside armed conflict.<sup>6</sup>

This article offers a cognitive framework for thinking about the confluence of uncertainty and the IHL rules governing targeting. In abstract discussions, the tendency has been to understand the requisite level of certainty for engaging a target as a particular threshold, that is, as “certain enough” to satisfy the requirement to confirm a target as a military objective,<sup>7</sup> qualify harm as collateral damage or military advantage that must be factored into the proportionality calculation,<sup>8</sup> or require the taking of feasible precautions in attack to minimize harm to civilians and civilian objects.<sup>9</sup> In our view, this approach neither reflects targeting practice, nor adequately operationalizes the balance between humanitarian considerations and military necessity that all “conduct of hostilities” rules must reflect.<sup>10</sup>

We suggest that the issue is more nuanced, that dealing with uncertainty involves a multifaceted situational assessment when planning, approving or executing attacks. The article is our attempt to widen the aperture of discussion about battlefield ambiguity and doubt. To do so, we consider target confirmation, proportionality and precautions in attack, offering a way to think about uncertainty with respect to each. Although discussed in the context of international armed conflict, the conclusions set forth apply *mutatis mutandis* to uncertainty that arises when applying IHL rules during non-international armed conflict.

Before proceeding, several cautionary notes are in order. Our approaches to uncertainty are represented in the form of mathematical formulae. We have employed this mechanism to better capture the connected and interdependent relationship of the variables that are at play in a targeting decision, for targeting is a dynamic process characterized by situation-specific decision-making. The formulae should not be viewed as an attempt to reduce targeting decisions to mechanical deterministic calculations. To do so would badly distort our intent.

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<sup>6</sup> DOD LAW OF WAR MANUAL, *supra* note 2, § 5.3.1.

<sup>7</sup> AP I, *supra* note 2, art. 52; 1 CIHL STUDY, *supra* note 2, r. 7; DOD LAW OF WAR MANUAL, *supra* note 2, § 5.6.

<sup>8</sup> AP I, *supra* note 2, art. 51(5)(b); 1 CIHL STUDY, *supra* note 2, r. 14; DOD LAW OF WAR MANUAL, *supra* note 2, § 5.10.

<sup>9</sup> AP I, *supra* note 2, art. 57; 1 CIHL STUDY, *supra* note 2, r. 15; DOD LAW OF WAR MANUAL, *supra* note 2, § 5.11.

<sup>10</sup> Michael N. Schmitt, *Military Necessity and Humanity in International Humanitarian Law: Preserving the Delicate Balance*, 50 VA. J. INT’L L. 795, 798–99 (2010). “Conduct of hostilities” is a term of art within international humanitarian law that refers primarily to those rules governing attacks.

In this regard, we make no effort to identify either a precise threshold or the particular point along a sliding scale at which sufficient certainty has been achieved to attack a target as planned. Thus, we do not evaluate standards such as “more likely than not” or “positive identification.” Rather, as explained, the article only sets forth a cognitive framework for thinking about how uncertainty factors into the targeting process. It is for others to determine when certainty thresholds have been reached, typically the “reasonable” commander or others involved in targeting decisions and execution. We also caution readers that our thoughts are somewhat tentative. The goal is to spark discussion about how to consider the uncertainty that infuses many targeting operations in a way that reflects the reality of, and practice on, the battlefield; we do not hope to definitively settle the matter.

## II. Determination that a Target is a Military Objective

The customary international law principle of distinction that is reflected in Article 48 of Additional Protocol I requires parties to a conflict to “distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly . . . direct their operations only against military objectives.”<sup>11</sup> This principle has been operationalized in the prohibitions on attacking civilians and civilian objects set forth in Articles 51(2) and 52(1), respectively, both of which reflect customary law.<sup>12</sup>

In the targeting context, civilians are those persons who are neither members of the armed forces<sup>13</sup> nor members of an organized armed group.<sup>14</sup> They may only be attacked “for such time” as they “take a direct part in the hostilities.”<sup>15</sup>

As to qualification as a member of an organized armed group for targeting purposes, a complicating factor derives from a controversy surrounding the requisite role of an individual in such a group. Although many commentators and States, including the authors, are of the view that any member of an organized

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<sup>11</sup> See also U.K. MINISTRY OF DEF., *THE MANUAL OF THE LAW OF ARMED CONFLICT*, 2004, JSP 383, at ¶ 2.5 [hereinafter U.K. MANUAL]; CHIEF OF THE GENERAL STAFF (CANADA), B-GJ-005-104/FP-021, *LAW OF ARMED CONFLICT AT THE OPERATIONAL AND TACTICAL LEVELS* ¶ 403 (2001) [hereinafter CANADIAN MANUAL]; PROGRAM ON HUMANITARIAN POL. AND CONFLICT RES., *MANUAL ON INT’L L. APPLICABLE TO AIR AND MISSILE WARFARE*, r. 10 (2009) [hereinafter AMW MANUAL]; MICHAEL N. SCHMITT, CHARLES H.B. GARRAWAY & YORAM DINSTEIN, *THE MANUAL ON THE LAW OF NON-INTERNATIONAL ARMED CONFLICT WITH COMMENTARY* 10–11 (2006); TALLINN MANUAL 2.0 ON THE INT’L L. APPLICABLE TO CYBER OPERATIONS, r. 93 (Michael N. Schmitt ed., 2013) [hereinafter TALLINN MANUAL 2.0].

<sup>12</sup> 1 CIHL STUDY, *supra* note 2, rr. 1, 10.

<sup>13</sup> AP I, *supra* note 2, art. 50(1).

<sup>14</sup> INT’L COMM. OF THE RED CROSS, *INTERPRETIVE GUIDANCE ON THE NOTION OF DIRECT PARTICIPATION IN HOSTILITIES UNDER INT’L HUMANITARIAN L.* 36 (2009) [hereinafter ICRC INTERPRETIVE GUIDANCE].

<sup>15</sup> AP I, *supra* note 2, art. 51(3); Protocol Additional to the Geneva Conventions of August 12, 1949, and Relating to the Protection of Victims of Non-International Armed Conflicts art. 13(3), June 8, 1977, 1125 U.N.T.S. 609 [hereinafter AP II]; 1 CIHL STUDY, *supra* note 2, r. 6.

armed group is targetable *per se*,<sup>16</sup> the International Committee of the Red Cross's (ICRC) *Interpretive Guidance on the Notion of Direct Participation in Hostilities* takes the position that only those members of the group having a "continuous combat function" are so targetable.<sup>17</sup> Accordingly, for those adopting the latter position, an additional question after determining that a person belongs to an organized armed group involved in the conflict is that individual's role therein; should it not be a continuous function involving combat, the individual will be treated as a civilian for targeting purposes and therefore may only be attacked while directly participating in the hostilities.

Civilian objects are those that do not constitute military objectives pursuant to the standard set out in Article 52(2) of Additional Protocol I, which provides that military objectives are "objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage."<sup>18</sup> Objects that are not inherently military objectives (such as military vehicles and facilities) are only susceptible to attack for such time as they qualify as military objectives. Of particular importance in this regard are the criteria of "use," which concerns the present use of a civilian object for a military purpose, and "purpose," which applies to civilian objects that will be used for military purposes in the future.<sup>19</sup> When not so qualifying, they retain the protection to which they are entitled as civilian objects. For the purposes of this article, the term "military objective" refers to both targetable persons and objects.<sup>20</sup>

The issue of uncertainty permeates the application of these status standards. As to persons, the question is whether there is sufficient certainty to conclude an individual is a member of the enemy armed forces or an organized armed group. For instance, if an individual in the vicinity of an insurgent group's basecamp is observed carrying a weapon and moving towards the basecamp, is the individual a member of the group or might he be armed solely for the purpose of personal defense against pervasive lawlessness? Moreover, assuming solely for the sake of analysis that the continuous combat function is a valid criterion for membership in an organized armed group, the person's function in the group may be somewhat unclear.

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<sup>16</sup> See, e.g., DOD LAW OF WAR MANUAL, *supra* note 2, § 5.7.3; Michael N. Schmitt, *The Interpretive Guidance on the Notion of Direct Participation in Hostilities: A Critical Analysis*, 1 HARV. NAT'L SEC. J. 5, 21–24 (2010). We exclude medical and religious personnel from this conclusion.

<sup>17</sup> ICRC INTERPRETIVE GUIDANCE, *supra* note 14, at 33–34.

<sup>18</sup> AP I, *supra* note 2, art. 52(2); 1 CIHL STUDY, *supra* note 2, r. 9. On the subject, see also YORAM DINSTEIN, *THE CONDUCT OF HOSTILITIES UNDER THE LAW OF INTERNATIONAL ARMED CONFLICT* 102–16 (3rd ed. 2016); A.P.V. ROGERS, *LAW ON THE BATTLEFIELD* 11–20 (3rd ed. 2012) (providing a general discussion of civilians and civilian objects).

<sup>19</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 12 AUGUST 1949 ¶¶ 2020, 2022 (Yves Sandoz, Christophe Swinarski & Bruno Zimmermann eds., 1987) [hereinafter COMMENTARY ON THE ADDITIONAL PROTOCOLS].

<sup>20</sup> *Id.* ¶¶ 1948, 1951.

Individuals who are not members of the armed forces or organized armed groups are civilians and therefore, as noted, targetable only “for such time” as they directly participate in hostilities.<sup>21</sup> Uncertainty can exist as to whether the acts in which they are engaging qualify as direct participation, as in the case of observing someone digging a hole next to a road that might, or might not, be for the purpose of implanting an improvised explosive device.<sup>22</sup> It can also surface regarding whether the person concerned is directly participating in the hostilities at the time of attack. The scope of the term “for such time” remains the subject of heated debate.<sup>23</sup> Nevertheless, there is agreement among IHL practitioners and scholars that whatever the appropriate definition thereof, attacks may only occur legally while the individual is within that window, thereby raising the question of how to treat any uncertainty as to the nature of the person’s activities at the time of the proposed attack.

The certainty inquiry is two-fold vis-à-vis military objectives that are objects. First, it is necessary to assess whether the object makes an effective contribution to military action due to its nature, location, purpose or use. By way of illustration, if infrared sensors or night vision goggles are being used to identify a target, how sure is an attacker that the derived image is that of a military instead of a civilian vehicle? Or is a house that has been used to store weapons or serve as a command and control center a lawful target because it is either still being used at the time of attack or will be used in the future? Second, the oft-neglected criterion of whether an attack will yield a definite military advantage in these circumstances can also be the subject of uncertainty, as with a remote bridge over which some enemy troops will pass in the future, when it is unclear that destroying the bridge will have any meaningful effect on the enemy’s capability to conduct operations.

These and other such situations raise the issue of the degree of certainty necessary to conclude that the person or object to be attacked constitutes a military objective subject to attack at that time. As to persons, Article 50(1) of Additional Protocol I provides, “[i]n case of doubt whether a person is a civilian, that person shall be considered to be a civilian.”<sup>24</sup> Doubt as to the qualification of an object as a military objective is dealt with in Article 52(3): “In case of doubt whether an object which is normally dedicated to civilian purposes, such as a place of worship, a house or other dwelling or a school, is being used to make an effective contribution to military action, it shall be presumed not to be so used.”<sup>25</sup> Although limited to objects normally dedicated to civilian purposes, it is self-evident that

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<sup>21</sup> AP I, *supra* note 2, art. 51(3); AP II, *supra* note 15, art. 13(3).

<sup>22</sup> ICRC INTERPRETIVE GUIDANCE, *supra* note 14, at 43–45.

<sup>23</sup> See, e.g., Bill Boothby, “*And for such time as*”: *The Time Dimension to Direct Participation in Hostilities*, 42 N.Y.U. J. INT’L L. & POL. 741, 752–67 (2010); Nils Melzer, *Keeping the Balance between Military Necessity and Humanity: A Response to Four Critiques of the ICRC’s Interpretive Guidance on the Notion of Direct Participation in Hostilities*, 42 N.Y.U. J. INT’L L. & POL. 831, 884–86 (2010); Schmitt, *The Interpretive Guidance on the Notion of Direct Participation in Hostilities: A Critical Analysis*, *supra* note 16, at 34–39.

<sup>24</sup> AP I, *supra* note 2, art. 50(1).

<sup>25</sup> *Id.* art. 52(3).

doubt can likewise preclude attack on other objects whose status as a military objective is uncertain, especially those that might qualify as military objectives on the basis of the use or purpose criteria. The articles essentially create a presumption of civilian status for both persons and objects when there is uncertainty as to their status.

The two provisions treat the absence of doubt as the threshold for when a determination that a person or object is a military objective is lawful. While there is a point at which uncertainty estops that conclusion, it is equally the case that targets sometimes may be attacked despite the existence of some doubt. To hold otherwise would fly in the face of state practice stretching back to the crystallization of the principle of distinction. The question remains, therefore, as to how much doubt is too much doubt in the face of which to execute an attack.

Additional Protocol I and the ICRC Commentary thereon lack specificity as to the precise level of doubt, or uncertainty, that necessitates making that determination. Article 50 was debated by the delegates to the Diplomatic Conference who drafted the Protocol.<sup>26</sup> Some of them believed the article should be redrafted to make the civilian presumption sharper and more understandable for the soldier. Others argued for the presumption as drafted.<sup>27</sup> Amendments rejected by the delegates proposed maintaining the civilian presumption until a person was either about to commit a hostile act or until his or her status was otherwise established.<sup>28</sup> Ultimately, the interpretation of “doubt,” and corresponding level of certainty required to determine that a targeted person may be attacked, was left unsettled.<sup>29</sup> The ICRC Commentary to Article 50 provides a bit of guidance by suggesting that the civilian presumption is concerned with “persons who have not committed hostile acts, but whose status seems doubtful because of the

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<sup>26</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶¶ 1918–1920. *See generally* FRITS KALSHOVEN, REFLECTIONS ON THE LAW OF WAR (2007) (providing a series of essays documenting the development of the Additional Protocols).

<sup>27</sup> 15 OFFICIAL RECORDS OF THE DIPLOMATIC CONFERENCE ON THE REAFFIRMATION AND DEVELOPMENT OF INTERNATIONAL HUMANITARIAN LAW APPLICABLE IN ARMED CONFLICTS, GENEVA 1974–1977, 239 (1978) [hereinafter OFFICIAL RECORDS].

<sup>28</sup> An Australian amendment would have stated that the civilian presumption means “in cases where doubt arises as to whether a person is a civilian, he shall be presumed to be a civilian until his status is otherwise established.” 3 OFFICIAL RECORDS, *supra* note 27, at 199. Another amendment, proposed by Belgium and the United Kingdom, would have maintained the civilian presumption until “there are reasonable grounds for supposing that he is about to commit a hostile act.” 3 OFFICIAL RECORDS, *supra* note 27, at 198.

<sup>29</sup> The only change made to the civilian presumption was the substitution of the word “presumed” for “considered.” This change was not made for clarity or ease of understanding, but instead to remove any possible conflict with the prisoner of war presumption in Article 5 of Geneva Convention III. *See* Convention (III) Relative to the Treatment of Prisoners of War art. 5, Aug. 12, 1949, 6 U.S.T. 3316, 75 U.N.T.S. 135; 15 OFFICIAL RECORDS, *supra* note 27, at 239. *See also* MICHAEL BOTHE, KARL JOSEF PARTSCH & WALDEMAR A. SOLF, NEW RULES FOR VICTIMS OF ARMED CONFLICTS: COMMENTARY ON THE TWO 1977 PROTOCOLS ADDITIONAL TO THE GENEVA CONVENTIONS OF 1949, at 336 n.12 (2d ed. 2013) (“The change does not effect any substantive change of meaning. As used in this sentence ‘considered’ means ‘presumed’”).

circumstances,”<sup>30</sup> and that persons in these circumstances “should be considered to be civilians until further information is available.”<sup>31</sup> Its recognition that doubt should be understood situationally is important, but the Commentary offers no help on the requisite degree of doubtfulness.

Likewise, the delegates’ discussions regarding Article 52 failed to shed much light on where the threshold of doubt was to lie with respect to objects.<sup>32</sup> As with persons, some delegates expressed concern regarding application of the presumption in practice during hostilities.<sup>33</sup> And while the ICRC Commentary labels the civilian presumption for objects “an essential step forward” because it prohibits belligerents from “arbitrarily and unilaterally declar[ing] as a military objective any civilian object . . . ,”<sup>34</sup> it also acknowledged that there would be “borderline cases where the responsible authorities could hesitate” to attack.<sup>35</sup> Thus, despite general acceptance of the premise that doubt could preclude attack as a matter of law, a lack of granularity persists.

The unofficial, yet authoritative (in light of the status of its authors as participants at the Diplomatic Conference) Bothe, Partsch and Solf commentary also failed to resolve the matter. However, it asserts that the aforementioned presumptions require that conclusions as to a target’s status as a military objective be based on more than speculation.<sup>36</sup> It made an analogous conclusion regarding the term “definite” in Article 52(2)’s definition of a military objective, explaining that the term requires that the military advantage gained from the attack not be hypothetical or speculative.<sup>37</sup>

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<sup>30</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 1920.

<sup>31</sup> *Id.*; see also INT’L COMM. OF THE RED CROSS, DRAFT ADDITIONAL PROTOCOLS TO THE GENEVA CONVENTIONS 56 (1973) [hereinafter ICRC DRAFT ADDITIONAL PROTOCOLS] (noting that the commentary to the 1973 draft stated that the civilian presumption was not “incontrovertible” and was “valid only in so far as the appearance and behaviour of the civilians are such as might be generally expected of persons claiming to be civilians”).

<sup>32</sup> The Swedish delegation proposed a presumption for objects, stating that since the “delegation thought it inevitable that doubt would arise whether certain objectives were civilian or military. It would be desirable therefore to stipulate that in case of doubt whether an object was civilian it should be presumed to be so . . . .” 14 OFFICIAL RECORDS, *supra* note 27, at 113. This provision corresponded to the civilian presumption for persons in Article 50(1) of AP I. See *id.*

<sup>33</sup> The Delegates debated the need for an exception allowing for derogation from the civilian presumption for objects “in contact zones where the security of the armed forces requires.” Supporters of the exception argued that it was necessary to offset the risk the presumption presented for soldiers, and that, without the exception, the presumption would not garner respect and compliance. 15 OFFICIAL RECORDS, *supra* note 27, at 331–32.

<sup>34</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2037. The Delegates understood this act as creating a “new presumption in the law.” 15 OFFICIAL RECORDS, *supra* note 27, at 277.

<sup>35</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2037.

<sup>36</sup> BOTHE, PARTSCH & SOLF, *supra* note 29, at 336 (“The practical impact of this rule is to require that persons responsible for an attack act honestly on the basis of information available to them at the time they take their action and not on the basis of mere speculation”).

<sup>37</sup> *Id.* at 367. Bothe, Partsch, and Solf came to this conclusion while noting that the Rapporteur could not find a substantive difference between the different adjectives debated by the delegates. *Id.* The

These views, combined with the reference to arbitrariness in the ICRC Commentary, enunciate a floor below which doubt is no longer an issue because the available evidence is too speculative. However, they do not directly bear on where the line of unacceptable doubt lies above that floor. That said, there appears to be no opposition to the establishment of such a floor. For instance, the *DoD Manual*, which, in our view, incorrectly rejects the customary law status of the two provisions, nevertheless confirms that “[a]ttacks . . . may not be directed against civilians or civilian objects based on merely hypothetical or speculative considerations regarding their possible current status as a military objective.”<sup>38</sup> U.S. targeting doctrine is in accord.<sup>39</sup>

Whatever the requisite level of certainty necessary to render an attack lawful under the rules of targeting, it is generally accepted that certainty requirements in IHL are to be understood contextually. For instance, although the prodigious 2005 ICRC *Customary International Humanitarian Law* study contains no rule on doubt, it addresses the matter in commentary accompanying the rules on targeting.<sup>40</sup> With regard to the prohibition on targeting civilians (Rule 6), the study looked to U.K. and French reservations at the time of Additional Protocol I ratification to the effect that a presumption of civilian status in the face of doubt does not override a commander’s responsibility to protect his troops or “preserve their military situation.”<sup>41</sup> It also quoted from an early edition of the U.S. *Commander’s Handbook on the Law of Naval Operations*, which stated: “Combatants in the field must make an honest determination as to whether a particular civilian is or is not subject to deliberate attack based on the person’s behavior, location and attire, and other information available at the time.”<sup>42</sup>

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ICRC commentary was also unable to discern any meaningful difference among the debated terms. See COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2019.

<sup>38</sup> DOD LAW OF WAR MANUAL, *supra* note 2, § 5.4.3.2.

<sup>39</sup> See CHAIRMAN, JOINT CHIEFS OF STAFF, JOINT PUBLICATION 3-60, JOINT TARGETING A-2–A-3 (2013) [hereinafter JOINT PUBLICATION 3-60]. In contrast, NATO targeting doctrine recognizes a civilian presumption for objects, but not for persons. Although the U.S. recorded several reservations to the NATO doctrine, a reservation against the civilian presumption for objects was not among them. See N. ATL. TREATY ORG. [NATO], NATO STANDARD AJP-3.9 ALLIED JOINT DOCTRINE FOR JOINT TARGETING (ed. A, version 1, Apr. 2016), <https://www.gov.uk/government/publications/allied-joint-doctrine-for-joint-targeting-ajp-39a> [<https://perma.cc/VNR7-4CF9>] [hereinafter NATO AJP-3.9].

<sup>40</sup> 1 CIHL STUDY, *supra* note 2, at 23–24, 35–36.

<sup>41</sup> *Id.* at 24 (citing France, Declarations and Reservations Made Upon Ratification of the 1977 Additional Protocol I, 11 April 2001, § 888 (Fr.); United Kingdom, Declarations and Reservations made upon Ratification of the 1977 Additional Protocol I, 28 January 1998, § 889 (UK)).

<sup>42</sup> *Id.* (quoting U.S. NAVY, U.S. MARINE CORPS & U.S. COAST GUARD, NWP 1-14M/MCWP 5-12/COMDTPUB P5800.7A, THE COMMANDER’S HANDBOOK ON THE LAW OF NAVAL OPERATIONS § 830 (1995)). A revised Commander’s Handbook was published in August 2017. See U.S. NAVY, U.S. MARINE CORPS & U.S. COAST GUARD, NWP 1-14M/MCWP 5-12/COMDTPUB P5800.7A, THE COMMANDER’S HANDBOOK ON THE LAW OF NAVAL OPERATIONS, 8.2.2 (2017), [http://usnwc.libguides.com/ld.php?content\\_id=2998109](http://usnwc.libguides.com/ld.php?content_id=2998109) [<https://perma.cc/ZTU6-4XHK>] [hereinafter COMMANDER’S HANDBOOK].

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Based on these and other sources, the ICRC concluded, with respect to international armed conflict, that “when there is a situation of doubt, a careful assessment has to be made under the conditions and restraints governing a particular situation as to whether there are sufficient indications to warrant an attack. One cannot automatically attack anyone who might appear dubious.”<sup>43</sup> It further suggested that “the same balanced approach . . . seems justified in non-international armed conflicts.”<sup>44</sup> The study took an analogous situational tack with regard to objects, adding that it was “also consistent with the requirement to take all feasible precautions in attack, in particular the obligation to verify that objects to be attacked are military objectives liable to attack and not civilian objects.”<sup>45</sup>

This contextual approach to certainty is further reflected in the ICRC’s *Interpretive Guidance on the Notion of Direct Participation in Hostilities*, which was published in 2009:

Obviously, the standard of doubt applicable to targeting decision . . . must reflect the level of certainty that can reasonably be achieved in the circumstances. In practice, this determination will have to take into account, *inter alia*, the intelligence available to the decision maker, the urgency of the situation, and the harm likely to result to the operating forces or to persons and objects protected against direct attack from an erroneous decision.<sup>46</sup>

Key States have emphasized the need for case-by-case determinations as to the degree of acceptable doubt when determining that a target is a military objective. The U.K. *Manual on the Law of Armed Conflict* (U.K. Manual), for example, notes:

In the practical application of the principle of civilian immunity and the rule of doubt, (a) commanders and others responsible for planning, deciding upon, or executing attacks necessarily have to reach decisions on the basis of their assessment of the information from all sources which is available to them at the relevant time, (b) it is only in cases of substantial doubt, after this assessment about the status of the individual in question, that the latter should be given the benefit of the doubt and treated as a civilian, and (c) the rule of doubt does not override the commander’s duty to protect the safety of troops under his command or to preserve the military situation.<sup>47</sup>

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<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

<sup>45</sup> *Id.* at 36.

<sup>46</sup> ICRC INTERPRETIVE GUIDANCE, *supra* note 14, at 76.

<sup>47</sup> U.K. MANUAL, *supra* note 11, ¶ 5.3.4. For the U.K. statement on which the text is based, see United Kingdom of Great Britain and Northern Ireland, Declarations and Reservations Made upon Ratification of the 1977 Additional Protocol I, 28 January 1998, ¶ h, <https://ihl->

Although suggesting that the proper standard is “substantial doubt,” the force protection and military concerns caveats effectively mean that the determination of whether the doubt in question is substantial enough to bar attack is in part a product of attendant military factors. Similarly, and despite a rejection of the customary nature of the aforementioned Additional Protocol I articles on doubt,<sup>48</sup> the *DoD Manual* observes, “[i]n assessing whether a person or object that normally does not have any military purpose or use is a military objective, commanders and other decision-makers must make the decision in good faith based on the information available to them in light of the circumstances ruling at the time.”<sup>49</sup>

With respect to U.S. practice regarding uncertainty, the concept of Positive Identification (PID) has caused a degree of confusion and merits a brief detour. At the start of combat operations in Afghanistan and Iraq, the U.S. military adopted the standard as a way to operationalize the principle of distinction in ground combat situations.<sup>50</sup> In this context, PID is defined as a “reasonable certainty that a proposed target is a legitimate military target.”<sup>51</sup> Although the requirement that an attacker have a reasonable degree of certainty is apposite, the word “positive” unartfully expresses the principle of distinction’s situational character and suggests the existence of a fixed threshold of requisite certainty. This can cause misunderstanding as to the attacker’s IHL obligations, which, as explained here, are highly contextual.<sup>52</sup> Equally problematic is PID’s use in rules of engagement (ROE) to effect policy-driven target identification and verification requirements that are in excess of IHL’s legal requirements.<sup>53</sup> The point is that when associated

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databases.icrc.org/applic/ihl/ihl.nsf/Notification.xsp?action=openDocument&documentId=0A9E03F0F2EE757CC1256402003FB6D2 [https://perma.cc/NGH4-7TB3].

<sup>48</sup> DOD LAW OF WAR MANUAL, *supra* note 2, § 5.4.3.2.

<sup>49</sup> *Id.* The Law of War Manual notes that the good faith criterion has been adopted in other military manuals and is supported by case law. In particular, it cited *United States v. List, et al. (The Hostage Case)*, XI TRIALS OF WAR CRIMINALS BEFORE THE NUREMBERG MILITARY TRIBUNAL 1295–96 (1947–1948).

<sup>50</sup> For a discussion of the origin of Positive Identification and its adoption into ground combat operations, see John J. Merriam, *Affirmative Target Identification: Operationalizing the Principle of Distinction for U.S. Warfighters*, 56 VA. J. INT’L L. 83, 132–35 (2016). Furthermore, during the 1990–91 Gulf War, “[a]ttack procedures specified that if the pilot could not positively identify his target . . . he could not deliver that weapon.” U.S. DEP’T OF DEF., CONDUCT OF THE PERSIAN GULF WAR: FINAL REPORT TO CONGRESS 177 (1992).

<sup>51</sup> See U.S. CFLCC and MNC-I ROE Cards, *reprinted in* U.S. DEP’T OF THE ARMY, OPERATIONAL LAW HANDBOOK 105–06 (2017). “CFLCC” stands for Combined Forces Land Component Commander, whereas “MNC” is the acronym for Multi-National Corps Iraq.

<sup>52</sup> This observation follows the authors’ experience of teaching Law of Armed Conflict (LOAC) and Rules of Engagement (ROE) compliance to U.S. and allied military forces.

<sup>53</sup> JOINT PUBLICATION 3-60, *supra* note 39, at II-29; NATO AJP-3.9, *supra* note 39, at A-4. Other certainty standards may also be adopted for policy reasons. For example, the 2013 standard for engaging a target during a counterterrorism strike outside the United States and beyond the active battlefield was “near certainty,” both as to the target and “that non-combatants will not be injured or killed.” White House, Fact Sheet: U.S. Policy Standards and Procedures for the Use of Force in Counterterrorism Operations Outside the United States and in Areas of Active Hostilities, May 23, 2013, <https://obamawhitehouse.archives.gov/the-press-office/2013/05/23/fact-sheet-us-policy-standards-and-procedures-use-force-counterterrorism> [https://perma.cc/L54B-VY5F]; *see also*

with the principle of distinction, the term PID, the use of which is widespread among U.S.-affiliated and -allied forces, does not amount to state practice requiring a specific level of certainty in target identification as a matter of law.<sup>54</sup>

Groups of experts involved in restatements of customary IHL law projects have emphasized the contextual nature of uncertainty. Two such efforts are noteworthy in this regard. The *HPCR Manual on International Law Applicable to Air and Missile Warfare* maintains the civilian presumption for persons, but not specifically for objects normally used for civilian purposes.<sup>55</sup> In addressing the former, the manual states that the level of doubt required for application of the civilian presumption “is that which would cause a reasonable attacker in the same or similar circumstances to abstain from ordering or executing an attack.”<sup>56</sup> Although it does not apply a presumption of civilian status to objects normally used for civilian purposes, the manual states that these objects may only be attacked based on reasonable grounds and that reasonable doubt, not just the presence of any doubt, would preclude an attack.<sup>57</sup>

In the context of cyber operations, the international group of experts that produced *The Tallinn Manual 2.0 on the International Law Applicable to Cyber Operations* concluded that the civilian presumption for persons reflects customary international law.<sup>58</sup> However, the experts also acknowledged that the level of doubt required to trigger the presumption is “unsettled,” noting that a cyber-attack in the face of the “existence of some doubt” would not establish a breach of the prohibition on attacking civilians.<sup>59</sup> The experts could reach no consensus as to whether a civilian presumption applies to objects.<sup>60</sup> They were only able to agree that determining whether an object normally used for civilian purpose is a lawful military objective requires a careful assessment that is “sufficient to establish that there are reasonable grounds” to conclude that the civilian object is being used for a military purpose.<sup>61</sup>

Some scholars have proposed innovative approaches to certainty. Professor Geoffrey Corn has employed the analytical methodology of assessing compliance with the U.S. Constitution’s Fourth Amendment “reasonableness” mandate to illuminate the essential role of context in assessing the reasonableness of targeting

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Michael N. Schmitt, *Extraterritorial Lethal Targeting: Deconstructing the Logic of International Law*, 52 COLUMBIA J. TRANSNAT’L L. 77, 107–08 (2013).

<sup>54</sup> Merriam, *supra* note 50, at 132.

<sup>55</sup> AMW MANUAL, *supra* note 11, at 116–19.

<sup>56</sup> *Id.* at 90.

<sup>57</sup> *Id.* at 119.

<sup>58</sup> TALLINN MANUAL 2.0, *supra* note 11, at 424.

<sup>59</sup> *Id.*

<sup>60</sup> *Id.* at 448–49.

<sup>61</sup> *Id.* at 449.

decisions.<sup>62</sup> Corn cites well-developed tests for Fourth Amendment reasonableness, and explains how those tests demand differing quanta of information to support different types of Fourth Amendment intrusions.<sup>63</sup> Drawing on this methodology for evaluating compliance with the reasonableness touchstone, he proposes a “quantum of information framework” for targeting, in which the extent of information needed to support a “reasonable” attack judgment varies depending on how the operational context influences the risk of targeting mistakes.<sup>64</sup> In Fourth Amendment analysis, as the level of government intrusion or intrusion on individual interest increases, the corresponding information threshold also rises. Corn suggests an analogous system for targeting, replacing the level of government intrusion or loss of individual interest with a consideration of the consequences of an erroneous targeting decision.<sup>65</sup>

Two aspects of context are central to his approach: the nature of a potential target and the operational context in which the attack decision is made. Accordingly, a low threshold is required for “presumptive enemy targets” such as military personnel and equipment, especially during a military operation against a “conventional” force operating pursuant to established doctrine.<sup>66</sup> The required quantum of information becomes progressively higher for objects normally used for civilian purposes and for civilians taking a direct part in hostilities, especially in operational contexts that are substantially removed from a “conventional” hostilities situation that would justify, for example, unobserved indirect fires based on decision templates or counter-battery radars. For these three target categories, Corn suggests certainty thresholds analogous to the established Fourth Amendment “tiers” of reasonableness: reasonable suspicion, probable cause, and preponderance, respectively.<sup>67</sup> Additionally, he proposes a standard of information analogous to clear and convincing proof for attacks on unconventional targets outside of an area of active hostilities.<sup>68</sup>

Professor Adil Haque has recommended what he labels “deontological targeting.”<sup>69</sup> Haque sets the certainty floor for making a determination that a target qualifies as a military objective at “reasonable belief.” This threshold is met when an attacker is “reasonably convinced that the individual is a combatant”<sup>70</sup> and their belief is supported by decisive evidence, meaning that (a) the evidence that the person is a lawful target clearly outweighs the evidence that the person is a

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<sup>62</sup> Geoffrey S. Corn, *Targeting, Command Judgment, and a Proposed Quantum of Information Component: A Fourth Amendment Lesson in Contextual Reasonableness*, 77 BROOKLYN L. REV. 437, 441–42 (2012).

<sup>63</sup> *Id.* at 466–76.

<sup>64</sup> *Id.* at 476–77.

<sup>65</sup> *Id.*

<sup>66</sup> *Id.* at 480–81.

<sup>67</sup> *Id.* at 484–89.

<sup>68</sup> *Id.* at 490–94.

<sup>69</sup> Adil Haque, *Killing in the Fog of War*, 86 S. CAL. L. REV. 63, 67 (2012).

<sup>70</sup> *Id.* at 91. Haque’s approach to proportionality appears limited to persons. The article does not contain a companion approach regarding objects.

protected person; and (b) the evidence that the person is a lawful target has sufficient weight or reliability to warrant forming any belief, rather than suspending judgment.<sup>71</sup>

Above this “reasonable belief” threshold, the required level of certainty reflects the humanitarian risk of mistakenly attacking civilians and varies with the military risk of mistakenly sparing lawful targets. For example, a reasonable belief that a person is an insurgent leader might be sufficient to justify attacking that person, assuming that it is impossible or infeasible to wait and gather more definitive information. On the other hand, near-certainty that a person is a member of an armed group who exclusively performs minor administrative functions might be required to support an attack on that person. Interestingly, Haque argues that the required level of certainty increases quite rapidly as the potential military value of the suspected target decreases, based on the philosophical principle that mistakenly killing an innocent person is morally worse than mistakenly sparing a dangerous person who may kill an innocent person himself—the “moral asymmetry between killing and letting die.”<sup>72</sup> Accordingly, Haque’s methodology results in increasingly higher certainty thresholds in relation to the consequences of incorrectly determining that a person is a combatant instead of a civilian.<sup>73</sup>

We take a somewhat different tack, one that focuses squarely on the balancing of military necessity and humanitarian considerations that suffuses IHL. In our view, that dynamic provides greater fidelity to the extant law and better reflects the contextual approach articulated by states and key IHL actors such as the ICRC than, for instance, either Corn’s tiered system or Haque’s infusion of the law with concepts drawn from extra-legal disciplines.

By our approach, the greater the value of a target, the more uncertainty may be countenanced in an attack, and vice versa. That such a comparative assessment is appropriate in IHL is evidenced by the law’s endorsement of a similar comparative approach in the context of proportionality, which is discussed below. There, a great deal of expected civilian harm may be lawful when the anticipated military advantage is very high, while even a small degree of expected civilian harm can render an attack unlawful if the military advantage anticipated to result from the attack is low. In other words, military necessity (military advantage) and

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<sup>71</sup> ADIL AHMAD HAQUE, *LAW AND MORALITY AT WAR* 119–20 (2017). The approach set forth in the book slightly raises the threshold that he originally articulated in his article.

<sup>72</sup> Haque, *Killing in the Fog of War*, *supra* note 69, at 84.

<sup>73</sup> *Id.* at 102–03. By way of example, if a soldier observes three armed men that do not pose an immediate threat to the soldier, any of his comrades, or any civilians, the soldier should only attack these men if he is reasonably convinced (Haque’s highest level of certainty) that the armed men are insurgents. If the soldier is reasonably confident (Haque’s second highest level of certainty) that the armed men are about to attack either a comparable number of civilians or fellow soldiers, the soldier can attack them. If the soldier reasonably believes (Haque’s minimum level of certainty) that the three armed men are going to attack a “substantially greater number of soldiers or civilians,” then the soldier can attack.

humanitarian considerations (collateral damage) exist in relation to each other, and they do so on a case-by-case basis.

Analogously, the risk posed by uncertainty when identifying a target is that the target will be misidentified as a valid military objective and the attack accordingly will harm persons or objects protected by IHL. This risk reflects the humanitarian concern that is present in the aforementioned balancing. But the military advantage anticipated to accrue if the target is attacked must also be considered. The objective is to determine when the risk of harm to protected persons or objects should the target be misidentified as a military objective is warranted relative to the anticipated value of the target; at that point, the prospective attack becomes lawful.

This relationship can be expressed as follows:

$$V_{DE} \cdot P_{DE} > V_{UH} \cdot P_{UH}$$

$V_{DE}$  represents the value of the desired effect,  $P_{DE}$  is the probability of achieving the desired effect,  $V_{UH}$  represents the value to be attributed to unintended harm caused to civilians or civilian objects, and  $P_{UH}$  is the probability of such harm occurring.

Focusing on the value of the desired effect, represented by  $V_{DE}$ , is consistent with effects-based targeting analysis,<sup>74</sup> meaning that it is the negative effect on enemy operations, or the positive effect on the attacker's own operations, that factors into the analysis, not any set value of a target based on its nature or other fixed feature. For instance, an attack that disrupts enemy command and control communications is less valuable when back-up systems are available than when there is no redundancy. Similarly, the value of the effect of an attack on forces retreating in disarray will usually be less than that which results from attacking forces that are engaged in hostilities against you at the time.

This is then discounted by the degree of uncertainty as to achieving the desired effect, a value represented by  $P_{DE}$ . The value can be further understood as:

$$P_{DE} = P_{TI} \cdot P_{KD} \cdot N_{KD}$$

$P_{TI}$  is the probability of accurate target identification,  $P_{KD}$  is the probability that the attack will cause the desired death (kill) or damage to the target, and  $N_{KD}$  is the degree of nexus between the desired death or damage to the target and the overall desired effect from the attack.

The first component of the aforementioned equation,  $P_{TI}$ , acknowledges the fact that targets are sometimes misidentified. This risk should form part of the likelihood of achieving the desired effect. To take a simple example, one Haque also applied in setting forth his approach, consider the case of an insurgent

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<sup>74</sup> See JOINT PUBLICATION, *supra* note 39, at I-7.

commander thought to be in a particular building. The question is whether the commander is still there. A real-time video feed from a remotely piloted aircraft that shows the commander entering a building will likely engender greater certainty than information that is several days old from a human intelligence source to the effect that the commander will be in the building at the planned time of attack. Similarly, the availability of multiple sources of intelligence verifying the commander is probably present will enhance the extent of certainty.

A related consideration is the degree of certainty that the attack will kill or damage the target, represented by  $P_{KD}$  in the formula. Consider the insurgent in the previous example. Not only must any uncertainty that the individual is in the targeted building be considered, but so too must the probability that an attack on the building will kill him or her. Likelihood of death can be greater, for instance, if the target is in certain parts of the building, such as the top floors or near exterior walls. Additionally, buildings constructed with particular materials such as wood are more likely to collapse and thereby kill the individual than buildings made of other materials, like concrete. Furthermore, weapons differ in precision capability, and operate differently in differing environments, thereby affecting the likelihood that the intended injury or damage will manifest. The point is that an attack often has less than a 100% chance of causing the death or damage that is intended to result in the desired effect.

The certainty of achieving the desired effect is also influenced by the causal relationship between the death or damage and the desired effect.<sup>75</sup> In our example, the desired effect is not to kill the insurgent commander. Rather, it may be, for example, to complicate enemy command-and-control by decapitating the enemy force. With some insurgent groups, it might be clear that the death of their leader will have this effect on enemy operations, whereas in others a new and effective leader will probably be found quickly. In the former case, the likelihood of achieving the desired effect is higher than in the latter. Of course, such cases are always context dependent. For example, although it may be anticipated that a targeted leader will be replaced quickly, if the effect sought is merely to disrupt enemy command-and-control for a short period while particular friendly operations are launched, the certainty of achieving the desired effect would be high.

As noted earlier, it must be emphasized that these formulae are not to be applied mechanistically. After all, it is impossible to mathematically express the value of the effect of an attack, as it also is to precisely calculate the certainty of achieving that effect. Instead, the formula, like all of those set forth below, is meant only as a cognitive framework reflecting how uncertainty factors into the deliberative targeting process. Nevertheless, although effect and the degree of certainty that the effect will be achieved are intangibles incapable of surgical quantification, competent commanders and other decision makers generally have a

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<sup>75</sup> Consideration of the causational relationship between the death and destruction achieved and the desired effect operationalizes the causal element imparted into proportionality by the modifying term “direct.” See *infra* text accompanying notes 77–78.

sense of how important a target is operationally in the circumstances and how likely it is that an operation will be successful.

The resulting assessment as to the value and likelihood of achieving the effect sought—in other words, the military necessity of the attack—is then examined in light of humanitarian considerations, that is, the risk of unintended harm to protected persons or objects, expressed as  $V_{UH} \cdot P_{UH}$ .  $V_{UH}$  represents the value to be attributed to unintended harm caused to civilians, civilian objects and other protected persons or objects in the event of attack following target misidentification. This value is considered in light of the likelihood that the unintended harm will occur, or  $P_{UH}$ , which can be further unpacked as:

$$P_{UH} = P_{TM} \cdot P_{KD}$$

$P_{TM}$  denotes the likelihood of the target being misidentified as a military objective when it is in fact a protected person or object. It is the reverse side of  $P_{TI}$ , the probability that a target is correctly identified, which was previously factored into the effects analysis.<sup>76</sup> As with determining likely effects,  $P_{KD}$  reflects the fact that the strike may not cause the death or damage intended. In the case of individuals, this will usually be a constant on both sides of the equation; individuals are equally susceptible to injury or death regardless of their status as targetable individuals or civilians. However, for strikes against objects, the certainty of achieving the damage may differ. For instance, consider a weaponeering decision based on a mistaken assessment that a structure is a hardened military facility. In fact, it is a civilian structure. If hardened, the nature of the target will lower the likelihood of damage, whereas the likelihood of causing damage to an unhardened civilian structure will be greater.

To illustrate the full analysis, consider the earlier scenario involving command and control. If disrupting enemy command and control during ongoing hostilities is highly valuable, an attack may be merited in the face of a significant likelihood of misidentification and high value of the person or object so misidentified. But should the same degree of uncertainty exist as to a lower level fighter, an attack might not be justified. In the latter case, this is because humanitarian value (the value of the misidentified person or object and the likelihood of causing that harm) outweighs the positive impact that would result from removing the individual from the battlefield.

### III. The Rule of Proportionality

The customary international law rule of proportionality that has been codified for state parties in Articles 51 and 57 of Additional Protocol I prohibits an “attack which may be expected to cause incidental loss of civilian life, injury to

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<sup>76</sup> In a hypothetical case in which (% of ID) on the left side of the equation is 100%, the likelihood of misidentification would be zero and the (V of MT) would therefore be irrelevant. The key issue would accordingly be proportionality, which is discussed below.

civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.”<sup>77</sup> It is the clearest example of the fundamental function of IHL, which is to effect a working relationship between military necessity and humanitarian considerations.<sup>78</sup>

Uncertainty arises as a proportionality issue in two regards. First, there is the matter of how uncertainty as to the occurrence and extent of incidental injury to civilians or collateral damage to civilian objects (referred to collectively as “collateral damage” in this article) should factor into the proportionality calculation. Second, and analogously, there is the matter of how doubt that the military advantage will be achieved (and if it is, the degree to which it is achieved) should affect the proportionality determination.

The prospect of codifying the rule of proportionality sparked debate among the delegates to the Diplomatic Conference at which the Additional Protocols were drafted between 1974 and 1977.<sup>79</sup> Discussion centered on the ICRC’s draft text for the rule of proportionality. That text articulated the rule of proportionality as a prohibition against attacks that “may be expected to entail incidental losses among the civilian population and cause the destruction of civilian objects to an extent disproportionate to the direct and substantial military advantage anticipated.”<sup>80</sup>

Some of the delegates expressed concern about the subjective and ambiguous nature of the rule on the basis that it necessitated a comparison between incommensurate values.<sup>81</sup> For them, any protection afforded to civilians under the proposed articles could easily be overcome on the basis of the purported military advantage of an attack.<sup>82</sup> These were fair concerns, for subjectivity and ambiguity were, and remain, the key obstacles to definitive application of the rule on the battlefield. Uncertainty as to the likelihood of collateral damage and military

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<sup>77</sup> AP I, *supra* note 2, arts. 51(5)(b), 57(2)(a)(iii), 57(2)(b). For the purposes of this article, incidental loss of life, injury, and damage to persons and objects that occur during an attack will be referred to as “collateral damage.” On proportionality generally, see DINSTEIN, *supra* note 18, at 149–62. *See also* ROGERS, *supra* note 18, at 21–26.

<sup>78</sup> *See* Robert D. Sloane, *Puzzles of Proportion and the “Reasonable Military Commander”*: *Reflections on the Law, Ethics, and Geopolitics of Proportionality*, 6 HARV. NAT’L SEC. J. 299, 308 (2015); *see also* Schmitt, *supra* note 10, at 837.

<sup>79</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2204.

<sup>80</sup> ICRC DRAFT ADDITIONAL PROTOCOLS, *supra* note 31, at 57. Two draft articles addressed proportionality: Draft Article 46(3)(b), which is quoted above, and Draft Article 50(b). Draft Article 46 ultimately became AP I, Article 51, while Draft Article 50 became AP I, Article 57. *See* 3 OFFICIAL RECORDS, *supra* note 27, at xiv. Draft Article 50 directed those responsible for an attack to, “if possible, cancel or suspend it [the attack] if . . . incidental losses in civilian lives and damage to civilian objects would be disproportionate to the direct and substantial advantage anticipated.” ICRC DRAFT ADDITIONAL PROTOCOLS, *supra* note 31, at 64. The delegates decided that they would consolidate the debate on the proportionality elements of Draft Articles 46 and 50, and, after finding consensus on a single text, either reproduce this text in both articles, or use a cross-reference between articles. *See* 15 OFFICIAL RECORDS, *supra* note 27, at 330–31.

<sup>81</sup> 14 OFFICIAL RECORDS, *supra* note 27, at 49.

<sup>82</sup> *Id.* at 182.

advantage further exacerbates the abstruseness of proportionality calculations, specifically the process of determining the value to be attributed to both prongs of the analysis.

The ICRC Commentary acknowledged that the rule of proportionality “allows for a fairly broad margin of judgment.”<sup>83</sup> In response to this reality, the ICRC appropriately harkened back to the need to seek balance between military necessity and humanitarian concerns when applying principles and rules of IHL:

The ICRC constantly had to bear in mind the fact that the ideal was complete elimination, in all circumstances, of losses among the civilian population. But to formulate that ideal in terms of an impracticable rule would not promote either the credibility or the effectiveness of humanitarian law.<sup>84</sup>

That the rule of proportionality necessitates a case-by-case analysis is apparent. As recognized in the Commentary, “the disproportion between losses and damages caused and the military advantages anticipated raises a delicate problem; in some situations there will be no room for doubt, while in other situations there may be reason for hesitation.”<sup>85</sup> Consequently, the treatment of uncertainty with respect to the potential for collateral damage and the likelihood of achieving the desired military advantage occupy center stage when performing proportionality calculations for a specific attack.

The issue of certainty was not lost on the delegates to the Diplomatic Conference. This is clear from the debate over, and textual changes made during the drafting of, the proportionality rule.<sup>86</sup> As to collateral damage, the delegates adopted the phrase “expected to cause” in lieu of “create a risk of.”<sup>87</sup> Although the Rapporteur could not explain the substantive difference between the two options,<sup>88</sup> the former would appear to require a greater degree of certainty. The Commentary also highlighted the role of uncertainty *vis-a-vis* collateral damage by including a list of relevant factors that “together must be taken into consideration whenever an attack *could hit* incidentally civilian persons and objects.”<sup>89</sup>

The danger incurred by the civilian population and civilian objects depends on various factors: their location (possibly within or in the

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<sup>83</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2210.

<sup>84</sup> 14 OFFICIAL RECORDS, *supra* note 27, at 183; *see also* COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2206.

<sup>85</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 1979.

<sup>86</sup> *Id.* ¶ 2204.

<sup>87</sup> The origin of this choice is not clear. The phrase “create a risk” does not appear in the relevant amendments submitted by the delegates. *See* 3 OFFICIAL RECORDS, *supra* note 27, at 200–06, 227–31. The authors assume that this phrase was a product of negotiations within Committee III’s Working Group. *See* 15 OFFICIAL RECORDS, *supra* note 27, at 353.

<sup>88</sup> 15 OFFICIAL RECORDS, *supra* note 27, at 353.

<sup>89</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2213 (emphasis added).

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vicinity of a military objective), the terrain (landslides, floods etc.), accuracy of the weapons used (greater or lesser dispersion, depending on the trajectory, the range, the ammunition used etc.), weather conditions (visibility, wind etc.), the specific nature of the military objectives concerned (ammunition depots, fuel reservoirs, main roads of military importance at or in the vicinity of inhabited areas etc.), and the technical skill of the combatants (random dropping of bombs when unable to hit the intended target).<sup>90</sup>

Similarly, “concrete and direct military advantage” replaced “direct and substantial military advantage” during the proceedings,<sup>91</sup> the new phrase being more demanding in terms of certainty. The ICRC Commentary to Article 57 points out that “the expression ‘concrete and direct’ was intended to show that the advantage concerned should be substantial and relatively close, and that advantages which are hardly perceptible and those which would only appear in the long term should be disregarded.”<sup>92</sup>

The unavoidable uncertainty in making highly contextual proportionality determinations, and therefore the relevance of certainty, was likewise recognized in the Bothe, Partsch and Solf commentary. That commentary describes the proportionality analysis as a decision process that seeks to balance “the *foreseeable* extent of incidental or collateral civilian casualties or damage” and “the *relative* importance of the military objective as a target.”<sup>93</sup>

Although it failed to expound on the extent to which collateral damage must be foreseeable to factor into a proportionality analysis, the commentary somewhat clarified the scope of what qualifies as an anticipated military advantage. It defines the term “concrete” in Article 57 as meaning “specific, not general; perceptible to the senses,” equating it to the term “definite” as used to describe military advantage in Article 52.<sup>94</sup> The commentary also described the term “direct” as meaning “without intervening condition of agency.”<sup>95</sup> Because of this introduction of an element of causality, their commentary treats the concept of military advantage

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<sup>90</sup> *Id.* ¶ 2212.

<sup>91</sup> As with the phrase “create a risk” discussed in *supra* note 87, the origin of this word choice is not clear. And, as with “create a risk,” the phrase “concrete and direct” does not appear in any of the relevant amendments submitted by the delegates. See 3 OFFICIAL RECORDS, *supra* note 27, at 200–06, 227–31. The authors assume that this phrase was a product of negotiations within Committee III’s Working Group. As the Rapporteur noted, the text for the rule of proportionality “was found ultimately to be acceptable when . . . phrased in terms of ‘losses excessive in relation to the *concrete and direct* military advantage anticipated.’” 15 OFFICIAL RECORDS, *supra* note 27, at 285 (emphasis added).

<sup>92</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2209.

<sup>93</sup> BOTHE, PARTSCH & SOLF, *supra* note 29, at 351 (emphasis added).

<sup>94</sup> *Id.* at 407; see also U.K. MANUAL, *supra* note 11, ¶ 5.33.3.

<sup>95</sup> BOTHE, PARTSCH & SOLF, *supra* note 29, at 407.

within proportionality as more restrictive than it is *vis-a-vis* defining a military objective.<sup>96</sup>

The Bothe, Partsch and Solf commentary further concludes that an anticipated concrete and direct military advantage cannot be “a remote advantage to be gained at some unknown time in the future” and that such a remote advantage “would not be a proper consideration to weigh against civilian losses.”<sup>97</sup> In other words, the causal nexus must be discernible and not speculative. Thus, the commentary acknowledges that uncertainty plays a role in the proportionality analysis, that there is a point at which the likelihood of collateral damage or military advantage is too low to be considered, and that above that threshold, uncertainty is situational.

In its *Customary International Humanitarian Law* study, the ICRC captured the rule of proportionality in three rules. Rule 14 sets forth the basic rule,<sup>98</sup> Rule 18 mandates an assessment of compliance with the rule in an attack,<sup>99</sup> and Rule 19 requires the attack to be suspended or cancelled should it become “apparent” that the rule of proportionality is likely to be violated.<sup>100</sup> Although the accompanying commentary fails to directly address the degree of certainty necessary for qualification as expected collateral damage or anticipated military advantage, the study identifies a number of relevant state declarations. For instance, it points to the Additional Protocol I ratification statements of Australia and New Zealand, which interpreted “concrete and direct military advantage” as meaning a “*bona fide expectation* that the attack will make a relevant and proportional contribution” to the overall military objective.<sup>101</sup>

Military manuals also acknowledge that the issue of certainty bears on the proportionality analysis. *Australian Defence Doctrine Publication 06.4: Law of Armed Conflict* acknowledges this point when it describes proportionality as requiring “a commander to weigh the military value arising from the success of the operation against the *possible* harmful effects to protected populations and

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<sup>96</sup> *Id.* See also COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2218; International Law Association Study Group on the Conduct of Hostilities in the 21st Century, *The Conduct of Hostilities and International Humanitarian Law: Challenges of 21st Century Warfare*, 93 INT’L L. STUD. 322, 365 (2017).

<sup>97</sup> BOTHE, PARTSCH & SOLF, *supra* note 29, at 407.

<sup>98</sup> 1 CIHL STUDY, *supra* note 2, r. 14.

<sup>99</sup> *Id.* r. 18.

<sup>100</sup> *Id.* r. 19.

<sup>101</sup> *Id.* at 50 (citing Australia, Declarations and Reservations Made Upon Ratification of the 1977 Additional Protocol I, ¶ 5 (June 24, 1991), available at <https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Notification.xsp?action=openDocument&documentId=10312B4E9047086EC1256402003FB253> [https://perma.cc/L2BN-65SR]; New Zealand, Declarations and Reservations Made Upon Ratification of the 1977 Additional Protocol I, ¶ 3, (Feb. 8, 1988)) (emphasis added). See also CANADIAN MANUAL, *supra* note 11, ¶ 415 (“A concrete and direct military advantage exists if the commander has an honest and reasonable expectation that the attack will make a relevant contribution to the success of the overall operation.”).

objects.”<sup>102</sup> In addressing what qualifies as expected collateral damage, the *U.K. Manual* refers to “foreseeable effects,” a phrase that confirms that speculative harm does not suffice. But it equally recognizes that foreseeability includes an element of uncertainty. Using the example of an attack on a military fuel depot located near a populated area, the *U.K. Manual* states that if the attack creates “the foreseeable risk” of excessive incidental loss, it would violate the rule of proportionality.<sup>103</sup> Risk by definition implies causal uncertainty. As to military advantage, that manual notes:

“Concrete and direct” means that the advantage to be gained is identifiable and quantifiable and one that flows directly from the attack, not some pious hope that it might improve the military situation in the long term. In this sense, it is like the term “definite” used in the definition of military objects.<sup>104</sup>

When discussing the collateral damage to be considered in the proportionality analysis, the *DoD Manual* expressly states that “remote” harm is too attenuated for inclusion in proportionality calculations because of the “difficulty of accurately predicting the myriad of remote harms from [an] attack.”<sup>105</sup> Instead, it concludes that “immediate or direct harms foreseeably resulting from [an] attack” are appropriate for consideration in the proportionality analysis because that is what “[t]he expected loss of civilian life, injury to civilians, and damage to civilian objects is generally understood to mean.”<sup>106</sup> Although the authors are of the view that *foreseeable* indirect harm should be included in the proportionality analysis, the Department of Defense’s ground for rejecting this view is based on uncertainty, thereby confirming its relevance.

With respect to certainty in the military advantage context, the manual is clear—it “may not be merely hypothetical or speculative” and there must be a “good faith expectation that [an] attack will make a relevant proportional contribution” to the overall military advantage gained from the attack as a whole.<sup>107</sup> As with all of the guidance above, the manual leaves unresolved the question of

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<sup>102</sup> Australian Defence Force, Australian Defence Doctrine Publication 06.4 (ADDP 06.4): Law of Armed Conflict, at 5-4, ¶ 5.9 (2006), <http://www.defence.gov.au/adfwc/Documents/DoctrineLibrary/ADDP/ADDP06.4-LawofArmedConflict.pdf> [<https://perma.cc/W3TW-4R6A>]. Several other nations offer similar descriptions in their military manuals. See, e.g., CANADIAN MANUAL, *supra* note 11, ¶ 204; *Orientaciones. El Derecho de los Conflictos Armados*, Tomo 1, Publicación OR7-004 (Edición Segunda), Mando de Adiestramiento y Doctrina, Dirección de Doctrina, Orgánica y Materiales, ¶ 2-5 2 November 2007 (Sp.).

<sup>103</sup> U.K. MANUAL, *supra* note 11, ¶ 5.33.4 (emphasis added).

<sup>104</sup> *Id.* ¶ 5.33.3.

<sup>105</sup> DOD LAW OF WAR MANUAL, *supra* note 2, § 5.12.1.3.

<sup>106</sup> *Id.*

<sup>107</sup> *Id.* §§ 5.12.2–.2.1.

how certain the collateral damage or incidental injury must be to be considered in the proportionality analysis.

In terms of expert, albeit unofficial, manuals, the *Tallinn Manual 2.0* failed to resolve the issue of uncertainty when doing proportionality calculations. The experts involved in the project agreed, however, that “[e]xpectation and anticipation do not require absolute certainty of occurrence. By the same token, the mere possibility of occurrence does not suffice to attribute expectation or anticipation to those planning, approving, or executing a cyber attack.”<sup>108</sup> Beyond this consensus, they were divided.

There was a discussion among the International Group of Experts over whether and to what extent uncertainty as to collateral damage affects application of the rule of proportionality. The issue is of particular relevance in the context of cyber attacks in that it is sometimes quite difficult to reliably determine likely collateral damage in advance. A minority of the Experts took the position that the lower the probability of collateral damage, the less the military advantage needed to justify the operation. The majority of Experts rejected this approach on the basis that once collateral damage is expected, it must be calculated into the proportionality analysis as such; it is not appropriate to consider the degree of certainty as to possible collateral damage. The attacker either reasonably expects it or the possibility of collateral damage is merely speculative, in which case it would not be considered in assessing proportionality.<sup>109</sup>

The *Harvard Manual* experts took a middle ground, concluding that the terms “expected” and “anticipated” meant “probable.”<sup>110</sup> They also adopted a certainty threshold of “more likely than not” as determined by a “good-faith assessment by the commander.”<sup>111</sup>

Proportionality-related text of Articles 51 and 57, the commentary thereto, efforts to operationalize the rule in official military manuals, and learned treatment by groups of experts, taken together, lead to the conclusion that characterizing expected harm as collateral damage or anticipated effect as military advantage requires, at a minimum, a certainty of occurrence beyond mere speculation. Collateral damage must be characterized by a degree of predictability and an element of causal nexus that is not highly attenuated. Likewise, for an anticipated military advantage to be “concrete and direct,” the anticipated effect factoring into the proportionality analysis must be perceptible and reflect a causal nexus between it and the attack on the target.

Unfortunately, these conclusions only establish a floor for certainty as to both collateral damage and military advantage, in much the same way that qualification of a possible target as a military objective is subject to a minimum

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<sup>108</sup> TALLINN MANUAL 2.0, *supra* note 11, at 475.

<sup>109</sup> *Id.*

<sup>110</sup> AMW MANUAL, *supra* note 11, at 97.

<sup>111</sup> *Id.*

degree of certainty. Yet, the task at hand is to ascertain how uncertainty as to expected collateral damage and anticipated concrete and direct military advantage affects the excessiveness assessment in practice. This poses the challenge of determining the value to be attributed to both.

We begin by setting forth the cognitive framework for valuation of collateral damage.

$$\Sigma [V_{\text{CIV}} \cdot P_{\text{CD}}]$$

$\Sigma$ , denoting sum, reflects the fact that all collateral damage concerns must be considered in an attack.  $V_{\text{CIV}}$  is the value to be attributed to each civilian or civilian object that could be harmed, and  $P_{\text{CD}}$  denotes the probability of collateral damage to each of them. It may be necessary to evaluate them separately. For instance, the likelihood of an explosion harming a civilian inside a building may differ significantly from that of causing damage to the building.

Of course, it is impossible to precisely meter the value to be ascribed to civilians and civilian objects (or parts thereof) that might incidentally be harmed during an attack. To illustrate, while the value of five civilians generally can be said to be less than, say, ten civilians, how should issues like age or role in providing essential civilian services for the population (e.g., health care) affect the valuation of the harm? Similarly, what is the relative harm value, for example, of damage to a single building that performs a key function for the civilian population, like an electrical sub-station, and damage to multiple empty warehouses?

All that is really clear, based on the plain text of the rule, is that only “incidental loss of civilian life, injury to civilians and damage to civilian objects”<sup>112</sup> are considered in proportionality assessments. Mere inconvenience and other intangible forms of harm do not qualify as collateral damage for the purpose of the rule unless they in turn cause qualifying consequences, as in the case of a denial of service cyber-attack on a dual purpose electrical grid during the dead of winter that will foreseeably result in individuals freezing to death.<sup>113</sup> Ultimately, the determination of the value to be attributed to collateral damage,  $V_{\text{CIV}}$ , is to be made on the basis of reasonable expectations “in light of reliable information available at the time,”<sup>114</sup> that is, the value that a reasonable attacker in the same or similar circumstances would accord it. The vagueness inherent in the standard renders it difficult to apply with precision, but this standard is nevertheless widely accepted by practitioners and others assessing proportionality.

This value is then considered in light of the likelihood of the collateral damage manifesting,  $P_{\text{CD}}$ . In this assessment, all civilian harm is “foreseeable” collateral damage for the purposes of the proportionality calculation, excluding, of

<sup>112</sup> AP I, *supra* note 2, arts. 51(5)(b), 57(2)(a)(iii), 57(2)(b).

<sup>113</sup> TALLINN MANUAL 2.0, *supra* note 11, at 415–20.

<sup>114</sup> AMW MANUAL, *supra* note 11, at 97.

course, that which is purely speculative. The relevant harm includes not only that directly caused by the attack, as with damage or injury from the blast effects of a weapon, but also foreseeable indirect effects, which are sometimes labeled reverberating or knock-on effects.<sup>115</sup>

Obviously, the expected likelihood of collateral damage occurring will vary during each attack based on factors such as the weapon used, location of persons relative to the blast, the materials of which affected facilities are composed, weapon delivery tactics, the pattern of life in the target area at the time of proposed attack, and the reliability of information regarding the target area. Therefore, we adopt the minority position taken by the *Tallinn Manual* experts: the degree of certainty that qualifying harm will occur affects the value of the collateral damage factored into the proportionality calculation.<sup>116</sup>

In our estimation, it would run counter to the balancing of military necessity and humanitarian considerations to hold otherwise. On the one hand, including harm that is unlikely, albeit not speculative, without considering the probability of that harm manifesting would unduly constrain the military necessity of conducting an attack and therefore skew the balancing. Yet, to ignore such harm altogether because it does not reach an objective threshold of certainty, wherever that threshold might lie, would be to discount the humanitarian mandate by disregarding actual risk to civilians and civilian objects.

The approach also reflects reality. In practice, commanders and others involved in planning, deciding on, or executing attacks consider probability when assessing potential collateral damage. The widely used collateral damage estimate methodology, for example, although not strictly a tool for assessing proportionality, takes into account such factors as the weapon used, distance from blast, population density and structural integrity in determining the level at which an attack posing the risk of collateral damage must be approved.<sup>117</sup> These and other factors decrease or increase the likelihood of harm occurring and are therefore considered when arriving at the collateral damage estimate.

Because collateral damage caused by an individual attack can manifest with regard to multiple civilians and civilian objects, and the certainty attendant to each can differ based on contextual factors, it may be necessary when assessing the proportionality of a single attack to do multiple collateral damage calculations. The symbol  $\Sigma$ , which denotes the sum of those assessments, takes this reality into

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<sup>115</sup> See TALLINN MANUAL 2.0, *supra* note 11, at 472; see also JOINT PUBLICATION 3-60, *supra* note 39, at II-35 to -36.

<sup>116</sup> See *supra* text accompanying note 89.

<sup>117</sup> CHAIRMAN OF THE JOINT CHIEFS OF STAFF, INSTRUCTION 3160.01, NO-STRIKE AND THE COLLATERAL DAMAGE ESTIMATION METHODOLOGY, D-A-1 to D-A-3 (Feb. 13, 2012), [https://www.aclu.org/files/dronefoia/dod/drone\\_dod\\_3160\\_01.pdf](https://www.aclu.org/files/dronefoia/dod/drone_dod_3160_01.pdf) [<https://perma.cc/D9QL-XJGQ>]. The current version of CJCSI 3160.01 is marked For Official Use Only (FOUO) and subject to limited distribution. This cited version was released in response to a Freedom of Information Act (FOIA) request from the ACLU.

account. Accordingly, a separate assessment must be made for each type of harm and with respect to any differing degree of uncertainty as to the harm likely to be caused in that category. They are added together to form the final assessment of the value to be attributed to the expected collateral damage. Again, it is important to note that the formula is meant to reflect a cognitive framework, not an arithmetical exercise. It merely notes that in doing the proportionality calculation, the estimate of total collateral damage must account for the likelihood of its occurrence.

We take a similar approach with respect to the valuation of military advantage, that is,  $V_{DE} \cdot P_{DE}$ . As with qualification as a military objective, the notation  $V_{DE}$  represents the valuation of the desired effect sought. The discussion of desired effect applicable in the context of military objectives applies *mutatis mutandis* here. To arrive at the final value to be attributed to military advantage, it is necessary to consider the value of the desired effect in light of the degree of certainty of that effect being achieved, represented by  $P_{DE}$  in the formula. This likelihood is determined in the same manner as the question of qualification as a military objective.

Once both the expected collateral damage and anticipated concrete and direct military advantage have been assessed in light of their respective uncertainty, the proportionality examination concludes with a determination of whether the former is “excessive” relative to the latter. This determination is not based upon a strict balancing test in the sense of asking whether the value assessed for one side of the equation outweighs, even slightly, the other; rather, expected collateral damage only bars attack once it rises to the “excessive” threshold. This threshold is based upon what the notional reasonable attacker in the same or similar circumstances would conclude.<sup>118</sup> We agree with the experts who drafted the *Harvard Manual* that excessiveness is characterized by a situation in which “there is a significant imbalance between the military advantage anticipated, on the one hand, and the expected collateral damage to civilians and civilian objects, on the other.”<sup>119</sup>

Expressed in its entirety, the cognitive framework for determining that an attack will violate the rule of proportionality is as follows:

$$\Sigma [V_{CIV} \cdot P_{CD}] \text{ excessive relative to } [V_{DE} \cdot P_{DE}]^{120}$$

<sup>118</sup> See Prosecutor v. Galić, Case No. IT-98-29-T, Judgment, ¶ 58 (Int’l Crim. Trib. for the Former Yugoslavia Dec. 5, 2003); see also Geoffrey S. Corn & Gary P. Corn, *The Law of Operational Targeting: Viewing the LOAC Through an Operational Lens*, 47 TEX. INT’L L.J. 337, 366 (2012).

<sup>119</sup> AMW MANUAL, *supra* note 11, at 98; NILS MELZER, TARGETED KILLINGS IN INTERNATIONAL LAW 344, 360 (2008).

<sup>120</sup> Expected sum of [(value of the civilians or civilian objects) considered in light of (probability of collateral damage occurring to them)] is excessive relative to (value of the desired effect) considered in light of (probability of achieving that effect).

We note that this was, in relevant part, the approach adopted by the prosecution in the *Gotovina* case before the International Criminal Tribunal for the Former Yugoslavia. In its brief,<sup>121</sup> which cited to the ICRC Commentary on the Additional Protocols, the prosecution noted:

Under the rules of proportionality, even a reasonable perception that hitting a target will offer a “concrete and direct” military advantage does not justify targeting the object where the chances of actually hitting the target are minimal to none, while the chances of hitting civilian objects are guaranteed. Weighing up whether “collateral damage or incidental injury will be excessive in relation to the concrete and direct advantage anticipated from the attack” must take into account the accuracy of the chosen means. In this way, the “concrete and direct advantage anticipated” is not the value of the target wholly in the abstract but rather its abstract value relative to the likelihood of in fact neutralizing or destroying the object. Similarly, the weight of the collateral damage on the other side of the equation is relative to its certainty or likelihood. The “danger” incurred by the civilian population is thus dependent on such factors as the “accuracy of the weapons used (greater or lesser dispersion, depending on the trajectory, the range, the ammunition used etc.)” and “technical skill of the combatants (random dropping of bombs when unable to hit the intended target).”<sup>122</sup>

Clearly, conducting a proportionality analysis involves more than simply assessing relative values of expected collateral damage and anticipated military advantage. It necessitates factoring in the likelihood that those values will manifest. Only once that has occurred does consideration of whether an attack is excessive accurately reflect the sought-after balancing of military necessity and humanitarian considerations.

#### IV. The Requirement to Take Active Precautions

Even when an attack against a lawful military objective conforms to the rule of proportionality, the attacker must take feasible measures to limit harm to civilians and civilian objects. These measures, known as “active precautions,” are set forth in Article 57 of Additional Protocol I and are generally considered to reflect customary international law.<sup>123</sup> Active precautions must be distinguished from passive precautions, which obligate a defender, pursuant to Article 58 of

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<sup>121</sup> Prosecutor v. Gotovina, Čermak & Markač, Case No. IT-06-90-T, Prosecution’s Public Redacted Public Trial Brief, ¶ 549 (Int’l Crim. Trib. for the Former Yugoslavia Aug. 2, 2010).

<sup>122</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2212.

<sup>123</sup> See 1 CIHL STUDY, *supra* note 2, rr. 15–21; TALLINN MANUAL 2.0, *supra* note 11, at 476–87; AMW MANUAL, *supra* note 11, at 141–48. *But see* DOD LAW OF WAR MANUAL, *supra* note 2, § 5.11.7.1 (stating that the U.S. does not view Article 57(3) as customary international law).

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Additional Protocol I and customary law, to take steps to protect the civilian population from the harmful effects of an attack.<sup>124</sup>

Article 57 provides:

1. In the conduct of military operations, constant care shall be taken to spare the civilian population, civilians and civilian objects.

2. With respect to attacks, the following precautions shall be taken:

(a) those who plan or decide upon an attack shall:

(i) do everything feasible to verify that the objectives to be attacked are neither civilians nor civilian objects and are not subject to special protection but are military objectives within the meaning of paragraph 2 of Article 52 and that it is not prohibited by the provisions of this Protocol to attack them;

(ii) take all feasible precautions in the choice of means and methods of attack with a view to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects;

(iii) refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated;

(b) an attack shall be cancelled or suspended if it becomes apparent that the objective is not a military one or is subject to special protection or that the attack may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which

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<sup>124</sup> See COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2241; 1 CIHL STUDY, *supra* note 2, r. 22; see also DOD LAW OF WAR MANUAL, *supra* note 2, § 5.14. As suggested by the terms active and passive, while the precautions prescribed by these two articles have inherently different natures, they share a commonality of uncertainty. Article 58 of AP I requires that a belligerent “shall, to the maximum extent feasible” take precautions to protect civilians and civilian objects under their control. AP I, *supra* note 2, art. 58. Further, both active and passive precautions coalesce around the same two key points: uncertainty regarding when a precaution is required and uncertainty regarding whether or not a precaution is “feasible.”

would be excessive in relation to the concrete and direct military advantage anticipated;

(c) effective advance warning shall be given of attacks which may affect the civilian population, unless circumstances do not permit.

3. When a choice is possible between several military objectives for obtaining a similar military advantage, the objective to be selected shall be that the attack on which may be expected to cause the least danger to civilian lives and to civilian objects.<sup>125</sup>

Both general and specific obligations reside in the article. Article 57(1) sets forth the broad “constant care” obligation. This duty was relatively novel in 1977 when Additional Protocol I was adopted. Indeed, in documents submitted to the Conference of Government Experts in 1971,<sup>126</sup> the ICRC noted that IHL lacked an express requirement for the taking of “general precautions” to protect the civilian population from the negative effects of military operations.<sup>127</sup> The closest equivalent was the 1970 non-binding United Nations General Assembly Resolution 2675, which provided “[i]n the conduct of military operations, every effort should be made to spare the civilian populations from the ravages of war, and all necessary precautions should be taken to avoid injury, loss or damage to the civilian populations.”<sup>128</sup>

During the following year’s session, the Government Experts considered a draft protocol prepared by the ICRC that contained three articles dealing with precautions during international armed conflict.<sup>129</sup> Although the phrase “constant care” did not appear in the draft, the concept’s inclusion in language similar to that

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<sup>125</sup> AP I, *supra* note 2, art. 57.

<sup>126</sup> In 1971, the ICRC convened a conference of 200 experts, representing forty-one states, to consult on the current state and potential development of international humanitarian law in armed conflict. The conference was a continuation of the ICRC’s effort to develop “concrete rules which would supplement humanitarian law in force.” INT’L COMM. OF THE RED CROSS, CONFERENCE OF GOVERNMENT EXPERTS ON THE REAFFIRMATION AND DEVELOPMENT OF INTERNATIONAL HUMANITARIAN LAW IN ARMED CONFLICT: REPORT ON THE WORK OF THE CONFERENCE 1 (24 May – 12 June 1971, 1st session) [hereinafter ICRC CONFERENCE OF GOVERNMENT EXPERTS, SESSION 1].

<sup>127</sup> 3 ICRC CONFERENCE OF GOVERNMENT EXPERTS, SESSION 1, *supra* note 126, at 77.

<sup>128</sup> G.A. Res. 2675 (XXV), ¶ 3 (Oct. 24, 1970) (setting forth basic principles for the protection of the civilian population during armed conflict). One of these principles stated that “[i]n the conduct of military operations, every effort should be made to spare the civilian populations from the ravages of war, and all necessary precautions should be taken to avoid injury, loss or damage to the civilian populations.” *Id.*

<sup>129</sup> 2 INT’L COMM. OF THE RED CROSS, CONFERENCE OF GOVERNMENT EXPERTS ON THE REAFFIRMATION AND DEVELOPMENT OF INTERNATIONAL HUMANITARIAN LAW IN ARMED CONFLICT: REPORT ON THE WORK OF THE CONFERENCE 8 (3 May – 3 June 1972, 2nd session) [hereinafter ICRC CONFERENCE OF GOVERNMENT EXPERTS, SESSION 2].

contained in Resolution 2675 was urged by the French delegation.<sup>130</sup> Drawing on that discussion, the ICRC released an updated draft protocol and commentary thereto as preparatory material for the Diplomatic Conference of Government Representatives that began work in 1974 on the Additional Protocols.<sup>131</sup> Article 50 of the new draft contained a constant care provision identical to the one that would be adopted by the Diplomatic Conference in 1977 as Article 57(1).

The ICRC commentary accompanying the draft article described the constant care provision as a “general rule governing the behavior of combatants with regard to the risks which military operations, and especially attacks, involve for protected persons.”<sup>132</sup> Interestingly, the Conference record makes no mention of discussions about the requirement. Nevertheless, the ICRC Commentary to Article 57(1) of Additional Protocol I characterizes it as supplementing the principle of distinction set forth in Article 48.<sup>133</sup>

There is a degree of controversy over the scope of Article 57(1). To some, it is but a chapeau provision that is operationalized in the subsequent provisions of Article 57 dealing with attacks; thus, it has no independent normative effect beyond the planning and conduct of operations qualifying as “attacks,”<sup>134</sup> a term denoting “acts of violence against the adversary, whether in offence or defence.”<sup>135</sup> Textual support for this position is found in the title to the article, which refers only to attacks.

By contrast, the ICRC Commentary to the provision explains that the term “military operations” encompasses “any movements, maneuvers and other activities whatsoever carried out by the armed forces with a view to combat.”<sup>136</sup> We agree, for it is sensible from a military perspective to always take the effect of one’s operations on the civilian population into account.<sup>137</sup> The Commentary also styles the provision as “an important duty on belligerents,” that is, as imparting a legal obligation.<sup>138</sup> The result is a duty for those who participate in military operations, including but not limited to attacks, to take the possibility of negative consequences for the civilian population and/or civilian objects into consideration.<sup>139</sup> Subsequent explanations of the constant care provision by groups of experts and in military

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<sup>130</sup> *Id.* at 74.

<sup>131</sup> ICRC DRAFT ADDITIONAL PROTOCOLS, *supra* note 31, at 1.

<sup>132</sup> *Id.* at 65.

<sup>133</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2191; BOTHE, PARTSCH & SOLF, *supra* note 29, at 407.

<sup>134</sup> DoD LAW OF WAR MANUAL, *supra* note 2, § 5.3.3.

<sup>135</sup> AP I, *supra* note 2, art. 49(1).

<sup>136</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2191.

<sup>137</sup> See Jean-François Quéguiner, *Precautions Under the Law Governing the Conduct of Hostilities*, 88 INT’L REV. RED CROSS 793, 797 (2006).

<sup>138</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2191.

<sup>139</sup> U.K. MANUAL, *supra* note 11, ¶ 5.32.1 (“So the commander will have to bear in mind the effect on the civilian population of what he is planning to do and take steps to reduce that effect as much as possible.”).

manuals confirm that the constant care provision is meant to impose an affirmative duty on parties to a conflict, albeit one that is general and rather ill-defined.<sup>140</sup>

The obligation applies without reference to the issue of uncertainty as to whether civilians or civilian objects might be harmed during an operation. Rather, it is quite straightforward. Commanders and others with control over military operations cannot lawfully ignore any possibility of an impact on the civilian population. They may be able to dismiss the possibility very quickly, but the consideration thereof must always be part of the operational analysis. Should there be a potential negative effect, “feasible” precautions, a standard discussed below, have to be taken to avoid it.

In addition to being a freestanding duty, the constant care requirement is meant to be put into “practical application” through specific precautionary requirements set forth in the remainder of Article 57.<sup>141</sup> Unlike “constant care,” uncertainty plays a role in assessing whether these active precautions must be taken. As set forth textually, Article 57(2) obligates attackers to “[d]o everything feasible” to verify the target is a lawful military objective, select means and methods of warfare (weapons and tactics) that can be feasibly employed to minimize civilian harm, refrain from launching an attack that expected to breach the proportionality rule and to suspend or cancel an attack underway that is likely to do so, and provide advance warning of an attack that “may affect” the civilian population, “unless circumstance do not permit.”<sup>142</sup> Article 57(3) adds a further requirement to assess whether a “similar military advantage” may be gained by attacking another target that would result in the “less danger” to civilians or civilian objects than striking the target under consideration; if so, attack must be against the former.<sup>143</sup>

Uncertainty looms large with respect to such precautions because the options available to minimize civilian harm vary from attack to attack. Steps that can enhance verification range from relying on special forces in the vicinity of the target, to using sensors aboard aircraft and drones, to employing cyber means to map a targeted system, to consulting human intelligence reports. Characteristics of weapons that can minimize harm include, *inter alia*, the degree of blast effect, the precision, the guidance system the weapon relies upon, and the shift cold

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<sup>140</sup> See AMW MANUAL, *supra* note 11, at 142 (“‘Constant care’ means that there are no exceptions from the duty to seek to spare the civilian population, civilians and civilian objects.”); see also DOD LAW OF WAR MANUAL, *supra* note 2, § 5.2.3.5; U.K. MANUAL *supra* note 11, ¶ 5.32.1; TALLINN MANUAL 2.0, *supra* note 11, at 477 (noting the “broad general duty to ‘respect’ the civilian population, that is to consider deleterious effects of military operations on civilians”). Further, the Tallinn Manual 2.0 states, “the duty of constant care requires commanders and all others involved in the operations to be continuously sensitive to the effects of their activities on the civilian population and civilian objects, and to seek to avoid any unnecessary effects thereon.” *Id.*

<sup>141</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2191.

<sup>142</sup> AP I, *supra* note 2, art. 57(2).

<sup>143</sup> *Id.* art. 49(3).

capability.<sup>144</sup> Certain tactics can also, depending on the situation, avoid harm to civilians and civilian objects. These include, for instance, adjusting the angle of attack or altitude of release and tracking a target until it is away from civilians or civilian objects. They also embrace disabling a system temporarily to cause an effect during a desired timeframe (e.g., by cyber means), rather than physically destroying it. And choice of target can be critical in preventing civilian harm. To illustrate, if the effect sought is disruption of power, it might avoid civilian harm to incapacitate transmission wires (employing carbon filament bombs) serving the military objective, rather than attack an electrical generating station, damage to which risks widespread effects throughout the civilian population that relies on it.

As to when IHL requires the taking of such measures, there are two steps in the decision process. The first is to determine if an attacker is obliged to consider the taking of precautions at all. This varies depending on the type of precaution involved.

With respect to verification of the target's status, the earlier discussion of uncertainty as to whether the target is a military objective applies fully. However, even after determining to the requisite degree of certainty in the circumstances that the target is a military objective, an attacker must still employ feasible means of verification to attempt to resolve any remaining doubt. This requirement reflects the fact that the duty to take active precautions is in addition to the obligation to determine the target is a lawful one; so long as doubt remains, the attacker must exhaust feasible means of verification even if the target has been identified as a military objective to the extent necessary for the target identification set forth above. Any uncertainty lying above the threshold of mere speculation that the target might not be a valid military objective triggers the duty.

Attachment of the precautionary obligations with respect to choice of means and methods of warfare and to choice among military objectives depends on whether there is collateral damage that might be avoided by using a different weapon or tactic or striking a target other than that originally selected in order to achieve the effect sought.<sup>145</sup> It is essential to understand that the collateral damage to which these rules apply does not render the attack in violation of the rule of proportionality (because otherwise the attack itself would be unlawful), but nevertheless could be avoided by feasible changes in weapon, tactic or target. These

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<sup>144</sup> For a discussion of the “shift cold” tactic, see Michael Schmitt & Matthew King, *The “Shift Cold” Military Tactic and International Humanitarian Law*, JUST SECURITY (Feb. 20, 2018), <https://www.justsecurity.org/52198/shift-cold-tactic-international-humanitarian-law/> [<https://perma.cc/H4K5-TRH6>].

<sup>145</sup> AP I, *supra* note 2, arts. 57(2)(a)(ii), 57(3). The choice of targets requirement found within Article 57(3) is framed in terms of options to reduce the “danger to civilian lives and to civilian objects,” which is slightly different than “loss of civilian life, injury to civilians and damage to civilian objects.”

precautions must be considered in the face of any likelihood of causing the requisite harm that is more than speculative.

Article 57's two references to the rule of proportionality<sup>146</sup> do not raise certainty issues, except as explained above with respect to that rule. They serve as reminders that the requirement to consider proportionality extends throughout the attack and to all those who can exercise control over it. As to application of the provisions, the earlier discussion of proportionality applies *mutatis mutandis*.

The second, and more significant, task is identifying those possible precautions that have to be taken. With respect to choice of means or methods, the answer is found in the text of the relevant provision. Only precautions that are "feasible" need be taken. Thus, the meaning of feasibility lies at the heart of that obligation.

Feasibility also impliedly informs Article 57(3)'s obligation to choose from among military objectives the target that is likely to cause the least loss of civilian life or damage to civilian objects without lessening the probability of achieving the desired effect. On its face, the phrase "[w]hen a choice is possible" would appear to suggest a higher standard than feasibility, for the very function of a feasibility caveat, as will be explained, is to counter suggestions that *all* possible measures must be taken as a matter of law. Logically, though, the provision cannot impose a requirement to take other than feasible precautions. For example, as will be seen, the fact that an attacker has to assume greater risk to take a precaution is a factor to be considered when deciding whether the use of a particular weapon is feasible. It would be incongruous to suggest that the same would not hold true with respect to selecting a different target.

Moreover, treaties are to be interpreted "in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in light of their object and purpose."<sup>147</sup> Context includes other text of the treaty,<sup>148</sup> the relevant text in this case being Articles 57(2)(a)(i) and 57(2)(a)(ii), both of which reference feasibility. Recall also that the object and purpose of IHL treaties is to craft an appropriate balance between military necessity and humanitarian considerations. It would contravene this object and purpose if, for instance, an attacker was required to attack a different target than planned in order to avoid the chance of only marginally greater collateral damage when doing so would be highly risky. Plainly, a feasibility condition must be read into the provision.

This raises the question of the meaning of feasible. Additional Protocol I does not define the term. However, the 1980 Convention on Certain Conventional Weapons provides that it refers to "those precautions which are practicable or practically possible taking into account all circumstances ruling at the time,

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<sup>146</sup> AP I, *supra* note 2, arts. 57(2)(a)(iii), 57(2)(b).

<sup>147</sup> Vienna Convention on the Law of Treaties art. 31(1), May 23, 1969, 1155 U.N.T.S. 331.

<sup>148</sup> *Id.* art. 31(2).

including humanitarian and military considerations.”<sup>149</sup> The definition was accepted as equally appropriate for interpretation of the term in Additional Protocol I by a number of states when they later ratified that instrument, including the U.K. and France.<sup>150</sup> Its emphasis on the contextual nature of the feasibility requirement and its confirmation that military considerations factor into the assessment rule out any argument that every *possible* precautionary measure must be taken.

Interestingly, it took some time to overcome the yearning for an absolutist approach by which every possible precaution must be taken to avoid civilian harm. The ICRC’s non-binding 1956 Draft Rules for the Limitation of the Dangers Incurred by the Civilian Population in the Time of War, for example, provided that “[a]ll possible precautions shall be taken . . . to ensure that no losses or damage are caused to the civilian population in the vicinity of the [military] objective . . . or that such losses or damage are at least reduced to a minimum.”<sup>151</sup> Later, the 1971 meeting of the Conference of Government Experts, in a compilation of “Basic Rules,” similarly set forth the obligation in rather absolute terms by providing that an attacker “must take the necessary precautions.”<sup>152</sup> At the following year’s session, the draft protocol likewise used unqualified terminology (“shall ensure”).<sup>153</sup> Yet, during debate over the draft article, several of the experts argued that articulating the precaution obligations in “absolute” terms would be unworkable militarily and active precautions should be stated with “more flexible wording.”<sup>154</sup> They recommended a formulation expressed in terms of “reasonable precautions.”<sup>155</sup>

In preparation for the Diplomatic Conference and building on the work of the Conference of Government Experts, the ICRC crafted new draft protocols. Draft

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<sup>149</sup> Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons art. 1(5), Oct. 10, 1980, 1342 U.N.T.S. 171.

<sup>150</sup> United Kingdom, Declarations and Reservations Made upon Ratification of the 1977 Additional Protocol I, 28 January 1998, § b (UK); France, Declarations and Reservations Made Upon Ratification of the 1977 Additional Protocol I, 4 November 2001, ¶ 3.

<sup>151</sup> INT’L COMM. OF THE RED CROSS, 1956 DRAFT RULES FOR THE LIMITATION OF THE DANGERS INCURRED BY THE CIVILIAN POPULATION IN THE TIME OF WAR 10 (1956) [hereinafter 1956 DRAFT RULES].

<sup>152</sup> 3 ICRC CONFERENCE OF GOVERNMENT EXPERTS, SESSION 1 *supra* note 126, at 136–37.

<sup>153</sup> 2 ICRC CONFERENCE OF GOVERNMENT EXPERTS, SESSION 2, *supra* note 129, at 8 (noting that this Draft Article did not contain a companion provision regarding means and methods).

<sup>154</sup> 1 ICRC CONFERENCE OF GOVERNMENT EXPERTS, SESSION 2, *supra* note 129, at 152. Of course, in certain operations where the avoidance of civilian harm is essential, particularly during counterinsurgencies in which the support of the civilian population is essential, a party to the conflict may require the taking of every precaution as a matter of policy and good operational sense. For instance, in Vietnam, the U.S. 1971 Rules of Engagement provided “[a]ll possible means will be employed to limit the risk to the lives and property of friendly forces and civilians.” U.S. MILITARY ASSISTANCE COMMAND, VIET-NAM, DIRECTIVE NUMBER 525–13, DATED MAY 1971: RULES OF ENGAGEMENT FOR THE EMPLOYMENT OF FIREPOWER IN THE REPUBLIC OF VIET-NAM, para. 6(a) (1971), *reprinted in* ELEANOR C. MCDOWELL, OFF. OF THE LEGAL ADVISER, U.S. DEP’T OF STATE, DIGEST OF UNITED STATES PRACTICE IN INTERNATIONAL LAW 1975, 814, 815 (1975).

<sup>155</sup> 1 ICRC CONFERENCE OF GOVERNMENT EXPERTS, SESSION 2, *supra* note 129, at 152.

Article 50, entitled “Precautions in the Attack,” presented the delegates with a choice between a target verification obligation that was absolute in nature and one limited to circumstances of reasonability.<sup>156</sup> As to choice of “weapons and methods,” the draft article required an attacker to take “all necessary precautions” to limit incidental loss.<sup>157</sup> However, the accompanying commentary explained that the provision amounted to an obligation “to consider and weigh . . . probable or possible effects on the civilian population” in light of various humanitarian and military factors.<sup>158</sup>

During the Diplomatic Conference, the target verification and means and methods precaution obligations were accepted as “qualified” obligations, limited by feasibility.<sup>159</sup> The Rapporteur observed that the delegates preferred the term “feasible” over “reasonable,” for some of them saw the latter as overly subjective,<sup>160</sup> whereas feasible “was intended to mean that which is practicable or practically possible.”<sup>161</sup> Noting that certain delegates stated that they understood the phrase to mean “everything that was practicable or practically possible, taking into account all the circumstances at the time of attack, including those relevant to the success of military operations,” the Additional Protocol Commentary to Article 57, addressing the possibility of military considerations being exploited to outweigh humanitarian obligations, stated that “interpretation will be a matter of common sense and good faith.”<sup>162</sup> Subsequent expert commentaries are generally in accord with the approach taken in Article 57,<sup>163</sup> which the ICRC’s *Customary International Humanitarian Law* study found to be reflective of customary international law.<sup>164</sup>

Numerous military manuals offer practical guidance on considerations that bear on feasibility. That of the Netherlands, for instance, observes, “the extent that commanders and their staff . . . may be bound by these rules [on precautions in the attack] depends on three specific factors: freedom of choice of means and methods; availability of intelligence; available time.”<sup>165</sup> The *U.K. Manual* proffers a list of

<sup>156</sup> ICRC DRAFT ADDITIONAL PROTOCOLS, *supra* note 31, at 64; BOTHE, PARTSCH & SOLF, *supra* note 29, at 404–05.

<sup>157</sup> ICRC DRAFT ADDITIONAL PROTOCOLS, *supra* note 31, at 64.

<sup>158</sup> *Id.* at 66 The factors listed in the draft commentary were: location of the persons and objects concerned (in the immediate vicinity of a military objective), the configuration of the terrain (danger of landslide, of ricocheting, etc.), the accuracy of the weapons used (relative dispersion according to trajectory, firing range, ammunition used, etc.), meteorological conditions (visibility, effect of wind, etc.), the specific nature of the military objectives (ammunition stores, fuel tanks, army nuclear stations, etc.), and combatants’ mastery of techniques. *Id.* at 65.

<sup>159</sup> BOTHE, PARTSCH & SOLF, *supra* note 29, at 404.

<sup>160</sup> 15 OFFICIAL RECORDS, *supra* note 27, at 353.

<sup>161</sup> *Id.* at 285; *see also* BOTHE, PARTSCH & SOLF, *supra* note 29, at 404–05.

<sup>162</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2198. Interestingly, the Commentary acknowledged that reasonable precautions are “slightly different from and a little less far reaching” than feasible precautions, but it also found the distinction “tenuous” at best. *Id.* ¶ 2230.

<sup>163</sup> *See* AMW MANUAL, *supra* note 11, at 143–46; TALLINN MANUAL 2.0, *supra* note 11, at 478–81.

<sup>164</sup> 1 CIHL STUDY, *supra* note 2, r. 15.

<sup>165</sup> KONINKLIJKE MILITAIRE ACADEMIE, TOEPASSING HUMANITAIR OORLOGSRECHT: VS 27-412/1 V-11 (1993).

non-exhaustive factors for consideration when determining the choice of means and methods of attack:

- a. the importance of the target and the urgency of the situation;
- b. intelligence about the proposed target—what it is being, or will be, used for and when;
- c. the characteristics of the target itself, for example, whether it houses dangerous forces;
- d. what weapons are available, their range, accuracy, and radius of effect;
- e. conditions affecting the accuracy of targeting, such as terrain, weather, and time of day;
- f. factors affecting incidental loss or damage, such as the proximity of civilians or civilian objects in the vicinity of the target or other protected objects or zones and whether they are inhabited, or the possible release of hazardous substances as a result of the attack;
- g. the risks to [the commander's] own troops of the various options open to him.<sup>166</sup>

So too does the *DoD Manual*:

Circumstances ruling at the time may include: (1) the effect of taking the precaution on mission accomplishment; (2) whether taking the precaution poses a risk to one's own forces or presents other security risks;<sup>167</sup> (3) the likelihood and degree of humanitarian benefit from taking the precaution; (4) the cost of taking the precaution, in terms of time, money, or other resources; (5) or whether taking the precaution forecloses alternative courses of action.<sup>168</sup>

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<sup>166</sup> U.K. MANUAL, *supra* note 11, ¶ 5.32.5.

<sup>167</sup> In further discussion of this point, the *DoD Law of War Manual* cites to the U.S. response to an ICRC memorandum regarding the applicability of IHL to any armed conflict resulting between Iraq and Coalition states. The U.S. defined feasible precautions as “reasonable precautions, consistent with mission accomplishment and allowable risk to attacking forces.” 2 DIGEST OF UNITED STATES PRACTICE IN INTERNATIONAL LAW 1991–1999, 2063. The United States also drew a distinction between the prevention of incidental injury of civilians and collateral damage to civilian property, viewing the latter as of lesser concern. In accordance with this view, the United States took the position that “[m]easures to minimize collateral damage to civilian objects should not include steps that will place U.S. and allied lives at greater or unnecessary risk.” *Id.* at 2064.

<sup>168</sup> DOD LAW OF WAR MANUAL, *supra* note 2, § 5.2.3.2.

In a feasibility determination, the value of each factor is derived from the specific circumstances surrounding the attack.<sup>169</sup> This point has generated a degree of debate, particularly concerning precautions that present increased risk to attacking force. Some authors have argued, for instance, that an attacking force is under no legal obligation to assume increased risk in order to avoid harm to civilians or civilian objects; any such increase renders a precautionary measure infeasible.<sup>170</sup>

This is an extreme position, and one that does not comport with the military necessity-humanitarian considerations balancing that underlies IHL. The better view is that while the extent to which a possible precaution increases the risk to an attacking force is an appropriate military factor in determining whether it is feasible in the attendant circumstances, the fact of increased risk to the attacking force, by itself, does not necessarily displace the obligation to take precautions.<sup>171</sup>

Certainty issues enter the feasibility determination during assessment of the respective value to be attributed to military and humanitarian considerations. With regard to military considerations, the key issue is the extent to which taking the active precaution(s) might negatively affect the desired effect of an attack, whether that effect is tangible or not. To illustrate, consider the use of a small-diameter bomb that will cause less collateral damage when employed in a particular situation than a bomb filled with a greater amount of explosive. However, because its blast effect is smaller, the certainty of achieving the desired effect drops. That loss of certainty of achieving the effect is a military consideration to be factored into the feasibility assessment.

Likewise, consider physical risk to the attacking force. Risk has both a qualitative and a quantitative element. The former is about what is being risked, and the latter is about certainty in the sense of how probable it is that the risk will manifest. Thus, the magnitude of harm to one's own forces has to be considered in light of the probability of that harm occurring.

Military considerations in the feasibility context must be assessed broadly. For instance, they include opportunity costs that might result from the use of a particular weapon that is in short supply and might prove more useful during later phases in the conflict. Or consider force orientation. Attacking a moving target in a

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<sup>169</sup> See Study Group, *supra* note 96, at 378.

<sup>170</sup> WILLIAM H. BOOTHBY, *THE LAW OF TARGETING* 123 (2012) (citing Hamutal Esther Shamash, *How Much Is Too Much? An Examination of the Principle of Jus in Bello Proportionality*, 2 *ISR. DEF. FORCES L. REV.* 103, 125 (2005–2006)). Although not referring directly to precautions, see also Charles J. Dunlap, Jr., *Kosovo, Casualty Aversion, and the American Military Ethos: A Perspective*, 10 *J. LEG. STUD.* 95, 99–101 (1999–2000).

<sup>171</sup> See Study Group, *supra* note 96, at 378; DINSTEIN, *supra* note 18, at 168; ROGERS, *supra* note 18, at 137. See also *DoD LAW OF WAR MANUAL*, *supra* note 2, § 5.2.3.2 (“For example, a commander may determine that a precaution would not be feasible because it would result in increased operational risk or an increased risk to his or her forces.”). However, this does not mean that any increased risk to the commander's forces, by itself, automatically makes a precaution infeasible. See *supra* note 149 and accompanying text.

location that will risk less collateral damage than the one initially chosen for attack could result in the enemy repositioning forces in a manner disadvantageous to an attacker. The point is that military considerations are contextual and holistic.

A similar dynamic is at work with respect to the causation of collateral damage. As noted earlier, the mere possibility of collateral damage triggers the obligation to consider ways to minimize it. But the extent of collateral damage and the degree to which it is likely to occur factor into the decision as to whether the alternative is feasible. In the previous example, assume that additional possible collateral damage caused by using the larger bomb is only marginally greater. The chance that resort to the smaller weapon will avoid causing the harm is correspondingly limited.

The following equation illustrates operation of the feasibility condition, describing when a precaution *is not* feasible:

$$\Sigma [V_{\text{NMC}} \cdot P_{\text{NMC}}] \text{ excessive to } \Sigma [V_{\text{CIV}} \cdot P_{\text{CD}}]$$

$V_{\text{NMC}}$  denotes the value of negative military considerations,  $P_{\text{NMC}}$  is the probability of those negative military considerations occurring, and  $V_{\text{CIV}} \cdot P_{\text{CD}}$ , as in proportionality, represents civilian concerns. By this equation, the feasibility of taking a precaution lies along a sliding scale that takes into account not only possible collateral damage in light of its likelihood of occurrence, but also any risk of a negative non-speculative effect on the attacker's military operations, also considered in light of the chance of that negative effect occurring. If the latter is not excessive relative to the collateral damage risk, the precaution is feasible; otherwise, it is not.

It is important to avoid underestimating the significance of the negative military considerations. We have adapted the term "excessive" from the proportionality equation to emphasize this point. The equation is not meant to be a finely tuned balancing test. Indeed, recall that we are not suggesting that any of the formulae proffered are mathematical determinations; rather, they are merely cognitive frameworks. Thus, the decision as to whether the precaution in question is feasible depends, adapting the *Harvard Manual's* excessiveness explanation cited above,<sup>172</sup> on the extent to which the risk, in quantitative and qualitative terms, of negative impact on the attacker's military operations significantly outbalances the quantitative and qualitative risk of harm to civilians and civilian objects should the precaution be taken.

The appropriateness of imposing an excessiveness condition is buoyed by Article 57(3), which only requires the precaution of choosing among military objectives when those objectives would obtain a "similar military advantage." This demonstrates IHL's sensitivity to military considerations, for, by the article, even if choosing another target might significantly reduce civilian deaths and damage to

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<sup>172</sup> AMW MANUAL, *supra* note 11, at 27-28, 98; MELZER, *supra* note 121, at 360.

civilian objects, that precaution need not be taken if there is a significant impact on achieving the attack's desired effect.

Both sides of the equation are set forth as a summation of individual assessments. For instance, some precautions, such as ensuring ground forces have "eyes on" a target before attacking, may both imperil the soldiers concerned and risk not achieving the desired effect because of the time required for those soldiers to be in place to visually identify the target. On the other side of the equation, failure to take a precaution under consideration, as was the case with proportionality calculations, may risk harm of differing likelihood to individual civilians or civilian objects.

Analogous sensitivity appears with respect to the final precaution in attack set out in Article 57, the obligation to warn the civilian population of an attack if it is to be affected thereby. The obligation is widely accepted as having a customary law character<sup>173</sup> and is recognized in military manuals<sup>174</sup> and expert restatements of law.<sup>175</sup> Based on treaty text and state practice, warnings are subject to different standards of application than other precautions.<sup>176</sup>

First, the threshold at which warnings must be considered is low, not in terms of certainty, but rather with respect to the nature of the harm risked. Whereas the other specific precautions apply only to civilian harm qualifying as collateral damage (see above), there is a requirement to warn whenever the civilian population could be "affected" by a planned attack. The latter is a much lower threshold than "loss of civilian life, injury to civilians, and damage to civilian objects," which applies to precautionary measures in the choice of means and methods, or "danger to civilian lives and to civilian objects," the standard for taking precautionary measures involving choice of target. Despite the difference, the same certainty of risk threshold applies. So long as affecting the civilian population is likelier than mere speculation, warnings must be considered.

Second, military considerations appear to loom especially large in determining whether a warning of attack, whether general in nature or specific to the attack itself, must be issued. The contemporary warning requirement reflected in Article 57(2)(c) first took firm hold in the 1956 Draft Rules, Article 8 of which required a belligerent to "whenever the circumstances allow, warn the civilian population in jeopardy . . ."<sup>177</sup> It was understood that the requirement to warn was

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<sup>173</sup> 1 CIHL STUDY, *supra* note 2, r. 20.

<sup>174</sup> DOD LAW OF WAR MANUAL, *supra* note 2, § 5.11.5.

<sup>175</sup> AMW MANUAL, *supra* note 11, at 153–56; TALLINN MANUAL 2.0, *supra* note 11, at 484–85.

<sup>176</sup> Geoffrey S. Corn & James A. Schoettler, Jr., *Targeting and Civilian Risk Mitigation: The Essential Role of Precautionary Measures*, 223 MIL. L. REV. 785, 815 (2015); Study Group, *supra* note 96, at 385–88.

<sup>177</sup> 1956 DRAFT RULES, *supra* note 151, at 10. Note that in earlier times, warnings had been considered required in certain circumstances. For instance, Article 26 of the Regulations attached to the 1907 Hague Convention IV provided that "[t]he officer in command of an attacking force must, before commencing a bombardment, except in cases of assault, do all in his power to warn the

limited and that the necessity of surprise “is the military commander’s ‘trump card’, and, in many cases, circumstances do not permit the person ordering the attack to warn the population.”<sup>178</sup> Nevertheless, the warning requirement was deemed constructive because it, at a minimum, required a belligerent to consider the possibility of issuing a warning to the civilian population.<sup>179</sup>

Although not a topic of extensive discussion among the delegates at the Diplomatic Conference, the Committee working on precautions faced a choice between the phrases “when circumstances permit” and “unless circumstances do not permit.”<sup>180</sup> The former was understood to imply that a warning would only sometimes be possible, whereas the latter indicated that it typically would be possible to issue one.<sup>181</sup> “Unless circumstances do not permit” was adopted, thereby confirming a presumption that warnings are to be given.<sup>182</sup> Nevertheless, the caveat acknowledged the significance of the military considerations that previously had animated the 1956 Draft Rules.

There are a number of reasons circumstances might not permit effective warnings. Of fundamental concern, however, are two problems for an attacking force. The first is risk to the attacking force itself. If the defender knows an attack is looming, it can position its defenses in a manner that will often dramatically increase the peril to the attacking force. Such increased risk leads to the second problem, that loss of surprise hinders mission success. This is so not only because the attacking force is placed at greater risk, but also because the target can be hardened or moved or, if an individual, flee the target area.

These realities are universally understood as contextualizing the warning requirement. The ICRC Commentary to Article 57, for instance, notes that the degree to which the “element of surprise in the attack is a condition of its success” was an underlying justification for the exception to the warning requirement,<sup>183</sup> while the ICRC’s *Customary International Humanitarian Law* study found that, in addition to the need for surprise in the success of an attack, state practice also accounts for the degree to which surprise is “essential . . . to the security of the

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authorities.” Regulations Respecting the Laws and Customs of War on Land, annexed to Convention No. IV Respecting the Laws and Customs of War on Land art. 26, Oct. 18, 1907, 36 Stat. 2227, T.S. No. 539. Once warned, it was assumed the authorities would take measures to safeguard the civilian population. *See, e.g.*, U.S. Department of War, Instructions for the Government of Armies of the United States in the Field, General Orders No. 100 art. 19, Apr. 24, 1863; Project of an International Declaration Concerning the Laws and Customs of War, Brussels art. 16, Aug. 27, 1874, *reprinted in THE LAWS OF ARMED CONFLICTS* 23 (Dietrich Schindler & Jiri Toman eds., 4th ed. 2004); Institute of International Law, The Laws of War on Land art. 33 (1880) (Oxford Manual), *reprinted in THE LAWS OF ARMED CONFLICTS, supra*, at 29.

<sup>178</sup> 1956 DRAFT RULES, *supra* note 151, at 84.

<sup>179</sup> *Id.*

<sup>180</sup> 14 OFFICIAL RECORDS, *supra* note 27, at 303.

<sup>181</sup> 15 OFFICIAL RECORDS, *supra* note 27, at 353.

<sup>182</sup> Study Group, *supra* note 96, at 385; Quéguiner, *supra* note 137, at 807.

<sup>183</sup> COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2223.

attacking forces or that of friendly forces.”<sup>184</sup> Expert commentaries have similarly given surprise a place of prominence when determining whether warnings are required prior to an attack.<sup>185</sup>

As numerous scholars have observed, warnings generally result in disadvantage for the attacking force.<sup>186</sup> In light of this self-evident reality of warfare, the question is when must warnings be given despite the risk of negative consequences. Although other factors are relevant, there is almost universal acceptance of the premise that loss of the element of surprise is the paradigmatic example of a situation justifying an attack without warning.

Indeed, the relatively scant state practice of warning tends to come in two forms. First are those situations involving warnings to the civilian population of attacks in general, warnings so broad that the loss of surprise has little influence on the likelihood of mission success.<sup>187</sup> An example would be the general warnings issued by coalition forces via airdropped pamphlets urging civilians to stay away from Iraqi military sites prior to the start of hostilities in 2003.<sup>188</sup> The second situation is one in which the target is immovable, as in the case of a building, and can be attacked with impunity because the defender lacks the means to place the attacker at risk. Israeli practices of phoning, texting or “roof knocking” to urge civilians to leave buildings that are about to be targeted are illustrative.<sup>189</sup> In such cases, it usually cannot be said that circumstances prevent issuing a warning.

The relative dearth of warning practice in other situations appears to run contrary to the fact that, as discussed, Article 57 was intended to create a rebuttable presumption that civilians must be warned, an intent that has been reaffirmed since then even with respect to surprise.<sup>190</sup> In our view, the mere fact of somewhat compromised surprise or other military considerations is insufficient, without more, to rebut this presumption, for allowing any loss of tactical initiative to justify dispensing with the warning requirement would result in an exception that would effectively swallow the rule.

Ultimately, determining when it is appropriate to forego a warning is highly situational; such assessments are judged against what an objective, reasonable

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<sup>184</sup> 1 CIHL STUDY, *supra* note 2, at 64.

<sup>185</sup> TALLINN MANUAL 2.0, *supra* note 11, at 486–87; AMW MANUAL, *supra* note 11, at 153–54.

<sup>186</sup> IAN HENDERSON, THE CONTEMPORARY LAW OF TARGETING: MILITARY OBJECTIVES, PROPORTIONALITY AND PRECAUTIONS IN ATTACK UNDER ADDITIONAL PROTOCOL I, 186 (2009); Corn & Schoettler, Jr., *supra* note 176, at 816; Study Group, *supra* note 96, at 385–86.

<sup>187</sup> See COMMENTARY ON THE ADDITIONAL PROTOCOLS, *supra* note 19, ¶ 2225 (indicating that warnings “may also have a general character”); see also DOD LAW OF WAR MANUAL, *supra* note 2, § 5.11.5.2.

<sup>188</sup> See Pamela Hess, *Propaganda Leaflets Dropped over Iraq*, UNITED PRESS INT’L (Mar. 18, 2003), [http://www.upi.com/Business\\_News/Security-Industry/2003/03/18/Propaganda-leaflets-dropped-over-Iraq/UPI-81231048022702/](http://www.upi.com/Business_News/Security-Industry/2003/03/18/Propaganda-leaflets-dropped-over-Iraq/UPI-81231048022702/) [<https://perma.cc/6EPZ-VNEJ>].

<sup>189</sup> Michael N. Schmitt & John J. Merriam, *The Tyranny of Context: Israeli Targeting Practice in Legal Perspective*, 37 U. PA. J. INT’L. L. 53, 79–80 (2015).

<sup>190</sup> See, e.g., Study Group, *supra* note 96, at 385.

commander would decide under the attendant circumstances. To illustrate, assume an air attack planned against a building in which many civilians are located. If warned, they can be expected to depart. However, the warning will also permit the defenders to place effective air defenses in the target area. Because of the risk posed to the aircraft, the attacker will have to use indirect artillery fire against the target, which will slightly diminish the likelihood of success in striking the building with the desired effect. Depending on the extent to which the expectation of success declines and the degree and likelihood of civilian harm avoided by the warning, a reasonable commander might conclude one can be issued, or not.

Uncertainty also enters the assessment with respect to the fact that the requisite warning must be, as noted in the text of Article 57(2)(c), “effective.” An effective warning is one that will place the civilian population on notice of the attack and allow it to take measures to protect itself from the effects of that attack.<sup>191</sup> However, warnings can prove ineffective, or only partially effective, for many reasons. Warnings sent by cyber means, for example, rely on functioning cyber infrastructure and the target population being connected to the systems used to deliver the warnings. Similarly, notifying the affected population through authorities in the target area is only effective when those authorities will pass on the warning in an efficacious manner. And the effectiveness of leaflets can be limited if used to warn a widely illiterate population. These and similar factors are appropriate for consideration when deciding whether warning the civilian population of an attack is obligatory.

The cognitive framework for determining whether a warning must be issued can be represented thusly. Since there is a presumption that warnings will be issued, the formula denotes when warnings are *not* required because military considerations reasonably rebut the presumption.

$$\sum [V_{\text{NMC}} \cdot P_{\text{NMC}}] \text{ excessive relative to } \sum [V_{\text{NECP}} \cdot P_{\text{NECP}}]^{192}$$

As before,  $V_{\text{NMC}}$  signifies the value of negative military considerations, while  $P_{\text{NMC}}$  is the probability of those negative military considerations occurring. Especially significant in the warning context is the extent to which warnings pose a risk to mission success or the safety of the attacking force and its equipment. The equation indicates that both the severity of the consequences and the likelihood thereof are relevant. For instance, while the severity of negative considerations, such as pilot loss, may be high, if the likelihood thereof is low, a highly effective and protective warning may be required. Likelihood is, of course, affected by the nature of the warnings and their specificity. General warnings of attack, as an example, usually

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<sup>191</sup> Schmitt & Merriam, *supra* note 189, at 134 (discussing the Israeli understanding of “effective” warnings); see also DINSTEIN, *supra* note 18, at 144 (citing Antonio Cassese, *The Geneva Protocols of 1977 on the Humanitarian Law of Armed Conflict and Customary International Law*, 3 UCLA PAC. BASIN L.J. 55, 84 (1984)).

<sup>192</sup> Sum of [(value of negative military consequences) considered in light of (probability of negative military considerations)] is excessive relative to the sum of [(value of negative effects for the civilian population) considered in light of (negative effects for the civilian population)].

pose less of a threat to attacking forces than highly specific ones and therefore the probability of the negative military consequences would be lower for the former in most cases. It must be cautioned that warnings can generate deleterious military consequences in a number of ways. To illustrate, a warning that results in the downing of an attacking aircraft has a negative effect on the success of that particular mission and from a force protection perspective. It is appropriate to consider both in determining whether to warn, a fact represented in the framework as a sum of military considerations.

$V_{NECP}$  denotes the value of negative effects on the civilian population, and  $P_{NECP}$  is the probability of those negative effects manifesting. NECP is used in lieu of CD because effects that would not qualify as collateral damage in the proportionality or other active precautions sense must nevertheless be considered. As with negative military considerations, the gravity and probability of negative consequences for the civilian population are relevant considerations in the warning obligation determination. And also, as with negative military consequences, the probability of the effects would depend in great part on the nature of the warning(s) in question and the likely effectiveness thereof.

And as with the feasibility equation, the warning equation is expressed in terms of sums. Because a single attack may generate multiple negative military considerations, as with loss of the pilot and aircraft and loss of the effect sought in the attack, an attacker may consider the sum of the value and probability of all negative military considerations. The same is true with respect to negative effects on the civilian population. For instance, the failure to evacuate a hospital due to the lack of warning might result in injury to those therein and damage to the facility, as well as possible loss of future medical care for the civilian population. Accordingly, both sides of the equation employ the sum symbol  $\Sigma$ .

Finally, as with feasibility considerations, there is a wide margin of appreciation when determining whether “circumstances do not permit” warnings. But unlike feasibility, here a clear presumption exists that warnings will be given, a point confirmed by use of the term “unless.” Therefore, the equation indicates that the negative military considerations must be excessive before they sufficiently outweigh the effect on the civilian population to negate the requirement to provide a warning.

## V. Concluding Thoughts

We have not attempted to solve the perennial problem of how to address the uncertainty in targeting that haunts those involved in lethal and destructive operations during warfare. Rather, this article simply offers a cognitive framework for dealing with the reality of uncertainty, one drawing on treaties, legal commentary, practice, and simple logic. In doing so, it rejects the notion that definitive thresholds, such as those found in domestic criminal or civil legal regimes, are to be found in international humanitarian law when ascertaining

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whether a person or object is a military objective, an attack is proportionate or precautions in attack are required.

On the contrary, by our approach every situation must be considered on its own merits in light of the attendant circumstances. This fact is reflected in the resulting formulae, summarized below.

## Target Identification

$$V_{DE} \cdot P_{DE} > V_{UH} \cdot P_{UH}^{193}$$

## Proportionality

$$\Sigma [V_{CIV} \cdot P_{CD}] \text{ excessive relative to } [V_{DE} \cdot P_{DE}]^{194}$$

## Precautions Not Feasible

$$\Sigma [V_{NMC} \cdot P_{NMC}] \text{ excessive to } \Sigma [V_{CIV} \cdot P_{CD}]^{195}$$

## Warnings not Required

$$\Sigma [V_{NMC} \cdot P_{NMC}] \text{ excessive relative to } \Sigma [V_{NECP} \cdot P_{NECP}]^{196}$$

The formulae are meant only to mind map our proposed frameworks. They are not susceptible to formulaic application. In particular, we eschew any attempt to apply them mathematically, for the factors we have highlighted for consideration defy clear quantification. As a result, there is a significant margin of appreciation in their application.

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<sup>193</sup> (Value of desired effect) considered in light of (probability of achieving desired effect) greater than (value of unintended harm) considered in light of (probability of unintended harm).

<sup>194</sup> Sum of [(value of the civilians or civilian objects) considered in light of (probability of collateral damage occurring to them)] is excessive relative to (value of the desired effect) considered in light of (probability of achieving that effect).

<sup>195</sup> Sum of [(Value of negative military considerations) considered in light of (probability of negative military considerations occurring)] is excessive relative to sum of [(value of the civilians or civilian objects) considered in light of (probability of collateral damage occurring to them)].

<sup>196</sup> Sum of [(value of negative military consequences) considered in light of (probability of negative military considerations)] is excessive relative to the sum of [(value of negative effects for the civilian population) considered in light of the (negative effects for the civilian population)].

Moreover, the cognitive frameworks are strictly legal in character. At no time did we consider moral or policy concerns. Situations may exist on the battlefield in which those concerns lead to treating uncertainty more restrictively than the law requires. This is certainly the case, for instance, when conducting counter-insurgency operations, the success of which may depend on the support of the civilian population, or at least denying the enemy its support.

In this regard, our approach to interpretation of the relevant law is based on the premise that law must be interpreted in light of the context in which it is to be applied and with sensitivity to its object and purpose. In the case of IHL, this endeavor demands fidelity to the foundational goal of balancing military necessity and humanitarian concerns. Thus, we have attempted to fully appreciate the dialectical relationship between potential operational and humanitarian consequences. Proposed approaches that exaggerate or neglect either side of the dynamic are doomed to eventual rejection.

Finally, we merely hope to open a more robust dialogue on how to factor uncertainty into decisions to attack, or refrain from attacking, targets, whether they be individuals or objects. The cognitive frameworks set forth may have neglected key factors for consideration, skewed the analysis inappropriately or simply be wrong. We believe not, but are prepared to accept such possibilities. Whatever the case, the dialogue must be opened, and it must be sophisticated. After all, uncertainty on the battlefield is nothing less than a matter of life and death.