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# Back to the Future: Reflections on the Advent of Autonomous Weapons Systems

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# BACK TO THE FUTURE: REFLECTIONS ON THE ADVENT OF AUTONOMOUS WEAPONS SYSTEMS

*Michael A. Newton*<sup>1</sup>

*This essay refocuses the debate over autonomous weapons systems to consider the potentially salutary effects of the evolving technology. Law does not exist in a vacuum and cannot evolve in the abstract. Jus in bello norms should be developed in light of the overarching humanitarian goals, particularly since such weapons are not “inherently unlawful or unethical” in all circumstances. This essay considers whether a preemptive ban on autonomous weapons systems is likely to be effective and enforceable. It examines the grounds potentially justifying a preemptive ban, concluding that there is little evidence that such a ban would advance humanitarian goals because of a foreseeable lack of complete adherence. The essay concludes by suggesting three affirmative values that would be served by fully vetted and field-tested technological advances represented by autonomous weapons. Properly developed and deployed, autonomous weapons might well advance the core purposes of jus in bello by helping the balance the twin imperatives of military necessity and humanitarian interests.*

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## I. INTRODUCTION

The prospect of autonomous weapons as a regularized feature of future wars poses existential implications for the entire field of law regulating the use of force. Such autonomous weapons may over time become so commonplace and so uncontrollable that the idea of human decision-making, based on good faith efforts to comply with legal norms, as an outer limit to war making becomes eviscerated. At the time of this writing, autonomous weapons thus face pre-demonization aimed at freezing development or proliferation. Proponents of a complete ban on autonomous weapons frame the issue as centering on the prohibition of so called “killer robots.”<sup>2</sup> This notion admittedly strikes a visceral nerve among the public at large, not to mention military experts and ethicists. The law of war is an inescapable aspect of the dialogue among people of good conscience who appreciate the awful consequences inherent in the waging of modern wars. For those seeking a preemptory ban on autonomous systems, such unease overshadows the costs of failing to explore the limits of technology or develop a full understanding of the information interface between humans and autonomous weapons that might well alter the ethical compass.

Indeed, the Secretary General of the United Nations questioned whether it can ever be “morally acceptable to delegate decisions about the use of lethal force to such systems” and wondered aloud whether the lack of individual culpability against a machine launching lethal force would ever make it “legal or ethical to deploy such systems.”<sup>3</sup> The U.N. Special Rapporteur on the subject goes a step further to specifically recommend an immediate “national moratorium on at least the testing, production, assembly, transfer, acquisition, deployment of LARs [lethal autonomous robotics] until such time as an internationally agreed upon framework on the future of LARs has been established.”<sup>4</sup> When the debate is framed as one in which

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2. Acknowledging the implicit power of this argument, the U.S. Department of Defense seeks to assure scholars and practitioners that “for a significant period into the future, the decision to pull the trigger or launch a missile from an unmanned system will not be fully automated, but it will remain under the full control of a human operator.” U.S. DEF. DEP’T, FY 2009-2034 UNMANNED SYSTEMS ROADMAP 10 (2009).
  3. *UN Meeting Targets ‘Killer Robots,’* UN NEWS (May 14, 2014), <http://www.un.org/apps/news/story.asp?NewsID=47794#.VOCz8LDF-f9>.
  4. Special Rapporteur on Extrajudicial, Summary and Arbitrary Executions, *Annual Rep. on Extrajudicial, Summary or Arbitrary Executions*, U.N. Doc. A/HCR/23/47, ¶ 113 (April 9, 2013) (by Christof Heyns).

“tireless war machines” hold the potential to “take decisions of life or death out of human hands,”<sup>5</sup> such concerns seem eminently appropriate for preserving the integrity of international efforts to protect innocent lives during conflicts.

This short essay nevertheless aims to refocus the debate. Law does not exist in a vacuum. Legal norms always operate in synergy with changing contexts and often rapidly emerging challenges. They establish societal expectations and shape correlative rights in accordance with the shared experiences of other states. The experience of warfighters is an essential component of the effort to regulate armed conflicts. As with any emerging technology for waging war, the legal regime serves to reinforce accepted value structures. In perhaps his most famous observation, Justice Oliver Wendell Holmes noted that

“the life of the law has never been logic: it has been experience. The felt necessities of the time, the prevalent moral and political theories, intuitions of public policy, avowed or unconscious, even the prejudices which judges share with their fellow-men, have had a good deal more to do with the syllogism in determining the rules by which men should be governed.”<sup>6</sup>

Because normative shifts in the law never serve as a complete *tabula rasa*, they, as well as the policy preferences that animate such legal reforms, do not march with the linear certainty of mathematical extrapolation or algebraic formulae. They move instead in episodic response to shifting valuations and perceptions in light of the ever-changing tide of human events and the inevitable technological innovations that have shaped our world since the Enlightenment.

This essay will question the overall validity of the legal assumptions marshalled to support a preemptive ban on autonomous weapons. It concludes by postulating some salutary purposes that could be served by the development of lethal autonomous technologies, or at a minimum could guide future research in order to solve some of the most vexing issues the warrior faces in modern combat. Autonomous weapons platforms that operate in conformity with international humanitarian law could actually advance compliance with the law in the aggregate, as well as minimizing the human costs of conflict. This essay will first consider the arguments for a preemptive ban and conclude by postulating three possible contributions to legal norms of fielded autonomous weapons. Such salutary considerations have been almost entirely avoided in the passionate positions already staked out. Given the seemingly inevitable pace of technological change, it seems most opportune to

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5. *Id.* at ¶¶ 109–10.

6. OLIVER WENDELL HOLMES, *THE COMMON LAW* 1 (1881).

think prospectively about the affirmative role that autonomous weapons could serve in actually reinforcing compliance with the laws and customs of warfare, rather than simply assuming that they cannot be compatible. If we know anything about the pace of technological innovation over the past two decades, we should recognize that it proceeds far faster than preconceptions will predict. An affirmative vision of how to make technology serve larger societal interests is much more salutary when it is articulated early enough to actually *shape* innovation to serve social goals, rather than forcing legal and social norms to mold around newly fielded technologies. So it should be with the interface between autonomous weapons systems and the laws and customs of warfare.

## II. THE LAW AND TECHNOLOGICAL ADAPTATION

At the outset, it must be understood that the campaign for a moratorium on all autonomous weapons systems must be assessed against the backdrop of personalities and politics. Some of the same people that championed the 1997 Ottawa Convention,<sup>7</sup> banning the use, production, or transfer of anti-personnel landmines, figure prominently in the similar efforts regarding autonomous weapons. The game is the same, but played on a different field before a different audience and with different rules. The minimal decline in landmine use worldwide over the past two decades,<sup>8</sup> and the devastating spread of improvised explosive devices (which are their functional equivalent),<sup>9</sup> should provide an instructive and cautionary exemplar when advocates automatically assume the utility of a total ban on autonomous weapons systems. Total bans have never been wholly effective in changing state practice as a standalone matter. This is partially true because there will always be an incentive for some actors to gain disproportionate advantages by ignoring such

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7. Convention on the Prohibition of the Use, Stockpiling, Production, and Transfer of Anti-Personnel Mines and on their Destruction, Sept. 18, 1997, 2056 U.N.T.S. 211.
  8. *Sharp Drop in Landmine Casualties; But International Funding for Remaining Mine Clearance Declines*, INT'L CAMPAIGN TO BAN LANDMINES (Dec. 3, 2014), <http://www.icbl.org/en-gb/news-and-events/news/2014/landmine-monitor-2014-launch.aspx> (noting that while deaths resulting from landmines have dropped to their lowest levels since tracking began in 1999, fifty-six states still have active landmines).
  9. Peter W. Singer, *The Evolution of Improvised Explosive Devices (IEDs)*, BROOKINGS INST. (Feb. 2012), <http://www.brookings.edu/research/articles/2012/02/improvised-explosive-devices-singer>.

constraints.<sup>10</sup> Similarly, the strident movement for a moratorium on the development or deployment of autonomous weapons is squarely situated against the international angst caused by the widespread use of drones to strike enemies of the United States on foreign soil without the public expression of support by the affected sovereign state. The push for a ban on autonomous weapons has at times had the flavor of a politicized push to punish the United States for its controversial use of extraterritorial drone strikes.<sup>11</sup> There is a strong waft of politics that cannot be entirely disentangled from the legal posturing. Legal evolution never serves as a *tabula rasa*; thus, the lawyer/counselor must be as objective as possible in framing the issues based on law and precedent rather than passion and politics.

In this vein, the history of the law of armed conflict itself provides reason to believe that the law will adapt as needed in the wake of technological innovation. Throughout its history, *jus in bello*<sup>12</sup> has adapted at the precise points of friction with changing technology in order to reinforce the validity of legal regulation, while preserving the ability to wage war lawfully. Esteemed scholars have advocated precisely this view on the basis that autonomous weapons “are not inherently unlawful or unethical,” and that their responsible and effective use can conceivably be situated within a modified understanding of legal and ethical norms.<sup>13</sup> It cannot be overstated that the moral tension between evolving technology and the application of the precise legal rules designed to minimize the cruelty and inhumanity during conflict represents one of the enduring threads within the field. Shifting legal norms have always echoed a strand of Just War thinking that has sought to define the proper bounds for waging war.<sup>14</sup> St. Augustine wrote that peace “is not sought in order to provoke war, but war is waged in order to attain peace. Be a peacemaker, then, even by fighting, so that through your victory you might bring those whom you defeated to the advantages of peace.”<sup>15</sup>

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10. Steven Groves & Ted R. Bromund, *The Ottawa Mine Ban Convention: Unacceptable on Substance and Process*, 2496 BACKGROUND 1, 20 (2010).
  11. Larisa Epatko, *Controversy Surrounds Increased Use of U.S. Drone Strikes*, PBS NEWSHOUR (Oct. 10, 2011), <http://www.pbs.org/newshour/rundown/2011/10/drone-strikes-1.html>.
  12. Robert Kolb, *Origin of the Twin Terms Jus Ad Bellum/Jus in Bello*, 37 INT’L REV. RED CROSS 553, 553–62 (1997).
  13. Kenneth Anderson & Matthew Waxman, Op-Ed., *Killer Robots and the Laws of War*, WALL ST. J., NOV. 3, 2013, at A19.
  14. See generally JUST WAR THEORY (Jean Bethke Elshtain ed., 1992) (compiling different elements of the theory into a volume).
  15. See ST. AUGUSTINE, AUGUSTINE: POLITICAL WRITINGS 217 (E.M. Atkins & R.J. Dodaro eds., 2004).

Law and technology have operated in a healthy tension with each other that over time creates a new equilibrium. Among many other illustrative examples of this phenomenon, the Second Lateran Council sought to ban the crossbow from medieval battlefields as anathema and “hateful to God” because “men of non-knightly order could fell a knight.”<sup>16</sup> In contrast to preemptive bans on whole classes of weapons, the changing pace of technological advancement has more often necessitated legal reforms. The effort to ban cross-bows fell into desuetude as the invention of firearms using gunpowder for lethal purposes obviated efforts to ban cross-bows.<sup>17</sup> In a more modern example, the law of targeting evolved in response to new technologies and the shifting experiences and expectations of the international community. Following the World War II bombings of entire cities,<sup>18</sup> current law requires disaggregation of specific targets within a “city, town or village or other area containing a similar concentration of civilians or civilian objects,” which in turn requires a series of discrete distinction and proportionality assessments for each target.<sup>19</sup> *Jus in*

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16. G.I.A.D. Draper, *The Interaction of Christianity and Chivalry in the Historical Development of the Law of War*, 46 INT’L REV. RED CROSS 3, 19 (1965).
  17. See TREVOR N. DUPUY, *THE EVOLUTION OF WEAPONS AND WARFARE* 91 (1984).
  18. For a succinct history of this era and discussion of the shifts in legal and moral thinking over time see BOMBING CIVILIANS: A TWENTIETH-CENTURY HISTORY (Yuki Tanaka & Marilyn B. Young eds., 2009).
  19. Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I) art. 51, June 8, 1977, 1125 U.N.T.S. 17512 (which classifies such intentional attacks as being per se indiscriminate and therefore prohibited) [hereinafter Protocol I]; see also Customary International Humanitarian Law: Volume II (Jean-Marie Henckaerts & Louise Doswald-Beck eds., 2005). The Official ICRC Commentary to Additional Protocol I makes it clear that the provisions of Article 51 flowed directly from the practices during World War II and the reactions thereto:

The attacks which form the subject of this paragraph fall under the general prohibition of indiscriminate attacks laid down at the beginning of paragraph 4. Two types of attack in particular are envisaged here. The ‘ first type ‘ includes area bombardment, sometimes known as carpet bombing or saturation bombing. It is characteristic of such bombing that it destroys all life in a specific area and razes to the ground all buildings situated there. There were many examples of such bombing during the Second World War, and also during some more recent conflicts. Such types of attack have given rise to strong public criticism in many countries, and it is understandable that the drafters of the Protocol wished to mention it specifically, even though such attacks already fall under the general prohibition contained in paragraph 4. According to the report of Committee III, the expression “bombardment by any method or means” means all attacks by fire-arms

*bello* provides flexible, but not indeterminate, standards that automatically expand to suit any new form of warfare.<sup>20</sup> And so it has been throughout the history of the positivist law; as the tactics for warfare have shifted with the advent of new technologies, so has that shift necessitated legal innovations to serve the perceived needs of nations and preserve the values of humanity.

At the same time, *jus in bello* itself has never been infinitely malleable based on the individualized will of combatants and the convenience of technological superiority. Though laws and customs of warfare have a fixed and accepted form in diverse usages, the correct application of the legal and moral precepts depends entirely on the facts available, the reasonable perceptions of participants, and the overall motivations of the decision-makers. Subjective assessments that are entirely permissible within the legal framework are always bounded by non-negotiable tenets of military necessity and human dignity. The Brussels Declaration of 1874 extended this tenet by recognizing that “the laws of war do not recognize in belligerents an unlimited power in the adoption of means of injuring the enemy.”<sup>21</sup> The concretized formulation of the 1907 Hague Regulations provided a fitting positivist formulation to this developmental arc in specifying that “the right of belligerents to adopt means of injuring the enemy is not unlimited.”<sup>22</sup> The modern formulation of this foundational principle is captured in Article 35 of Additional Protocol I as follows: “In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited.”<sup>23</sup> This same spirit animated the judges of the Tokyo District Court to hold that the atomic attacks on Hiroshima and Nagasaki were disproportionate

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or projectiles (except for direct fire by small arms) and the use of any type of projectile.

INT’L COMM. RED CROSS, COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 12 AUGUST 1949 Art. 51, ¶¶ 1967–68 (Sandoz et al, eds.1987) [hereinafter ADD’L PROTOCOLS COMMENT.].

20. See Jasmine Moussa, *Can Jus ad Bellum Override Jus in Bello? Reaffirming the Separation of the Two Bodies of Law*, 90 INT’L REV. RED CROSS 963, 976.
21. The Brussels Project of an International Declaration Concerning the Laws and Customs of War art. 12, *reprinted in* DIETRICH SCHINDLER & JIRI TOMAN, *THE LAWS OF ARMED CONFLICTS* 21–28 (2d ed. 1981).
22. Regulations annexed to Hague Convention IV Respecting the Laws and Customs of War on Land, 1907, art. 22, *entered into force* Jan. 26, 1910, *reprinted in* DOCUMENTS ON THE LAWS OF WAR 43, 52 (Adam Roberts & Richard Guelff eds., 1982) [hereinafter *1907 Hague Regulations*].
23. Protocol I, *supra* note 18, art. 3.



in *Ryuichi Shimoda et. al. v. The State*.<sup>24</sup> The Court discounted arguments that the bombings shortened the war, saved hundreds of thousands of lives (both military and civilian), and perhaps laid the foundation for a modern Japanese state able to enjoy a sustained peace by virtue of averting what would have been destruction on a vast scale as allied armies advanced across the Home Islands:

It can be naturally assumed that the use of a new weapon is legal, as long as international law does not prohibit it. However, the prohibition in this context is to be understood to include not only the case where there is an express provision of direct prohibition, but also the case where the prohibition can be implied . . . from the interpretation and application by analogy of existing rules of international law (customary international laws and treaties). Further, the prohibition must be understood also to include the case where, in the light of principles of international law which are the basis of these positive rules of international law, the use of new weapons is admitted to be contrary to the principles . . . .<sup>25</sup>

To summarize, the entire body of the laws and customs of warfare represents an evolving compromise between the principles of military efficacy and humanity. Shifts in technological capacity, then, require application of the laws of warfare “even with respect to weapons that did not exist at the time when those principles were affirmed.”<sup>26</sup> The consistent pattern has been for legal evolution against the backdrop of changing tactics and technological innovations, rather than broad preemptive proscriptions designed to address shifts in technological abilities that can merely be anticipated but not yet ascertained. There is no reason to believe that the advent of autonomous weapons would be any different. As information about capabilities becomes available and tactics adjust accordingly, the legal debates would follow in short order as night follows day.

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24. Tōkyō Chihō Saibansho (Tokyo Dist. Ct.) Dec. 7 1963, 355 HANREI JIHO [HANJI] 17(Japan), *translated in* 8 JAPAN ANN. INT’L L. 212 (1964) *reprinted in* 32 I.L.R. 626 (1994).

25. *Id.* at 32 I.L.R. 628–29.

26. Marina Castellaneta, *New Weapons, Old Crimes?*, in WAR CRIMES AND THE CONDUCT OF HOSTILITIES: CHALLENGES TO ADJUDICATION AND INVESTIGATION 194, 195 (Fausto Pocar, et.al. eds., 2013).

### III. AUTONOMOUS WEAPONS AS THE NEW LEGAL FRONTIER

At the same time, some legal scholars have seized on the very nature of the legal regime to argue that fully autonomous weapons presumptively violate *jus in bello* as it has already evolved. Judge Meron, President of the International Criminal Tribunal for the former Yugoslavia, has written that “human rights norms have infiltrated the law of war to a significant degree.”<sup>27</sup> He traces this influence back into the natural law tradition, but its clearest modern influence is in the famous Martens Clause that originated in the 1899 Hague Regulations. The Martens Clause states in its entirety:

Until a more complete code of the laws of war is issued, the High Contracting Parties think it right to declare that in cases not included in the Regulations adopted by them, populations and belligerents remain under the protection and empire of the principles of international law, as they result from the usages established between civilized nations, from the laws of humanity and the requirements of the public conscience.<sup>28</sup>

The Russian publicist, jurist, and diplomat Fyodor Fyodorovich Martens proposed this compromise language as something of a diplomatic grab-bag or pressure relief valve to alleviate sharp disputes between nations in the negotiations, especially concerning the relationship between civilians and combatants.<sup>29</sup> The sentiment embodied in the Martens Clause would be substantially replicated in all four Geneva conventions of 1949,<sup>30</sup> Article 1, paragraph 2 of the 1977 Additional Protocol I,<sup>31</sup> and the Preamble of the 1977 Additional

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27. THEODOR MERON, *THE HUMANIZATION OF INTERNATIONAL LAW* 6 (2006).
  28. Convention with Respect to the Laws and Customs of War on Land (Hague II) pmbl., Jul. 29, 1899, 32 Stat. 1803, Treaty Series 403.
  29. See Vladimir Vasilievich Pustogaro, *Fyodor Fyodorovich Martens (1845-1909)—A Humanist of Modern Times*, 36 INT’L REV. RED CROSS 300, 311–12 (1996) (detailing the life and achievements of diplomat Fyodor Fyodorovich Martens).
  30. Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field art. 63, Aug. 12, 1949, 6 U.S.T. 3114; 75 U.N.T.S. 31; Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea art. 62, Aug. 12, 1949, 6 U.S.T. 3217, 75 U.N.T.S. 85; Convention (III) Relative to the Treatment of Prisoners of War art. 142, Aug. 12, 1949, 6 U.S.T. 3316; 75 U.N.T.S. 135; Convention (IV) Relative to the Protection of Civilian Persons in Time of War art. 158, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S. 287.
  31. Protocol I, *supra* note 18, art. I, ¶ 2 (“In cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of

Protocol II.<sup>32</sup> Perhaps because of its evasive but enduring phraseology, the Martens Clause has been widely cited by courts, international organizations, human rights advocates, tribunals, and individuals. Judge Meron summarized that, while the Martens Clause has had far-reaching effect, he is “far less confident, however, that the Martens Clause has had any influence on the battlefield.”<sup>33</sup> Its contortions in both domestic and international jurisprudence led the late jurist Antonio Cassese to say that the Martens Clause has become one of the “legal myths of the international community.”<sup>34</sup> The Clause nevertheless reflected an underlying and enduring consensus that the humanitarian aspiration, even in the midst of conflict, cannot be completely discounted on the basis of expediency or artful treaty drafting.

Of particular note in the context of efforts to ban autonomous weapons systems, the Preamble to the Certain Conventional Weapons Convention of 1980 (CCW)<sup>35</sup> repeats the Martens Clause sentiment that “in cases not covered by [international agreements] the civilian population and the combatants shall at all times remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from

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international law derived from established custom, from the principles of humanity and from the dictates of public conscience.”).

32. Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection Of Victims of Non-International Armed Conflicts (Protocol II), of 8 June 1977, pmbl, Jun. 8, 1977, 1125 U.N.T.S. 17513 [hereinafter Protocol II].
33. MERON, *supra* note 26, at 28.
34. Antonio Cassese, *The Martens Clauses: Half a Loaf or Pie in the Sky*, 11 EUR. J. INT'L L. 187, 188 (2000).
35. See Pacific Settlement of International Disputes (Hague I) pmbl., October 18, 1907., 205 CTS 264; 1 Bevans 619; Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, Aug. 12, 1949, 6 U.S.T. 3114, 75 U.N.T.S. 31; Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, Aug. 12, 1949, 6 U.S.T. 3217, 75 U.N.T.S. 85; Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, Sept. 23, 1971, 974 U.N.T.S. 177, 24 U.S.T. 564; Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S. 287; Geneva Convention Relative to the Treatment of Prisoners of War, Aug. 12, 1949, 6 U.S.T. 3316, 75 U.N.T.S. 135; Protocol II, *supra* note 31 at Article 1; Protocol I, *supra* note 18 at pmbl., ¶ 2; Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, Geneva, 10 October 1980, pmbl., CCW/CONF.II/2, 19 I.L.M. 1823 (1980) [hereinafter Convention on Prohibitions of Certain Conventional Weapons].

the dictates of public conscience.”<sup>36</sup> On its face, this language extends well past the original aspiration of the Martens Clause to protect civilians resisting occupation. Full exploration of the nuanced interconnections between this non-binding Preambular language and the body of applicable *jus in bello* and human rights law is beyond the scope of this essay. However, the CCW is, at the time of this writing, the locus of international efforts to debate the future for autonomous weapons systems. Delegations representing some twenty-seven nations and a wide variety of international experts and organizations attended the meetings in Geneva held in May 2014 to “discuss the questions related to emerging technologies in the area of lethal autonomous weapons systems, in the context of the objectives and purposes of the Convention.”<sup>37</sup>

According to the International Committee of the Red Cross (ICRC), some experts believe that even if autonomous weapons systems can be used in compliance with applicable *jus in bello* provisions, the penumbra of the Martens Clause as echoed in the CCW Preamble would constrain the use of machines making life and death decisions “with little or no human control.”<sup>38</sup> In its official statement to the May 2014 meeting of experts in Geneva, the ICRC extended this sentiment to conclude that “perhaps the most fundamental question is whether autonomous weapon systems are compatible with the principles of humanity and the dictates of public conscience. There is a deep sense of discomfort with the idea of any weapon system that places the use of force beyond human control.”<sup>39</sup> The definitive fit between the unfocused aspirations of the Martens Clause and its reincarnation in the CCW Preamble will be determined by national delegations in the future. For our purposes, it must be noted that there is no diplomatic history nor any evidence of state practice since 1899 on which practitioners or policy makers could anchor a broad ban on development or deployment of autonomous weapons systems. Indeed, the Martens concept would be forced to bear a wholly unprecedented and unforeseen burden if it becomes the fulcrum for forcing a preemptive ban on a developing class of

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36. Convention on Prohibitions of Certain Conventional Weapons, pmbl.

37. *See id.*

38. INT’L COMM. RED CROSS, EXPERT MEETING ON ‘AUTONOMOUS WEAPON SYSTEMS: TECHNICAL, MILITARY, LEGAL AND HUMANITARIAN ASPECTS’, 26-28 MARCH 2014, GENEVA 15 (2014).

39. Statement from Int’l Comm. Red Cross, Convention on Certain Conventional Weapons (CCW) Meeting of Experts on Lethal Autonomous Weapons Systems (LAWS), 13-16 May 2014 (May 13, 2014), *available at* [http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/C99C06D328117A11C1257CD7005D8753/\\$file/ICRC\\_MX\\_LAWS\\_2014.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/C99C06D328117A11C1257CD7005D8753/$file/ICRC_MX_LAWS_2014.pdf).

technology. The Martens Clause was simply not intended to be the primary weight bearing pillar of international humanitarian law. Basing a preemptive ban on weapons on its spare text would therefore be unprecedented and unwarranted.

#### IV. HOW LAW AND TECHNOLOGY CAN DEVELOP CONCURRENTLY

This essay will conclude by postulating three affirmative values that could be enhanced by the development and deployment of autonomous weapons systems. Law should indeed conform to social experience in light of the most feasible approach to achieving the desirable societal goals. As a distinctive field of law, *jus in bello* can only be understood in light of the truism that the established *lex lata* represents a finely honed balance between buttressing the ability of war-fighters to accomplish the military mission, even as the extensive system of constraints for lawfully doing so seeks to protect human lives and civilian property to the greatest degree possible.<sup>40</sup> Unlike the field of human rights, lethal force in armed conflict is permissible whenever reasonably necessary to achieve a military objective absent evidence of some prohibited purpose or unlawful tactic.<sup>41</sup> In other words, *jus in bello* operates on a presumed permissive basis subject to express limitations precisely because it must be applied during hostilities by war-fighters as an extension of disciplined professionalism even in the midst of mind-numbing fatigue, adrenalin, and soul felt fear. The debate over the appropriate role of autonomous weapons systems juxtaposed against larger efforts to inculcate compliance with international humanitarian law, in part, derives from this essential DNA of the field.

The very purpose of *jus in bello* is to facilitate the difficult moral and legal choices that require human judgment in order to preserve human dignity and life to the greatest degree possible in light of the military mission.<sup>42</sup> These purposes could be enhanced by the use of autonomous weapons in three distinct ways: 1) they could sharpen the

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40. See Mark Newton, *Charging War Crimes: Policy & Prognosis from a Military Perspective*, in THE LAW & PRACTICE OF THE INTERNATIONAL CRIMINAL COURT: A CRITICAL ACCOUNT OF CHALLENGES & ACHIEVEMENTS, (forthcoming 2015).

41. Nils Meltzer, *Targeted Killing or Less Harmful Means?—Israel's High Court Judgment on Targeted Killing and the Restrictive Function of Military Necessity*, 9 Y.B. INT' HUM. L. 87, 109 (2006).

42. Serena K. Sharma, *Reconsidering the Jus Ad Bellum/Jus in Bello Distinction*, in JUS POST BELLUM: TOWARDS A LAW OF TRANSITION FROM CONFLICT TO PEACE 9, 10 (Carsten Stahn & Jann K. Kleffner eds., 2008) (explaining the origin and rationale of *jus in bello* in contrast to the rationale for *jus ad bellum*).

ability of warfighters to distinguish between protected persons and property and the subjects of lawful military attack; 2) they could provide a significant boost to current obstacles for deterring violations during non-international armed conflicts or those waged primarily by non-state actors; and 3) they could boost the efforts of law abiding nations to defeat adversaries that increasingly resort to urban warfare and intentionally commingle with civilian populations. These potential goals should be prioritized as research into autonomous weapons systems continues, assuming of course that the foreseeable technological barriers to the complex decision-making that is an integral part of good faith compliance with *jus in bello* can be overcome.

At a superficial level, the ICRC view is understandable because autonomous weapons seem inconsistent with the quintessential expressions of the laws and customs of warfare by which objective standards are applied from the evaluative perspectives of diverse humans caught in the midst of conflict. *Jus in bello* is permissive by its express terms insofar as it defines the limits of lawful authority, rather than operating as an affirmative grant of authority. But that permissive character in turn relies on the assessments of human beings who must conform to the legal standards under shifting circumstances and on the basis of incomplete or often inaccurate information. Even as there are abundant examples in *jus in bello* of express prohibitions subject to no caveats, combatants exercise what the ICRC has labeled a “fairly broad margin of judgment.”<sup>43</sup> For example, medical care is due those in military custody only “to the fullest extent practicable and with the least possible delay.”<sup>44</sup> Obligations are repeatedly couched in aspirational terms such as “whenever possible”<sup>45</sup> or “as widely as possible.”<sup>46</sup> Other duties are framed in less than strident terms such as “shall endeavor”<sup>47</sup> or the duty to “take all practical precautions.”<sup>48</sup> There are also express exceptions permitted for reasons of “imperative military necessity.”<sup>49</sup>

The fine-grained and context-specific reasoning necessitated by these legal standards seems almost unimaginable in the hands of a computer programmed weapons platform. At the same time, who would have anticipated the internet at the time the 1977 Additional Protocols were negotiated, or satellite communications, or

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43. ADDITIONAL PROTOCOLS COMMENT., *supra* note 18, at ¶ 2187.

44. Protocol I, *supra* note 18, at art. 10(2).

45. *Id.* at art. 12(4).

46. *Id.* at art. 83(1).

47. *Id.* at art. 77(3).

48. *Id.* at art. 56(3).

49. *Id.* at art. 55(5).

smartphones, or the evolution of digital communications? A broad-based ban on development and deployment risks short-circuiting new technologies that could make such evaluative reasoning free from passions, prejudices, or external pressures. Indeed, autonomous weapons might actually advance adherence to these legal tenets by eliminating information barriers and ensuring instantaneous adjustment of tactics across linguistic or cultural boundaries that normally divide human military units in wartime. Thus, autonomous weapons systems may well be able to statistically enhance compliance with established legal norms by facilitating dispassionate compliance that is flexible enough to shift almost instantaneously in accordance with rapidly changing circumstances that might undermine human decision-making in similar contexts.

The basic law of targeting imposes another seemingly insurmountable barrier to compliant computer-powered autonomous weapons. For the purposes of proportionality, the most relevant permissive duties incumbent on those who order military strikes require them to “do everything feasible to verify that the objectives to be attacked are neither civilians nor civilian objects”<sup>50</sup> and “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.”<sup>51</sup> As a logical extension, “effective advance warning shall be given of attacks which may affect the civilian population, *unless circumstances do not permit* [emphasis added].”<sup>52</sup> The commander’s actions “must be made in good faith and in view of all information that can be said to be reasonably available in the specific situation” according to the ICRC.<sup>53</sup> This seemingly requires human judgment and human assessment rather than automated programming. This permissive *jus in bello* framing empowers those in the vortex of battle to balance the legitimate military needs against larger humanitarian imperatives. It is important to note that the benchmark for what is “feasible” is measured from the reasonable war-fighter’s point of view. In fact, modern international criminal law expressly preserves broad discretionary authority.

For example, Article 23 of the 1899 Hague II Convention stated that it was forbidden “[t]o destroy or seize the enemy’s property, unless such destruction or seizure be imperatively demanded by the

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50. Protocol I, *supra* note 18, at art. 57(2)(a)(i).

51. *Id.* at art. 57(2)(a)(ii).

52. *Id.* at art. 57(2)(c).

53. INT’L COMM. RED CROSS & NILS MELZER, INTERPRETIVE GUIDANCE ON THE NOTION OF DIRECT PARTICIPATION IN HOSTILITIES UNDER INTERNATIONAL HUMANITARIAN LAW 75 (2009).

necessities of war.”<sup>54</sup> The Rome Statute of the International Criminal Court repeated that same language in Articles 8(2)(b)(xiii) and 8(2)(e)(xii)(respectively applicable during international and non-international armed conflicts).<sup>55</sup> Based on their belief that the concept of military necessity ought to be an unacceptable component of military decision-making, some civilian delegates sought to introduce a higher subjective threshold by which to second-guess military operations.<sup>56</sup> They proposed a verbal formula for the Elements of Crimes that any seizure of civilian property would be valid only if based on “imperative military necessity.”<sup>57</sup> There is no evidence in the *travaux* of the Rome Statute that its drafters intended to alter the preexisting fabric of the laws and customs of war.<sup>58</sup> Introducing a tiered gradation of military necessity, as proposed, would have built a doubly high wall that would have had a paralyzing effect on military operations. A double threshold for the established concept of military necessity would have clouded the decision-making of commanders and soldiers who must balance the legitimate need to accomplish the mission against the mandates of the law. In my view, requiring “imperative military necessity” as a necessary condition for otherwise permissible actions would have introduced a wholly subjective and unworkable formulation that would foreseeably have exposed military commanders to after-the-fact personal criminal liability for their good faith judgments.

The important point for our purposes is that the twin concepts of military necessity and feasibility preserve *jus in bello* as a practicable body of law that balances humanitarian and military considerations, at least when applied by reasonable, well-intentioned, and well trained humans.<sup>59</sup> In our hearts, we simply trust humans more, even as we

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54. Michael A. Newton, *Modern Military Necessity: The Role & Relevance of Military Lawyers*, 12 ROGER WILLIAMS U. L. REV. 869, 877 (2007).
55. Rome Statute of the International Criminal Court arts. 8(2)(b)(xiii) and 8(2)(e)(xii), 2187 U.N.T.S. 3, *opened for signature* Jul. 17, 1998.
56. Mike A. Newton, *Humanitarian Protection in Future Wars*, in 8 INT’L PEACEKEEPING: Y.B. INT’L PEACE OPERATIONS 349, 358 (Harvey Langholtz et al. eds., 2004).
57. KNUT DÖRMANN, ELEMENTS OF WAR CRIMES UNDER THE ROME STATUTE OF THE INTERNATIONAL CRIMINAL COURT 249 (2003).
58. WILLIAM A. SCHABAS, THE INTERNATIONAL CRIMINAL COURT: A COMMENTARY ON THE ROME STATUTE 240–41 (2010) (noting that the provisions of the Rome Statute referencing military necessity were “quickly agreed to at the Rome Conference” and that the concept may be invoked only when the laws of armed conflict provide so and only to the extent provided by that body of law).
59. See Michael A. Newton, *The International Criminal Court Preparatory Commission: The Way It Is & The Way Ahead*, 41 VA. J. INT’L L. 204,



acknowledge that they must make decisions based on imperfect information in suboptimal conditions and often with inadequate resources. This understanding helps to explain why advocates of a ban are adamant that the role of criminal accountability for flawed decision-making is an integral component of *jus in bello*.<sup>60</sup> Machines cannot be prosecuted, and the line of actual responsibility to programmers or policy makers becomes too attenuated to support liability. Of course, such considerations overlook the distinct possibility that technological advances may well make adherence to established *jus in bello* duties far more regularized. Information could flow across programmed weapons systems in an instantaneous and comprehensive manner, and thereby facilitate compliance with the normative goals of the laws of war. A preemptive ban on autonomous weapons would prevent future policy makers that seek to maximize the values embedded in *jus in bello* from ever being in position to make informed choices on whether to use humans or autonomous systems for a particular operational task.

Of course, any sentient observer knows that we do indeed live in a flawed and dangerous world. There is little precedent to indicate that a complete ban would garner complete adherence. Banning autonomous systems might do little more than incentivize asymmetric research by states or non-state armed groups that prioritize their own military advantage above compliance with the normative framework of the law. There has been far too little analysis of the precise ways that advancing technology might well serve the interests of law-abiding states as they work towards regularized compliance with the laws and customs of war. Proponents of a complete ban on autonomous weapons simply assume technological innovations away, and certainly undervalue the benefits of providing some affirmative vision of a desired end state to researchers and scientists.

## V. AUTONOMOUS WEAPONS IN COMPLIANCE WITH *JUS IN BELLO*

This essay concludes by suggesting three plausible and affirmative values that could be served by fully vetted and field-tested technological advances embedded in deployed autonomous weapons. In the first place, the principle of distinction forms the prime directive for *jus in bello*. Combatants must at all times seek to distinguish themselves from protected civilians and must direct their warlike

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211–12 (2000) (discussing how military actors ought to help craft international law).

60. See generally Michael N. Schmitt & Jeffrey S. Thurnher, “Out of the Loop”: *Autonomous Weapon Systems and the Law of Armed Conflict*, 4 HARV. NAT’L SEC. J. 231 (2013).

actions only against other combatants. This principle is subject to no caveats or carve outs.<sup>61</sup> Autonomous weapons might well be able to advance this eminently desirable objective by focusing lethal violence only on the appropriately identified target. Imagine the capability to precisely strike the terrorist who is hiding in the midst of human shields. It would absolutely be desirable if that could be done without causing clearly excessive disproportionate damage to the innocent civilian lives and property. Similarly, autonomous weapons might be able to sort through the various weapons signatures and precisely identify the source of an attack and direct pin-point violence exactly where it can only kill or injure those responsible for the attack. To reiterate, the instantaneous flow of information across linguistic barriers or national boundaries and across military units might well have a deterrent effect by making the consequences of military action felt with far more immediacy.

By extension, individual deterrence could well be enhanced by autonomous weapons that are able to target individuals based on specific features. Incentivizing non-state armed groups to comply with the law of war is one of the most insoluble problems facing the field today. That is why the dramatic trend in prosecutions over the past decade has involved rampant campaigns of criminality committed by militias in areas where they feel far removed from any force of law. However, imagine that weapons systems are developed and fielded that can receive and process the biometric data of the target. Such things may already be on the horizon with the development of facial recognition software, but no one really knows the limits of technology. If biometric data of an individual target is combined with field DNA analysis, then discrimination and personal deterrence would be advanced to unprecedented levels. For example, Joseph Kony could in theory be found and targeted by Ugandan authorities even as he hides in the jungle. Autonomous weapons might be able to go places where humans cannot and to use force with more precision and far greater personal focus than was ever possible. Autonomous weapons systems might even be able to cancel an attack if the computer identifies an incorrect target on the basis of eyeball scans or other unique biometric “signatures.” This might be the most effective form of deterrence because a tireless machine would not rest until a particular perpetrator was either immobilized or killed. Such personal deterrence represents the gaping hole in current compliance efforts.

Autonomous weapons systems could conceptually be the key to conducting urban warfare that is both effective militarily and far more compatible with the goals of *jus in bello*. As much of the world’s population centralizes in large urban centers, and non-state actors increasingly seek to use urban areas as the locus of military

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61. Protocol I, *supra* note 18, at art.44. 3.

operations, current tactics have lagged behind. Westernized forces that want to minimize damage to civilian lives and property are increasingly confronted with adversaries that seek sanctuary among civilians.<sup>62</sup> Participants in conflict that are intertwined with civilian populations cannot be rooted out with conventional bombs or missiles, and street-to-street fighting endangers many more civilians. Fielding of tailored autonomous weapons systems that can be activated at times and areas seeking to strike insurgents, and not civilians, may hold great promise. This seems fanciful at present, but who would have foreseen GPS watches or the evolution of satellite radio when vacuum tube televisions were still the rage?

Technology should be the servant of society and not its antagonist. Prospectively seeking technological innovation that enhances compliance with *jus in bello*, rather than endangering its viability, seems far more advisable than a preemptive ban. Sound policy seldom proceeds from assumptions and aspersions. This is not an unprecedented problem in the context of warfare. Lt . Gen. Sir Ian Hamilton, for example, summarized the difficulty of accurate battle history in the Preface to his own observer's diary of the Russo-Japanese War, entitled *A Staff Officer 's Scrap Book*. His concluding thought is often quoted out of context,<sup>63</sup> but the longer text of his 1905 comment is more than apropos to our discussion of autonomous weapons systems:

If facts are hurriedly issued, fresh from the mint of battle, they cannot be expected to supply an account which is either well balanced or exhaustive. On the other hand, it is equally certain that, when once the fight has been fairly lost or won, it is the tendency of all ranks to combine and recast the story of their achievement into a shape which shall satisfy the susceptibilities of national and regimental vain-glory. It is then already too late for the painstaking historian to set to work. He may record the orders given and the movements which ensued, and he may build hopes and fears which dictated those orders, and to the spirit and method in which those movements were executed, he has for ever lost the clue. On the actual day of battle naked truths may be picked up for the asking; by the following morning they have already begun to get into their uniform.<sup>64</sup>

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62. See generally Michael A. Newton, *Flying into the Future: Drone Warfare and the Changing Face of Humanitarian Law Keynote Address to the 2010 Sutton Colloquium*, 39 DENV. J. INT'L L. & POL'Y 601 (2011).

63. MICHAEL NEWTON ET AL., PROPORTIONALITY IN INTERNATIONAL LAW 299 (2014)

64. *Id.*

## VI. CONCLUSION

If there is anything we can predict about technological innovation, it is that it proceeds unpredictably. The potential for autonomous weapons is too immense, and the implications for the future of warfare too important to be assumed away or to remain unexplored. We should not be afraid of technology but should always seek to harness its development in ways that seem most suitable for human purposes. Any preemptive ban would be the result of a long diplomatic process and thus a suboptimal negotiated text that would be implemented only intermittently and undermined at will by motivated state or non-state actors. Thus, policymakers and those who seek to enhance the goals of *jus in bello* would be well served to advocate for focused research efforts that seek to overcome some of the most pressing problems facing the field. Compliance with the laws and customs of warfare cannot be cut and pasted into the thinking of practitioners and lawyers across contexts. We ought, therefore, to think critically and carefully about the role and relevance of autonomous weapons and to guide their development so that they advance the core purposes of *jus in bello*. Properly developed and deployed, autonomous weapons systems could in fact strengthen compliance with the law by reinforcing its laudatory goals: Balance, symmetry, military effectiveness, and, perhaps most of all, the enduring interests of humanity.

