

**THE *ROBOTICIZATION* OF WARFARE WITH
LETHAL AUTONOMOUS WEAPON
SYSTEMS (LAWS): MANDATE OF
HUMANITY OR THREAT TO IT?**

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I. INTRODUCTION

“It has become appallingly obvious that our technology has exceeded our humanity.”

*Albert Einstein*¹

Whether Einstein was correct is certainly debatable amongst reasonable minds, but regardless of its truth, especially in an era where at one extreme intellectual debate has been reduced to 140-character quips on Twitter regarding matters of life and death to the other where persons a world away can bear live witness on YouTube to atrocities in warfare, we owe it to our species to always question whether emerging technology serves as a point of evolution or de-evolution. Is it bringing us closer as humanity? Or, is it further increasing the emotional, moral, and psychological distance between individuals and societies? The answers to these questions are of great significance to the

1. See Ken Makovsky, *Is Technology Exceeding Humanity?*, FORBES (May 7, 2012), <https://www.forbes.com/sites/kenmakovsky/2012/05/07/is-technology-exceeding-humanity/#43afe9c86ea3> (quoting Albert Einstein: “it has become appallingly obvious that our technology has exceeded our humanity”).

progression of human civilization. They may shape the formation of new laws and policies or, as will be discussed later, may form the basis for determining the existence of legal rules of a natural law variant through the application of foundational principles.

While these questions are of general applicability, this paper will focus on the most contentious issue in emerging weapons technology today: lethal autonomous weapon systems (LAWS). Although definitions are varied, LAWS are weapon systems that are capable—at a base minimum—of detecting, identifying, selecting, and lethally engaging human targets in war without direct human supervision or control.²

Like debates over submarines and military aviation a century ago, this new debate has been highly contentious.³ Some of the arguments made against using submarines and aircraft in warfare—such as those based in martial honor, or the intuitive moral dilemma of killing in combat with little to no physical risk—are now being made with respect to LAWS.⁴ Other arguments are informed by the vast development of human rights law and a deeper understanding of the dignity of the person and concept of humanity within the realm of law. These arguments include, for example, the need to maintain moral agency over life and death decisions.⁵

A disappointment in the debate thus far has been the highly partisan literature from lawyers in the field that does not seek to discover the current status of the law but merely puts forth circular arguments to fulfill their predetermined conclusions of the law.

By no means is it the only example, but a spearhead in the movement to pre-emptively ban LAWS has been Human Rights

2. Michael N. Schmitt, *Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics*, HARV. NAT'L SEC. J. FEATURES 1, 4 (2013).

3. HUM. RTS. WATCH, LOSING HUMANITY: THE CASE AGAINST KILLER ROBOTS 1 (Nov. 2012) [hereinafter HUM. RTS. WATCH], <https://www.hrw.org/report/2012/11/19/losing-humanity/case-against-killer-robots> (asserting that “a relatively small community of specialists have hotly debated the benefits and dangers of fully autonomous weapons”).

4. See *id.* at 6 (noting that the evolution of warfare has progressed to semi-autonomous weapons that have removed the aggressor from physical danger and killing with the introduction of drone technology).

5. See *id.* at 38 (discussing the importance of human soldiers being able to emphasize with civilians compared to LAWS, which cannot).

Watch (HRW), which founded a campaign to stop the “Killer Robots.”⁶ Even the language that is used in many of these arguments is unnecessarily hyperbolic, seeking to invoke Hollywood science-fiction images of the post-apocalyptic world of the *Terminator* franchise where the machines took over the world. In its 2012 report, *Losing Humanity: The Case Against “Killer Robots,”* HRW noted that “killer robots” could be developed within 20–30 years and began its argument with a premise that “[f]ull autonomy would strip civilians of protections from the effects of war that are guaranteed under the law.”⁷ Human Rights Watch said its primary concern is the impact of LAWS on the protection of civilians in time of war, but this argument seems disingenuous in that the organization calls for a full international ban to the research, development, stockpiling, and use of LAWS regardless of whether the technology may actually enhance the protection of civilians in war.⁸ Further, the presence of new weapons technology on the battlefield has no effect on the legal prohibition against intentionally attacking civilians and civilian objects.⁹

Hyperbole and immovable political positions hinder informed debate that should help determine the *lex lata*, or as it may be, the *lex ferenda*.¹⁰ With great respect to the general nature of the work done by non-governmental organizations (NGO), states

6. See *id.* at 1–3 (positing that such “killer robots” are incompatible with international humanitarian law and would lead to further human suffering during times of war).

7. *Id.* at 30.

8. See *id.* at 1–2 (noting that “the primary concern of Human Rights Watch and IHRC is the impact fully autonomous weapons would have on the protection of civilians during times of war”); see also Schmitt, *supra* note 2, at 8 (arguing against the Human Rights Watch and asserting that a categorical ban on LAWS oversimplifies international humanitarian law and should be afforded a higher level of respect for its potential value).

9. See Schmitt, *supra* note 2, at 9 (theorizing that the introduction of autonomous weapons will not lead to greater suffering or injury against civilians because “the rule addresses a weapon system’s effect on the targeted individual, not the manner of engagement (autonomous)”).

10. See Nicholas W. Mull, *The Honor of War: Core Value of the Warrior Ethos and Principle of the Law of War*, 18 CHI.-KENT J. INT’L & COMP. 31–32 (2018), <http://studentorgs.kentlaw.iit.edu/jicl/wp-content/uploads/sites/5/2018/01/The-Honor-Of-War-1.pdf> (arguing in part that civilians who do not properly understand warrior culture when regulating the law often jeopardize the objectives of the law of war).

should not be bullied by lobbying groups promoting a highly isolated agenda without regard to second- and third-order effects, and in light of the awesome responsibility of exercising sovereign authority that requires a delicate balance of many interests and concerns. This is not to say that they are fully incorrect, but merely that some of the arguments put forth are circular and hyperbolic propaganda, which takes away from the persuasiveness of legitimate concerns of the increased *roboticization*¹¹ of the most complex manifestation of the human relationship—war.

On the other side of the debate are the realists that view LAWS as nothing more than an additional tool to vindicate state interests in an amoral worldview of warfare.¹² To them, moral agency should have no bearing on a state's decisions.¹³ Legal positivists (often one and the same) simply state there is no treaty law or specific rule of customary international law (CIL) banning LAWS, so they can only be judged by standards set forth for other weapons. That is, if certain persons can be legally targeted and killed in war because of their status or their actions, it is irrelevant whether such lawful killing is conducted by a human agent or machine agent. They “do not accept that a machine-made lethal decision is always and necessarily *mala in se*.”¹⁴ All that matters is whether a human or machine can regularly comply

11. The author has used this term, which admittedly is not a recognized word, to emphasize what is alleged to be taking over war as opposed to what it is losing with reference to the de-humanization of war. This term reflects that even when humans are still involved in heavily mechanized or robotic processes, those humans more so take on the character of machine as opposed to the machine taking on the character of humans, which is manifested in the notion of “automation bias.” This is a situation where human operators of machines begin to have blind faith trust in the program so as to lose the natural human inclination to question.

12. See Matthew W. Haiigarth, *Just War Theory and Remote Military Technology: A Primer*, in *KILLING BY REMOTE CONTROL: THE ETHICS OF AN UNMANNED MILITARY* 42 (Bradley Jay Strawser ed., 2013) [hereinafter *KILLING BY REMOTE CONTROL*] (contending that morality in war is “a set of empty and impotent platitudes”).

13. See *id.* (arguing that an amoral existence merits amoral warfare).

14. Kenneth Anderson & Matthew C. Waxman, *Law and Ethics for Autonomous Weapons Systems: Why a Ban Won't Work and How the Laws of War Can*, HOOVER INST. 16 (Apr. 9, 2013), <https://www.hoover.org/research/law-and-ethics-autonomous-weapon-systems-why-ban-wont-work-and-how-laws-war-can>.

with the *jus in bello*.¹⁵

This side of the debate is often no less open to exploring the possibility of a different outcome. Its position ignores two of the three foundational principles of the law of war: honor and humanity. This author has previously argued in another work for the necessity to recognize honor as the progenitor principle of the law of war, and it is of special relevance in any discussion regarding weapons law.¹⁶ Martial honor commands the soul of the professional warrior.¹⁷ It reinforces notions of mercy toward the defeated enemy, protection of the weak, sacrifice, and mutual respect, and it is the shame associated with dishonor that is the most powerful prophylactic enforcement of the law of war.

Lawyers in a post-honor Western world who are not a part of the unique culture of various warrior organizations ignore this reality, not because of malicious intent, but simply due to a lack of awareness. They often overemphasize the importance of international criminal law as a deterrent as well as the need for highly specific textual rules to regulate conduct in warfare as opposed to encouraging application of broader principles that form an integral part of the warrior culture that is contemporaneously aligned with the law.

Instead of recognizing notions of natural law as manifested through general principles, the realists and legal positivists maintain that the foundational principles of the law of war, especially as it relates to the invocation of the Martens Clause, have no independent legal effect.¹⁸

15. See *id.* (asserting that “what matters morally is the ability consistently to behave in a certain way and to a specified level of performance”).

16. See generally Mull, *supra* note 10, at 2–3 (similarly, the author has intentionally used the phrase *law of war* as opposed to international humanitarian law (IHL) as typically used by non-government organizations and academics due to the regular conflation and confusion that occurs with international human rights law when using IHL and because the focus of the law should be the unique circumstances to which it applies to license otherwise unlawful conduct—war).

17. See *id.* at 2 (noting that to the “professional warrior of West and East, [martial honor] is a concept that is the heart of the warrior ethos, which transcends geography”).

18. See Schmitt, *supra* note 2, at 31–32 (suggesting that the Martens Clause is of little importance in the modern era due to codification and robust agreement of CIL and generally there is no gap in the law because the law is clear that weapons must be able to distinguish and not be calculated to cause unnecessary suffering, and that all states are required to conduct individual legal reviews).

This is a position that the author finds untenable. To recognize general principles of law is to recognize that its codified or specific rules must tend toward the achievement of the objectives of the general principles, and in the absence of codified law or specific CIL, the general still operates to constrain, or in some cases, license behavior. In the domain of the law of war, this pertains to the balancing of military necessity with humanity while preserving the honor of the warriors engaged in conflict. This is done in part, but not exclusively, through application of the operational principles of distinction and proportionality (including precautions in attack).¹⁹

Further, the Martens Clause is clear in its construct, and the historical development of the law of war is likewise clear that the law of war is based in natural law considerations, as opposed to what has become the default legal positivist approach in the contemporary world.²⁰ As the author has argued in his previous work regarding honor as the progenitor principle of the law of war, human civilization has regulated the conduct of humans through three concepts: honor, morality, and law.²¹ While these concepts can and often do have distinction, the ideal scenario, and one in which the greatest compliance is found, is when all three concepts align.²² Admittedly, alignment has not been true of all bodies of law, but as stated, the law of war did not develop as an amoral civil legal system; rather, it emerged as a system of honor among warriors, and later from morality as well, as propagated through Just War Theory.²³

19. See Mull, *supra* note 10, at 15–16 (positing that the foundations of the laws of war include mercy, moderation (including necessity, proportionality, and precaution), generosity and courtesy).

20. See *id.* at 25 (noting that “[m]artial honor within the law of war was a natural extension of the national honor foundation of general international law . . . but it also evolved from warrior codes of cultures such as those previously discussed”).

21. See *id.* at 2 (asserting that honor, religion, and the law have been used as moral standards to regulate human behavior throughout history).

22. See *id.* at 6 (consistently applying principles of religion, law, and honor while engaged in warfare is the greatest tool to mitigate suffering).

23. See *id.* at 20 (noting that honor has historically been integral to acts of war); see also THOMAS AQUINAS, ON LAW, MORALITY, AND POLITICS 170–71 (William P. Baumgarth & Richard J. Regan eds., Richard Regan trans., 2d ed. 2002) (describing codes of conduct pertaining to homicide and self-defense).

Legal positivists do not argue that all LAWS are lawful but that merely as a category LAWS cannot be said to be unlawful.²⁴ Mostly, they take a “wait and see” pragmatic approach to the development of LAWS as follows.²⁵ First, LAWS is too expansive of a category to state that all should be banned because autonomy is merely a feature of a weapon system, but not the weapon itself.²⁶ Seeking to ban LAWS as a category would be similar to saying that all weapon systems that use radar technology should be banned despite the wide multitude of weapons that utilize radar as a component of their operations. Thus, each LAWS must be judged on a case-by-case basis through the traditional legal review process.²⁷ Second, we should focus more on the quantitative goal of reducing casualties in war, of civilians as well as combatants, and if LAWS can actually save lives, then that is all that matters. The general appeal of this camp is that it recognizes that despite some unique characteristics of LAWS, by and large a review of individual weapon systems can be properly conducted by the traditional review process.²⁸ Similar to the argument against LAWS, this enables moral distancing from the greater picture of how this understanding of law may impact humanity.

The regulation of emerging weapons technology is, and

24. See Schmitt, *supra* note 2, at 29 (arguing that the United States has decided to examine the legality of individual weapons and weapon systems, and not categorically without reference to a specific system that can be analyzed).

25. See *id.* at 30–31 (providing that the military has adopted a wait-and-see approach, demonstrated by its adoption of catch-all guidelines for assessing the legality of weapon systems being considered for acquisition (including LAWS)).

26. See *id.* at 22 (reasoning that LAWS should not be categorically banned because the value of their wide-ranging potential military advantage is proportional to perceived harms).

27. See *id.* at 28 (noting that it is U.S. policy to review weapon systems both prior to formally developing the system and again after the weapon is fielded); see also, e.g., Meeting Report, Int’l Comm. of the Red Cross, *Autonomous Weapon Systems: Implications of Increasing Autonomy in the Critical Functions of Weapons*, Expert Meeting 57–59 (2016) [hereinafter Expert Meeting on AWS], <https://www.icrc.org/en/publication/4283-autonomous-weapons-systems> (statements of representatives of the Ministry of Defence of the UK arguing that LAWS means different things to different people, and that different militaries employ unique approaches to assess and regulate new weapons systems).

28. See Schmitt, *supra* note 2, at 30–31 (describing how the legality of a new weapons system is assessed by the degree of perceived injury it will cause and how effective the system will be at achieving military objectives).

always has been, one of the foremost subjects and drivers of the development of the law of war. “The development of new types of weapons,” e.g., crossbows, firearms, and bayonets, “has often resulted in public denunciation of their allegedly cruel effects and in attempts to prohibit their use in armed conflict.”²⁹ The potential for development and employment of true LAWS on the battlefield cannot be ignored by lawyers. The development of the tools of war is far too important for lawyers to take a “wait and see” approach when the potential dangers for humanity are so manifest. The “wait and see” approach has resulted in a world with nuclear, biological, and chemical weapons.³⁰

This paper seeks to contribute to the debate through an attempt to objectively approach the subject matter without preconceived attachment to a particular outcome of the analysis. Unlike nuclear weapons that were developed and produced for many years prior to any real attempts to put the jack back in the box, the issue of LAWS presents a unique opportunity in that diplomatic discussions are ongoing before any true LAWS are developed or employed due to the proactive efforts of attorneys, philosophers, religious leaders, and policy advocates.

Nuclear weapons were developed amidst an abundance of fear among states that was then transmitted directly by governments to their citizens.³¹ But we must remember that, while the human rights attorney in civilian society does not typically account for or comprehend the second- and third-order security effects of his or her positions and often does not understand national security holistically, governments also lose track of balance amidst the capture that occurs from the overwhelming responsibility of the security of a country’s population.³² Governments are easily prone

29. GENERAL COUNSEL OF THE DEP’T OF DEF., DEPARTMENT OF DEFENSE LAW OF WAR MANUAL ¶ 6.2.1 (2016) [hereinafter LOW MANUAL], <https://www.defense.gov/Portals/1/Documents/pubs/DoD%20Law%20of%20War%20Manual%20-%20June%202015%20Updated%20Dec%202016.pdf?ver=2016-12-13-172036-190>.

30. Dakota S. Rudesill, *Regulating Tactical Nuclear Weapons*, 102 GEO. L.J., 99, 106 (Nov. 2013) (discussing how the United States’ legislative efforts to regulate nuclear weapons have remained largely unsuccessful).

31. *See id.* at 118 (describing how the Russian government “fed the flames” of an impending nuclear war to its citizens during the Cold War).

32. *See id.* at 114 (detailing how the United States heavily strengthened its military alliances in Europe to counterbalance the Soviet Union’s growing nuclear arsenal).

to viewing threats to security as greater than what they are, just as the special interest human rights attorney is prone to undervalue them. This is not necessarily a result of attempts to confuse or mislead a population but simply because we as humans view the world through our own frames of reference.

Academic integrity, and the contribution to human civilization that comes from academia, is dependent upon confronting problems such as LAWS with the greatest objectivity possible by being mindful of our reference biases and honestly appraising opposing views. It is through this process that we may successfully find the proper balance between military necessity and humanity, which serves as the foundation for the law of war.

In order to form an ultimate opinion as to whether LAWS are generally permissible or prohibited by the law as it exists now, *lex lata*, or if not currently prohibited, whether the law should codify such a prohibition, *lex ferenda*, this paper will explore the background of the subject matter followed by an analysis of the arguments for and against LAWS.

Part II will look to the background of weapons law generally, and then more specifically regarding LAWS. First, the history of the law of weapons in warfare will be explored and will inform the later legal analysis, including historical examples, reasons for regulations, and derivative principles that guide the legal review of new weapons and weapon systems. Second, prior to conducting a full legal analysis, LAWS must be defined with enough specificity to properly understand the applicability of the subsequent arguments. In doing so, the section will look at different proposed definitions of LAWS, a taxonomy of autonomy in robotic systems, and examples of precursor weapons and weapon systems either currently fielded or in development. Third, we will look at the current work being undertaken in the international community to deal with LAWS, along with some state policies, specifically looking at the U.S. Department of Defense Directive on LAWS.³³

Part III will analyze the legality of LAWS as informed by well-

33. U.S. DEPT OF DEF., DIRECTIVE 3000.09, AUTONOMY IN WEAPON SYSTEMS 7 (2012) (incorporating change May 8, 2017) [hereinafter DOD DIRECTIVE 3000.09], <http://www.whs.mil/Directives/issuances/dodd/10/8/2017> (discussing the guidelines for review of certain autonomous or semi-autonomous weapons systems).

established rules governing weapons and weapon systems in warfare, and will also address issues of human rights, honor, ethics, morality, and policy generally. While these issues cannot be said to necessarily create a current status of law, it is unquestionable that they inform the development of new law or can reveal natural law. This analysis will specifically address the primary arguments put forth against LAWS: (1) that they are incapable of distinction; (2) that they are incapable of applying the rule of proportionality; (3) that they would create a responsibility gap for violations of the law of war amounting to war crimes; (4) that they would lower the threshold of states to resort to armed force; and (5) that they offend the principle of humanity and are contrary to the “dictates of the public conscience” as manifested in the positive law through the Martens Clause.³⁴

Part IV will conclude by summarizing the findings, and recommending a way forward to build consensus among the global community.

II. BACKGROUND

A. *Historical Development of Weapons Law*

As noted, the historical emergence of the law of war began with limits on the types of weapons to be used in warfare.³⁵ These laws and customs emerged from the shared martial honor among

34. Hague Convention No. II Respecting the Laws and Customs of War on Land, Preamble, Jul. 29, 1899, 32 Stat. 1803, T.S. No. 403 [hereinafter Hague II 1899] (“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.”); The Martens Clause, aptly named for the delegate to the Convention representing the Russian Empire, has been regularly incorporated into subsequent law of war treaties, to include as a substantive provision, and in the opinion of this author is a recognition that there is a natural law governing conduct in war beyond that of which has been reduced to treaty or widely understood as CIL. The Martens Clause is adaptable to changes in international relations, technology, and tactics of which the positive law cannot keep pace.

35. WILLIAM H. BOOTHBY, *WEAPONS AND THE LAW OF ARMED CONFLICT* 9 (2d ed. 2009).

combatants.³⁶ Like many honor systems, the rules often were not expected to be followed to the same degree in conflicts with outsiders, or more commonly known as barbarians from the ancient Greek word *barbaroi* referring to all who were not Greek, e.g. Greeks against Persians.³⁷ The Hellenic people of ancient Greece had a custom known as *koin nomina* that prohibited “unhoplite” arms.³⁸ The Hindu Code of Manu in 200 CE prohibited the use of poisoned arrows.³⁹ One of the most often cited examples in the medieval period was the Lateran Council of 1139 CE attempting to ban the use of crossbows in warfare.⁴⁰ This latter prohibition is also criticized historically in that many focus on its motivation to prevent peasants from posing a threat to the knighted gentry.⁴¹ However, taken in a less pejorative light it is a reflection of the belief that the knights possessed a shared sense of honor and understanding of war, and that warfare was to be a competition of skill in courageous conflict. In effect, the crossbow could be said to enable the killing without exposure to immediate physical risk of injury as well, which is the beginning of arguments that are equally applicable today to LAWS.

The prohibitions on certain types of weapons reflected that long before the Lieber Code, warrior cultures had a common understanding of proper conduct in battle.⁴² Although typically not reduced to codified law, they were an integral part of the warrior honor codes that possessed striking similarities that transcended political or cultural borders.⁴³ There were also

36. See Mull, *supra* note 10, at 4 (establishing that the concept of honor—especially martial honor—forms the basis for the law of war, particularly as it relates to compliance with international norms of conduct).

37. See William Rollo, *Nationalism and Internationalism in the Ancient World*, 6 GREECE & ROME 130, 132 (1937) (discussing how Greek leaders set up celebrations to honor the death of barbarians); *id.* at 134 (defining *barbaroi* as outsiders like the Persians who were separate and distinct from the Greeks).

38. See BOOTHBY, *supra* note 35, at 8.

39. *Id.* at 8.

40. *Id.* at 8–9.

41. See *id.* at 373 (attributing the ban on crossbows in part to their effect on the balance of power between knights and infantrymen of lower social strata).

42. See *id.* at 9 (noting poison as an example of improper battlefield conduct).

43. See *id.* (observing early writings reference to law of nations and their basis in established customs); see also Mull, *supra* note 10, at 2 (asserting that warriors of the East and West recognize honor as a paradigm).

examples of moral codes as well that influenced battlefield behavior as can be said of the Edicts of Ashoka in the third century BCE that were influenced by his own conversion to Buddhism, and the medieval Just War Theory that emerged from the moral codes of the Catholic Church.⁴⁴

It is important to look to the historical development of the body of law as it shows the critical importance of notions of honor and morality to its understanding. These two concepts—honor and morality—will be discussed in more depth later as they are the bedrock of the Martens Clause, and of the understanding that the law of war is far greater than the codified provisions of treaties; it is a creature of natural law.

Earlier in its development, the greatest opposition to emerging weapons technology was not necessarily the effects of employment alone, but it was deeply rooted in the sense of what was honorable on the battlefield.⁴⁵ Today, human rights attorneys would view the natural inclination to be wary of weapons that can be employed with zero risk to the operator such as remotely piloted vehicles (RPVs) (or colloquially ‘drones’) from the perspective that killing in a human rights paradigm is almost invariably linked to an imminent threat to the life of another.⁴⁶ Historically, and to a certain degree still resident in warrior cultures, such weapons were considered dishonorable weapons reflecting cowardice.⁴⁷ This should not necessarily be understood in some machismo type of way as the anti-honor culture may promote, but it is rooted in that warrior honor, at its base, is about displaying a mutual respect for fellow warriors whose lives are taken not as a result of personal animosity, but out of duty.⁴⁸ The

44. Barbara O'Brien, *The Emperor Ashoka, Patron of Buddhism*, RETHINKING RELIGION (Aug. 16, 2017), <https://rethinkingreligion-book.info/the-emperor-ashoka-patron-of-buddhism/>; see also AQUINAS, *supra* note 23, at 170–71 (describing when it is lawful for public authorities to kill an aggressor).

45. See BOOTHBY, *supra* note 35, at 373 (discussing the unstated reason for the ban on the use of crossbows).

46. See HUM. RTS. WATCH, *supra* note 3, at 49–50.

47. See Anderson & Waxman, *supra* note 14, at 8 (drawing attention to a common criticism of weapons throughout history that have reduced combat risks for the party using them).

48. See Mull, *supra* note 10, at 25–26 (asserting that warriors recognized their contemporaries as members of the same class, obligated to act honorably toward one

warrior gives up his individuality to the collective purpose.⁴⁹ This is much more than the notion of dignity that may be argued by a human rights attorney because it is a level of respect that has been earned in mutual sacrifice, loyalty, and shared performance of duty for one's country.⁵⁰

Over the centuries, and especially as a product of the industrial revolution, the opposition to long-range weapons like the cross bow to artillery and to aircraft gave way through the adaptation of warrior honor in light of the profession of arms.⁵¹ It gave way in part because the operators of these weapons may have mitigated the immediate physical risk to life, but there was still some risk as every new weapon will soon find others designed to counter the benefits gained.⁵² In recent decades though, the emergence of the RPV has eliminated all physical risk, and it once again called into question whether warrior honor could be preserved in light of it.⁵³ But, as is relevant to the later analysis, the operator must still bear the psychological burden of making a life and death decision, preserving that level of respect and realization that war involves the taking of human life.

While there have been movements in the past denouncing certain methods of employment of the destructive forces of war such as submarines, aircraft, or RPVs, the actual law has typically focused on the regulation of weapons from an effects-based approach, e.g. the ban on lasers designed to cause permanent blindness, the prohibition of weapons designed to produce incendiary effects as the primary means of injury, and projectiles with fragments not detectable in X-ray.⁵⁴ This is why

another).

49. *See id.* at 8 (noting that the conduct of an individual warrior reflects upon the collective unit).

50. *See id.* at 18–19 (noting that dignity is distinguishable because it recognizes all human beings share in fundamental and uniquely human experiences).

51. *See* Anderson & Waxman, *supra* note 14, at 8–9 (observing a tendency for the party opposing a certain weapon to eventually adopt it if they could benefit from its use).

52. Robert Sparrow, *War without Virtue? in* KILLING BY REMOTE CONTROL, *supra* note 12, at 88 (Bradley Jay Strawser ed., 2013).

53. *See id.* at 86 (questioning whether traditional conceptions of military virtues will remain relevant as combat is increasingly conducted from the safety of a desk).

54. *See generally* Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which may be Deemed to be Excessively Injurious or to Have

the LAWS issue is somewhat problematic to analyze; the objection is not based on the actual effects of any weapons that may be employed by a LAWS, but the function of one component of the weapon system.

B. LAWS Defined and Contemporary Examples of Autonomy in Weapon Systems

Before undertaking a full legal analysis of LAWS it is important to formulate a common understanding of the definition of LAWS and develop a taxonomy of autonomy in robotics. To do this, we will start first by producing a definition of a weapon/weapon system before adding autonomous functions. From here a working definition of autonomous weapon systems (AWS) can be identified, followed by understanding what it means to be a LAWS.

Weapons and weapon systems are “all arms, munitions, materiel, instruments, mechanisms, devices, and those components required for their operation, that are intended to have an effect of injuring, damaging, destroying, or disabling personnel or property,” to include less-than-lethal weapons, formerly known as non-lethal weapons.⁵⁵

1. Definition of LAWS and Taxonomy of Autonomy

An immediate challenge in a discussion of the LAWS issue is agreeing upon a precise definition of AWS. Several definitions have been proposed by various States, scholars, and the International Committee of the Red Cross (ICRC).⁵⁶ The focus of the definition has been autonomous weapon systems (AWS)

Indiscriminate Effects (Protocols I, III, IV) Oct. 10, 1980, 1342 U.N.T.S. 137 (as amended Dec. 21, 2001) [hereinafter Convention on CCW Prohibitions] (prohibiting weapons which injure by fragments not detectable by X-rays in Protocol I, prohibiting and restricting use of incendiary weapons in Protocol III, and prohibiting use of blinding laser weapons in protocol IV).

55. Sec’y of the Navy Instruction (SECNAVINST) 5000.2E, *Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System* ¶ 1.6.1(c) (2011) [hereinafter SECNAVIST 5000.2E].

56. See Expert Meeting on AWS, *supra* note 27, at 11, 52, 59 (proposing definitions based on whether they were classified as “highly automated,” “semi-autonomous,” or “autonomous”).

generally without regard to its intended purpose.⁵⁷ This paper, however, only addresses AWS that are designed to lethally attack personnel targets (hence LAWS) because the type of weapons described in the next section such as counter rocket and missile defense systems that are designed solely as a means to preserve life by attacking an inbound projectile are not subject to the same arguments regarding honor, morality, distinction, or proportionality even if designed with full autonomy.⁵⁸

On the other hand, HRW and its supporters are demanding a complete ban against all AWS, regardless of intended targets being incoming missiles or troops in the field, citing in part that even a successful destruction of an incoming missile threat can produce shrapnel that causes civilian casualties.⁵⁹ The likelihood of unintentional collateral harm to civilians is in no way unique to AWS, and under no interpretation of the law of war is the legal standard one of perfection.⁶⁰ This would give cause to ban human operated weapon systems utilizing the same munitions as well. The law of war developed with awareness of the fog of war, and it specifically envisions a certain level of collateral harm to civilians.⁶¹ But, as will be discussed in the section on proportionality, there may be cause to rethink the law as it would apply to LAWS, both from a moral and practical level.

Currently, LAWS do not exist in operation despite the existence of some weapon systems with significant autonomous features, because all currently known in development or currently deployed ultimately require some type of human input to execute a kinetic strike.⁶² Some groups such as HRW, and even some

57. *See id.* (focusing instead on what aspect of the human-machine relationship ensured compliance with international humanitarian law).

58. *See* Expert Meeting on AWS, *supra* note 27, at 11 (noting that these systems are anti-material weapons, and are therefore not lethal weapons, or in other words, anti-personnel weapons).

59. HUM. RTS. WATCH, *supra* note 3, at 13.

60. *See* Schmitt, *supra* note 2, at 21 (asserting that the standard is one of reasonableness).

61. *Id.* at 15 (citing the customary law prohibition on making civilians and civilian objects the object of attack).

62. *See* HUM. RTS. WATCH, *supra* note 3, at 3 (recognizing fully autonomous weapons do not yet exist despite a number of countries having developed or deployed autonomous systems).

participants in the Expert Meetings of the ICRC on LAWS argue that there is no legal distinction between offensive and defensive weapons.⁶³ While this is certainly true as a general rule, that general rule gives way when the most potent objection to the system is the delegation of moral agency, the decision of life and death to a machine.

The ICRC's working definition of AWS is:

- *Any weapon system with autonomy in its critical functions. That is, a weapon system that can select (i.e. search for or detect, identify, track, select) and attack (i.e. use force against, neutralize, damage, or destroy) targets without human intervention.*⁶⁴

The U.S. Department of Defense defines an AWS as:

- *a weapon system that, once activated, can select and engage targets without further intervention by a human operator. This includes human-supervised autonomous weapon systems designed to allow human operators to override operation of the weapon system, but can select and engage targets without further human input after activation.*⁶⁵

The United Kingdom has adopted a framework in which its definition of AWS is likely limited to the field of science-fiction. To the U.K., an AWS is “capable of understanding higher-level intent and direction,” or what would be called in military terms as the Commander’s Intent or End State. It would have a “sophisticated perception of its environment . . . [and] capable of deciding on a course of action from among a number of alternatives, without depending on human oversight and control” and without “merely follow[ing] a pattern of rules in a predictable way.”⁶⁶ Based on this definition, it becomes apparent why the U.K. has stated its policy is to never develop what it views as AWS.⁶⁷ In reality, such an artificial intelligence that replicates the human decision-making process is unlikely to ever be

63. See Expert Meeting on AWS, *supra* note 27, at 18 (asserting that they are both used to carry out attacks).

64. *Id.* at 8.

65. DoD DIRECTIVE 3000.09, *supra* note 33, at 13–14.

66. Expert Meeting on AWS, *supra* note 27, at 57.

67. See *id.* at 59 (ensuring human oversight, authority, and accountability for its use of weapons).

possible.⁶⁸ But, it does bring to bear an understanding that AWS should not be confused with automated weapons such as a traditional landmine or trip wire; both operate without complex algorithms or unpredictability.⁶⁹ The decision to engage the target was made directly by the human that emplaced it.⁷⁰

Autonomy in robotics is far different than the notion of autonomy of a person.⁷¹ Machines do not have free will, they merely operate based upon mathematical functions.⁷² The complexity of such algorithms will increase over time and may provide the appearance of a machine that learns in the same way as a human.⁷³ However, machine learning is not human learning. Machine learning can be categorized into one of three categories: (1) supervised learning; (2) reinforcement learning; and (3) unsupervised learning.⁷⁴ The first two are currently possible, whereas the third is not, and may likely never be.⁷⁵

In supervised learning a machine is provided a set of examples with an expected outcome.⁷⁶ An example of this is the faces feature on the photos program for Mac computers in which the machine is provided with one label (a photo of a person) and it then applies its function to detect all photos containing that person.⁷⁷

68. See *id.* at 58 (listing several key human attributes regarding military decision making that a machine will likely never be capable of understanding).

69. See Convention on CCW Prohibitions, *supra* note 54, at 168 (providing the definitions of conventional means of warfare like mines and booby-traps).

70. See *id.* (defining mines as “any munition placed under, on or near the ground . . . designed to be detonated or exploded by the presence . . . of a person or vehicle”).

71. Expert Meeting on AWS, *supra* note 27, at 37 (noting that machine learning is mainly concerned with finding statistical relationships in data).

72. See *id.* (explaining how data from real-world examples is used to create algorithms for machines to utilize).

73. Ray Kurzweil, *The Coming Merging of Mind and Machine*, SCI. AM. (Mar. 23, 2009), <https://www.scientificamerican.com/article/merging-of-mind-and-machine/> (describing how the increasingly fast-moving technological progression of artificial intelligent creation will cause those creations to eventually surpass human intelligence).

74. Expert Meeting on AWS, *supra* note 27, at 37.

75. *Id.* at 38 (explaining that unsupervised learning does not currently exist and may not even be possible).

76. *Id.* at 37.

77. *Id.* at 38 (explaining that computers use a supervised learning process to recognize objects in pictures and group those pictures together); J.D. Biersdorfer, *Finding*

Reinforcement learning applies algorithms for a machine to ‘learn’ how to choose a course of action toward achieving a task to receive the maximum reward, which is a math function to compute a score.⁷⁸ Think of this as a computer playing a board game. However, no matter how proficient the machine gets at playing the game, it does not possess the capacity to decide to play another game.⁷⁹

Lastly is unsupervised learning, which would be closely akin to true artificial intelligence. The machine’s algorithm would enable it to learn and develop courses of action without a pre-determined external goal.⁸⁰ This is the type of autonomy that would be covered by the narrow definition proposed by the U.K.⁸¹

The point of illustrating these learning categories is to highlight that any unpredictability associated with AWS is a result of the environment in which they may be employed, or unexpected technical failures.⁸² An AWS, like any other robot, operates only within the left and right lateral limits of the mathematical algorithms governing its program.⁸³

Unfortunately, the issue becomes even more nuanced when assessing differing levels of autonomy in weapon systems. There are two popular classifications of levels of autonomy: one proscribed by HRW, and the other from the U.S. Department of Defense. Both break down levels of autonomy into three levels

Photo Programs That Recognize Faces, N.Y. TIMES (Mar. 24, 2016), <https://www.nytimes.com/2016/03/25/technology/personaltech/finding-photo-programs-that-recognize-faces.html> (explaining some facial-recognition programs offered for identifying people in photos by providing examples such as a program used by Mac computers).

78. Expert Meeting on AWS, *supra* note 27, at 38.

79. *Id.*

80. *Id.*

81. JOINT CHIEFS OF STAFF, JOINT PUBLICATION 0-30.2: UNMANNED AIRCRAFT SYSTEMS, DIRECTOR CONCEPTS AND DOCTRINE 13 (2017) (defining automated systems and autonomous systems, including their learning systems, as used by the U.K.).

82. See Expert Meeting on AWS, *supra* note 27, at 8 (explaining that an autonomous system must have set guidelines within which it can operate because any operation by the weapons system that is affected by the environment would be unpredictable and unforeseeable).

83. *Id.* at 39 (explaining that guidelines are set via mathematical algorithms before the system starts operation and control what the system should do).

that correlate.⁸⁴

Human Rights Watch

- Human-in-the-Loop
- Human-on-the-Loop
- Human-out-of-the-Loop

U.S. Department of Defense

- Semi-Autonomous
- Human-Supervised Autonomous
- Fully Autonomous

Human Rights Watch advocates that all systems qualifying as Human-on-the-Loop or Human-out-of-the-Loop should be preemptively banned.⁸⁵ The characteristics of the categories are the same as paired in the table above. For sake of clarity, the HRW terms will be used to define the levels of autonomy. A human-in-the-loop system includes weapon systems that may “employ autonomy for engagement-related functions including, but not limited to, acquiring, tracking, and identifying potential targets; cueing potential targets to human operators; prioritizing selected targets; timing of when to fire; or providing terminal guidance” for individual or target groups selected by a human operator.⁸⁶ These would include so-called “fire and forget” munitions like a missile that locks into a heat signature of a target selected by a human operator and deployed by the human operator.⁸⁷ Or, certain naval mines or torpedoes that can hone in on pre-programmed signatures to engage those targets in a controlled environment.⁸⁸ While these weapon systems utilize autonomous functions they do not engage a target without human operator control; the moral agency of the life and death decision resides

84. See U.C. JHA, KILLER ROBOTS: LETHAL AUTONOMOUS WEAPON SYSTEMS, LEGAL, ETHICAL AND MORAL CHALLENGES 17 (2016) (comparing HRW with DoD); see also HUM. RTS. WATCH, *supra* note 3, at 2 (defining Human-in-the-Loop weapons, Human-on-the-Loop weapons, and Human-out-of-the-Loop weapons); DOD DIRECTIVE 3000.09, *supra* note 33, at 3 (defining Semi-Autonomous weapons systems, Human-Supervised-Autonomous Weapons systems, and Autonomous Weapon systems).

85. HUM. RTS. WATCH, *supra* note 3, at 2.

86. DOD DIRECTIVE 3000.09, *supra* note 33, at 14.

87. *Id.*; see Schmitt, *supra* note 2, at 5 (describing how a target is identified by the human pilot of the missile and then the aircraft locks onto that target and attacks after the identification process is complete).

88. Expert Meeting on AWS, *supra* note 27, at 13–14 (describing the different types of torpedoes and sea mines and how they operate under the initial targeting of a human operator and then fire on their own when the target is in range).

with the human not the machine.⁸⁹ Systems currently deployed operate on this spectrum of autonomy.⁹⁰

Human-on-the-Loop systems are an AWS that enables a human operator to intervene with a decision made by the AWS based on its programming.⁹¹ Thus, a human is aware of the products of the AWS, and if there appears to be an issue the human operator can terminate the engagement.⁹² Although this system may appear on its face to preserve “meaningful human control” it still raises the concerns of delegating the decision of life and death, especially in light of the well-established phenomenon of “automation bias,” which refers to the inclination to have blind faith in the operation of programs even when there may be evidence to suggest the contrary.⁹³ It is in part what this author referred to as an aspect of the *roboticization* of warfare in that even when a human operator can intervene, the operator has effectively taken on the characteristics of the robot despite his involvement.⁹⁴ The human ceases to apply his own free thought and intuition in favor of acting as an algorithm designed to simply execute a function when produced with a result from another machine component.⁹⁵ Human supervision may be nominal in light of our modern tendencies to trust products of algorithms as if divinely delivered. Admittedly there are times when “automation bias” may not be present such as the 1988 incident when the U.S.S. Vincennes erroneously shot down an Iranian commercial airliner.⁹⁶ In that case, the ship’s computer systems

89. See Schmitt, *supra* note 2, at 6 (explaining that all autonomous systems are supervised at some level by a human operator and cannot engage a target without a human operator).

90. *Id.*

91. See Amos Guiora, *Accountability and Decision Making in Autonomous Warfare: Who is Responsible?* 2 UTAH L. REV. 393, 398 (2017) (discussing the use of autonomous weapons systems for offensive purposes).

92. DoD DIRECTIVE 3000.09, *supra* note 33, at 14.

93. HUM. RTS. WATCH, *supra* note 3, at 13.

94. *Id.* at 12–13 (describing that even when a human has the power to intervene with an autonomous system they trust the judgment of the machine more than their own and chose not to act on their own opinions).

95. *Id.* (explaining that a person can experience automation bias and choose not to intervene, even though it would be possible to do so, on the decisions of an automated system because the human is relying too heavily on the system to be correct).

96. Schmitt, *supra* note 2, at 13.

correctly identified that the aircraft was in ascent, but human error led the crew to believe it was descending in an attack profile toward the ship.⁹⁷ This incident is used as an example by proponents of autonomy to suggest that human-in-the-loop is not a solution to all problems in targeting.⁹⁸ This is of course only one anecdotal example that does not take into account that the foundation of opposition arguments is not that machines are necessarily unreliable, but that LAWS delegate agency of life and death decisions. Further, this was nearly thirty years ago, and it cannot be doubted that automation bias is more prevalent today with a rising generation of adults for whom computer technology has permeated every aspect of their lives since childhood.

Human-out-of-the-Loop systems are synonymously described as the fully autonomous system in which the machine uses autonomy for all engagement-related functions up to and including launching a kinetic strike.⁹⁹ These systems have yet to be developed or employed, but are of the greatest concern to opponents of LAWS.¹⁰⁰

These categories are relatively focused on the specific decision to execute an attack, but they may be oversimplified in the sense that the level of autonomy considered acceptable from a legal or political perspective may require greater description. Some authors have advocated that using a taxonomy of autonomy produced by actual roboticists may be more apt.¹⁰¹ A ten-level autonomy scale developed by Sheridan and Verplank at the Massachusetts Institute of Technology (MIT) in 1978 can easily fit into a targeting process:

Level of Autonomy
Description

97. *Id.*

98. *See id.*

99. *See* HUM. RTS. WATCH, *supra* note 3, at 2 (explaining that human-out-of-the-loop weapons refers to fully autonomous weapons because of their limited human supervision); DOD DIRECTIVE 3000.09, *supra* note 33, at 14 (explaining that autonomous weapons systems may be used to launch a kinetic strike.).

100. *See* HUM. RTS. WATCH, *supra* note 3, at 1, 3 (explaining that fully autonomous weapons do not exist yet but that they are the primary concern of the Human Rights Watch and International Human Rights Clinic regarding the protection of the civilians).

101. Tim McFarland, *Factors Shaping the Legal Implications of Increasingly Autonomous Military Systems*, 97 INT'L REV. RED CROSS 1313, 1320 (2015); *see also* JHA, *supra* note 84, at 14.

- 1 (Low) Computer offers no assistance; human completely responsible
- 2 Computer offers a complete set of decisions/actions for human decision
- 3 Computer narrows course of action (COA) down to a few
- 4 Computer suggests a particular COA
- 5 Computer executes suggested COA if the human approves
- 6 Human operator provided a limited time to intervene before automatic execution of selected COA
- 7 Computer executes automatically, then informs operator after
- 8 Computer informs operator after execution only if the human asks
- 9 Computer informs the operator after execution if it decides to do so
- 10 (High) Computer decides everything and acts truly autonomously, ignoring the human operator completely¹⁰²

The ten-level taxonomy may allow for a greater understanding of an acceptable level of autonomy depending on the intended targets of the system. As an example, for a missile-defense system an autonomy level up to 6, or possibly 7, may seem perfectly reasonable based on the overwhelming need for fast response times and the fact that the target is not a human. On the other hand, for personnel targets, especially targeting of a deliberate nature, or not as a means of support to troops-in-contact, autonomy levels above 3 may seem inappropriate. These specifics of course are more akin to informing the development of policy within militaries that may withhold legal authority for certain strikes to higher levels of command through rules of engagement.¹⁰³

102. McFarland, *supra* note 101.

103. DOD DIRECTIVE 3000.09, *supra* note 33, at 2–3 (informing agents that the U.S. policy is officially that autonomous and semi-autonomous weapons systems will be designed so that human commanders will be the ones to make the judgment calls on the appropriate use of force in accordance with the law of war, treaties, weapons systems safety rules, and rules of engagement).

In fact, despite its three-part taxonomy, the U.S. Department of Defense has seemed to take this type of approach.¹⁰⁴ Its directive to operational commanders prohibits any targeting of personnel by human-on-the-loop or human-out-of-the-loop systems.¹⁰⁵ Human-on-the-loop systems are permitted to operate to select and engage targets for “local defense to intercept attempted time-critical or saturation attacks” to defend ships and land-based installations as example.¹⁰⁶ Human-out-of-the-loop systems would be limited to “non-lethal, non-kinetic force, such as some forms of electronic attack, against materiel targets.”¹⁰⁷

2. Current Weapon Systems with Autonomous Features

Human-on-the-Loop, or human-supervised autonomous weapon systems, are currently fielded.¹⁰⁸ These systems are generally counter rocket and missile defense systems such as the U.S. Aegis system employed by the U.S. Navy and the land-based Patriot missile defense systems.¹⁰⁹ All of the current human-on-the-loop systems would be described in military terms as anti-materiel weapons because they are not designed or employed to engage personnel targets.¹¹⁰ These systems should inform the debate of LAWS in that they use similar technology, and certainly are precursors of anti-personnel human-on-the-loop systems. But, they are not LAWS and to question their legality is of little persuasive authority.

A participant at the ICRC’s Second Experts Meeting on LAWS in 2016 noted that in more than 11 years of deployment for the U.S. land-based Counter-Rocket, Artillery, and Mortar (C-RAM) system there has been no reported collateral damage as a

104. *Id.* at 3 (describing the three-part taxonomy levels the U.S. Department of Defense intends to use in its policies for autonomous weapons systems).

105. *Id.* (describing that semi-autonomous weapons and human supervised autonomous weapon systems cannot engage any human targets. The systems are designed to prevent automated human targeting even in case of system failure).

106. *Id.*

107. *Id.*

108. See Schmitt, *supra* note 2, at 4 (describing multiple human-on-the-loop systems fielded and currently in use).

109. *Id.* at 4.

110. Expert Meeting on AWS, *supra* note 27, at 11.

result of operation.¹¹¹ The system, like others of its kind such as the U.S. Navy's Phalanx Close-in-Weapons System (CIWS) (aka "sea wiz"), possesses some autonomous capabilities to detect, track, identify, select, and attack targets, but engagement only occurs with approval of a human operator.¹¹² The command and control system of the C-RAM continuously updates to account for commercial air activity, and even uses self-destructing rounds to minimize any potential of collateral damage if it happens to miss its target.¹¹³

Similarly, Israel's well-known Iron Dome system that has been used to defend civilians in Israel from incoming rocket and mortar attacks from outside its borders has a reported effective rate of 90% intercepting incoming munitions.¹¹⁴ This, like the C-RAM and similar systems in various States, performs a task that simply cannot be completed by humans.¹¹⁵ It is less of a replacement of human troops as it is of using technology to augment the capabilities of a force to protect its troops and civilians. These systems actually launch projectiles at incoming rocket, mortar, and artillery rounds to destroy them in the air prior to striking intended targets.¹¹⁶ Further, these systems do not seek to provide physical, moral, and psychological distance from the decision to take life; there is no delegation of such a decision to the machines.

Most other systems with some autonomous features that are currently operational are human-in-the-loop systems such as sensor-fused munitions, missiles, and loitering munitions, along with types of torpedo mines.¹¹⁷ Despite the autonomous features of these systems, even HRW does not advocate their

111. *Id.*

112. *Id.* at 73.

113. *Id.* at 10.

114. *Id.*

115. *Id.*

116. *See id.* (explaining that the C-RAM system is used to defend military bases from incoming attacks and is updated with commercial aircraft flight paths to determine the proper engagement zones as to not harm the civilian aircraft flying above the base).

117. *See* Expert Meeting on AWS, *supra* note 27, at 12–13 (discussing the autonomous nature of munitions and weapons platforms that are classified within the human-in-the-loop system, including sensor-fused munitions, missiles, and loitering munitions).

prohibition.¹¹⁸

A system closer on point to a debate over LAWS is the Samsung Sentry Tech weapon system being fielded in the demilitarized zone of the Korean Peninsula, and a similar system that Israel is developing because they are designed as anti-personnel weapon systems.¹¹⁹ The Sentry system, unlike those noted above, is actually a human-in-the-loop weapon: only a human operator can choose to engage a target via remote control.¹²⁰ But, the system being used in Korea is said to be capable of operating at the human-on-the-loop level of autonomy as well even though it has not been deployed in such a mode.¹²¹ This system uses onboard sensors to detect human targets and notifies an operator of identified potential targets.¹²² A point of great relevance in reviewing the legality of the weapon system is that its concept of employment is limited to a highly controlled operational environment where the likelihood of the presence of civilians is virtually zero, but even so, the engagement decision still resides with a human operator.¹²³

118. See HUM. RTS. WATCH, *supra* note 3, at 46 (making the case for all nation states to prohibit the development and use of fully autonomous weapons that function as human-out-of-the-loop and instead, require technological developments in the military sector retain a human-in-the-loop system).

119. See Expert Meeting on AWS, *supra* note 27, at 74 (providing examples of the various anti-personal sentry systems being developed and tested in South Korea and Israel); see also Noah Shachtman, *Robo-Snipers, "Auto Kill Zones" to Protect Israeli Borders*, WIRED (June 4, 2007), https://www.wired.com/2007/06/for_years_and_y/ (describing Israel's plans for a see-shoot system networking remote-controlled machine guns, ground sensors, and drones along the Gaza border and based on the Samson Remote Control Weapons Station).

120. See *id.* at 12 (identifying how these sentry systems are able to select targets autonomously but require authorization from a human operator which renders it a human-in-the-loop system).

121. See *id.* (pointing out that there have been reports and allegations that these systems are able to operate autonomously, without any authorization of a human operator); Simon Parkin, *Killer Robots: The Soldiers That Never Sleep*, BBC NEWS (July 16, 2015), <http://www.bbc.com/future/story/20150715-killer-robots-the-soldiers-that-never-sleep> (addressing that the ultimate idea is to have these systems operating as a closed loop system; however, military commanders are currently operating these systems as human on the loop).

122. See Expert Meeting on AWS, *supra* note 27, at 74 (specifying how certain weapon systems sensors are composed of optical, thermal, and infrared sensors to identify human targets).

123. See Armin Krishnan, *Autonomous Weapons Systems and the Future of War*, E-

The cited examples are only a few of the various weapon systems in development or currently operational throughout the world that possess some level of autonomous capabilities. There are at least 30 States with weapon systems that fit on the autonomy scale including Australia, Bahrain, Belgium, Canada, Chile, China, Egypt, France, Germany, Greece, India, Israel, Japan, Kuwait, the Netherlands, New Zealand, Norway, Pakistan, Poland, Portugal, Qatar, Russia, Saudi Arabia, Republic of Korea (South), Taiwan, United Arab Emirates, the U.K., and the U.S.¹²⁴

C. Contemporary Efforts in the LAWS Debate

In addition to the HRW's "Stop the Killer Robots" campaign, two distinct bodies have pulled together representatives of States, industry, and academia in order to discuss the concerns of increased autonomy in warfare: the ICRC and the United Nations Office for Disarmament Affairs, the representative body for the Convention on Certain Conventional Weapons (CCW).¹²⁵ The ICRC has now held two such meetings, both of which focused more broadly on AWS; the first meeting in 2014 and the second in March 2016.¹²⁶ The ICRC's Second Meeting of Experts included

INT'L REL. (May 27, 2013), <http://www.e-ir.info/2013/05/27/autonomous-weapons-systems-and-the-future-of-war/> (stating that autonomous defense systems operate in environments that are less problematic because of the lack of human presence); Thompson Chengeta, *Measuring Autonomous Weapon Systems Against International Humanitarian Law Rules*, 5 J.L. & CYBER WARFARE 66, 71 (2016) (arguing that autonomous weapon systems that are not under "Meaningful Human Control" deployed in areas of highly populated civilians, may be incapable of complying with rules of international humanitarian law because of their inability to distinguish combatants from civilians).

124. JHA, *supra* note 84, at 53.

125. *See id.* at 137–38 (stating that parties to CCW Meetings of Experts of LAWS have had numerous of parties attend, including but not limited to the United Nations Office of Disarmament Affairs, Representatives of the United Nations Institute for Disarmament Research, United Nations Interregional Crime and Justice Research, and the Geneva International Centre for Humanitarian Demining); *see generally* UNITED NATIONS OFFICE FOR DISARMAMENT AFFAIRS, <https://www.un.org/disarmament/about/> (last visited Jan. 22, 2018) (explaining its role of providing support to Member States and parties to multilateral agreements, such as the Convention on Certain Conventional Weapons, for issues and activities related to disarmament procedures and policies).

126. *See* Expert Meeting on AWS, *supra* note 27, at 5 (discussing the original meeting being held in March 2014 and subsequent meetings held by the members in March 2016 as having a broader international discussion on AWS than previously).

delegations from twenty states, among which included States critical to this discussion such as the U.S., the U.K., China, Russia, Israel, India, Pakistan, and the Republic of (South) Korea.¹²⁷

The CCW body has held three such meetings of experts in successive years since 2014 with a fourth one in 2017.¹²⁸ Nearly forty states, multiple industry experts, and several NGOs, including HRW and the ICRC, participated in the most recent meeting of experts in 2016.¹²⁹ Unlike the ICRC meetings, the CCW meetings are supposed to be tailored more to LAWS as opposed to autonomy in general.¹³⁰ However, as there is no agreed upon universal definition of LAWS, the debate is broad. Some participants like the U.K. have such a narrow definition of LAWS requiring advanced-level artificial intelligence (AI) that some scientists view as never coming to fruition, and others that are so broad that any weapon system that is computer-enabled would be covered.¹³¹

Statements exchanged by the delegations result in the

127. *Id.*

128. *See id.* (meetings have been held in April 2014, April 2015, April 2016, and in March 2016); for the 2017 meeting at the CCW, see U.N. Convention on Certain Conventional Weapons, *2017 Group of Governmental Experts on Lethal Autonomous Weapons Systems*, [https://www.unog.ch/80256EE600585943/\(httpPages\)/F027DAA4966EB9C7C12580CD0039D7B5?OpenDocument](https://www.unog.ch/80256EE600585943/(httpPages)/F027DAA4966EB9C7C12580CD0039D7B5?OpenDocument) (last visited Oct. 27, 2017) (stating that the meeting was scheduled to take place from November 13–17, 2017).

129. *See 2016 Meeting of Experts on LAWS*, [https://www.unog.ch/80256EE600585943/\(httpPages\)/37D51189AC4FB6E1C1257F4D004CAFB2?OpenDocument](https://www.unog.ch/80256EE600585943/(httpPages)/37D51189AC4FB6E1C1257F4D004CAFB2?OpenDocument) (last visited Jan. 23, 2018) (listing all participants of the LAWS Meetings of Experts).

130. *See Moving Forward in 2016*, CAMPAIGN TO STOP KILLER ROBOTS, <https://www.stopkillerrobots.org/2016/12/moving-forward-in-2016/> (last visited Jan. 23, 2018) (approving of recent developments made by countries to formalize and dedicate discussion oriented towards LAWS within the CCW meetings); INT'L COMM. OF THE RED CROSS, *AUTONOMOUS WEAPONS SYSTEMS: TECHNICAL, MILITARY, LEGAL AND HUMANITARIAN ASPECTS 5* (Mar. 26–28, 2014) (summarizing that the purpose of the 2014 expert meeting was for States to consider the full ramifications of autonomous weapon systems in the context of legal, ethical, and societal issues with respect to all critical functions and not just lethality).

131. U.N. Convention on Certain Conventional Weapons, *2016 Meeting of Experts on Lethal Autonomous Weapon Systems* (Apr. 11–15, 2016) (Statement of the United Kingdom of Great Britain and Northern Ireland) [hereinafter Statement of the U.K.], [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/49456EB7B5AC3769C1257F920057D1FE/\\$file/2016_LAWS+MX_GeneralExchange_Statements_United+Kingdom.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/49456EB7B5AC3769C1257F920057D1FE/$file/2016_LAWS+MX_GeneralExchange_Statements_United+Kingdom.pdf).

somewhat expected alignment of opinion as to whether a Protocol VI to the CCW should pre-emptively ban LAWS.¹³² Certain NGOs such as HRW and Article 36 (co-founder of the “Stop the Killer Robots” campaign) unsurprisingly have lead the charge for a pre-emptive ban to a weapon system that does not yet exist, and depending on the definition, a weapon system that may never exist technologically.¹³³ But, the NGOs have now been joined by several States, typically limited to those with much less technologically advanced militaries, e.g. the Holy See, Argentina, Panama, Peru, and Ecuador.¹³⁴

On the other end, states are not necessarily strong advocates of LAWS, but their position is one of pragmatism. The U.S. and Israel for example argue against a pre-emptive ban because it is too difficult to predict with enough certainty the characteristics, capabilities and limitations of LAWS to be able to effectively regulate as a category.¹³⁵ Israel and France, like the U.S. and the

132. See Sean Welsh, *Machines with Guns: Debating the Future of Autonomous Weapons Systems*, THE CONVERSATION (Apr. 12, 2015), <http://theconversation.com/machines-with-guns-debating-the-future-of-autonomous-weapons-systems-39795> (discussing opinions of parties on the need for an additional Protocol to the CCW, with some countries calling for better definitions and discussions on the potential ban before any action can be taken in crafting Protocol VI).

133. For statements by Article 36 and HRW, see U.N. Convention on Certain Conventional Weapons, *2016 Meetings of Experts on Lethal Autonomous Weapon Systems* (Apr. 12, 2016) (Statement of Article 36), [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/BF8FA54645C1D4D4C1257F9A004411C4/\\$file/2016_LAWS+MX_GeneralExchange_Statements_Article+36.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/BF8FA54645C1D4D4C1257F9A004411C4/$file/2016_LAWS+MX_GeneralExchange_Statements_Article+36.pdf); see also U.N. Convention on Certain Conventional Weapons, *2016 Meeting of Experts on Lethal Autonomous Weapon Systems* (Apr. 12, 2016), (Statement of Human Rights Watch), [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/252007F8C3EB3E1EC1257FAE002F4DE5/\\$file/HRW+intervention+Goose+12+April+2016.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/252007F8C3EB3E1EC1257FAE002F4DE5/$file/HRW+intervention+Goose+12+April+2016.pdf).

134. See Sean Welsh, *Killer Robots: The Future of War?*, CNN (Apr. 14, 2015), <http://www.cnn.com/2015/04/14/opinions/welsh-killer-robots-conversation/index.html> (stating that in 2015, countries such as Cuba, Ecuador, Egypt, Pakistan, and the Vatican supported a ban on LAWS); U.N. Convention on Certain Conventional Weapons, *2016 Meeting of Experts on Lethal Autonomous Weapon Systems* (Apr. 11, 2016), (Statement of the Holy See), [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/F7020F20B0844885C1257F9200579023/\\$file/2016_LAWS+MX_GeneralExchange_Statements_Holy+See.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/F7020F20B0844885C1257F9200579023/$file/2016_LAWS+MX_GeneralExchange_Statements_Holy+See.pdf).

135. See U.N. Convention on Certain Conventional Weapons, *2016 Meeting of Experts on Lethal Autonomous Weapon Systems* (Apr. 11, 2016), (Statement of U.S. Delegation) [hereinafter Statement of U.S. Delegation], [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/EFF7036380934E5EC1257F920057989A/\\$file/2016_LAWS+M](https://www.unog.ch/80256EDD006B8954/(httpAssets)/EFF7036380934E5EC1257F920057989A/$file/2016_LAWS+M)

U.K., feel for now that the emphasis should be on the case-by-case legal reviews of all new weapons and weapon systems as required by Article 36 of Additional Protocol I of 1977 to the Geneva Conventions of 1949 (AP I).¹³⁶ The U.S. delegate emphasized that its policy neither encourages nor prohibits the development of LAWS as a category, but instead emphasizes independent reviews of any to be developed.¹³⁷ The U.S. noted that before the CCW can focus on outcomes and drafting a potential Protocol VI, there needs to be an increased understanding and consensus on the nature and definition of LAWS.¹³⁸ France stated it is too early to determine whether LAWS could comply with the *jus in bello*, and that France would only consider developing such weapons if the ability of a LAWS to comply was proven.¹³⁹

X_GeneralExchange_Statements_United+States.pdf (stating that because other nations' views on what constitutes LAWS are so broad and incongruous, further discussions are needed to develop a common understanding on the scope of LAWS in international law); U.N. Convention on Certain Conventional Weapons, *2016 Meeting of Experts on Lethal Autonomous Weapon Systems* (Apr. 11–15, 2016), (Statement of Representative of Israel) [hereinafter Statement of Israel], [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/A02C15B2E5B49AA1C1257F9B0029C454/\\$file/2016_LAWS_MX_GeneralDebate_Statements_Israel.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/A02C15B2E5B49AA1C1257F9B0029C454/$file/2016_LAWS_MX_GeneralDebate_Statements_Israel.pdf) (stating that "[t]hese discussion[s] have also highlighted that LAWS do not currently exist and that, as the technologies are rapidly developing, it would be difficult, if at all possible, at this stage, to predict how future LAWS would look like, and what their characteristics, capabilities and limitations will be").

136. *See id.* ("There seemed to be a general understanding that the use of LAWS, like other weapon systems, is subject to the Law of Armed Conflict and that LAWS should undergo legal review before they are deployed."); *see also infra* note 139 (discussing that the French viewpoint for an analysis or legal review for LAWS should be conducted under Article 36); Statement of U.S. Delegation, *supra* note 135 (noting the current Department of Defense Directive's setting of additional requirements beyond the normal requirements of weapons acquisitions process applicable to LAWS, which inherently would be Article 36); Statement of the U.K., *supra* note 131 (recognizing that the legal review process has been developed for the purposes of LAWS).

137. *See* Statement of U.S. Delegation, *supra* note 135 (establishing that the U.S.'s position is to work towards developing weapons review processes and legal review standards that would include policy, technical, and operational practices that States could consider).

138. *Id.* (reiterating that the focus of these discussions should be on the emerging technologies within LAWS, not rudimentary computer-enabled weapons as some nations have constituted as part of LAWS).

139. For the French analysis on the legal framework and opinion for LAWS, see U.N. Convention on Certain Conventional Weapons, *2016 Meeting of Experts on Lethal Autonomous Weapon Systems* (Apr. 11–15, 2016), [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/C4D88A9E3530929EC1257F8F005A226C/\\$file/2016_LAWSM](https://www.unog.ch/80256EDD006B8954/(httpAssets)/C4D88A9E3530929EC1257F8F005A226C/$file/2016_LAWSM)

With a greater understanding of the technical aspects of autonomy applied in weapon systems, analogous weapon systems currently deployed, and the continued efforts in the international community regarding LAWS, we will now turn to analyze the legal issues presented. First and foremost is to analyze, as recommended by several States, the traditional questions posed during a legal review of a new weapon.

III. ANALYSIS

A. *Legal Reviews of New Weapons and Weapon Systems*

As stated in Article 22 of The Hague Regulations of 1907 relating to the Laws and Customs of War on Land, the “right of belligerents to adopt means of injuring the enemy is not unlimited.”¹⁴⁰ This statement, along with the preceding notion that the “laws of humanity” prohibit the employment of arms that are calculated to cause unnecessary suffering in the 1868 St. Petersburg Declaration, establish the foundation for modern requirements for States to conduct legal reviews of all new weapons and weapon systems.¹⁴¹ In the view of this author, absent any additional explicit codification mandating weapon reviews, the requirement is inherent in the notion that the law of war limits the means of warfare to a minimum of weapons or weapon systems that are neither designed to inflict unnecessary suffering nor employed with the purpose of inflicting unnecessary suffering. Unfortunately, however, the actual practice of conducting weapon reviews prior to the mandate being codified in Article 36 of AP I seems to have been limited to the United States, a State that explicitly claims to do so as a matter of policy as

X_CountryPaper_France+LegalFramework+EN.pdf (acknowledging that it would be a mistake to conclude that LAWS cannot be designed to comply with international law and further insisting that it would be premature to advocate for a prohibition on LAWS without further analysis under current legal framework of Article 36 and international humanitarian law).

140. Hague Convention No. IV Respecting the Laws and Customs of War on Land, art. 22, Oct. 18, 1907, 36 Stat. 2277, T.S. No. 539.

141. See BOOTHBY, *supra* note 35, at 10–12 (articulating how the law of humanity was developed into the modern day legal standard for ensuring the principle of military necessity is not in contravention to the principles of superfluous injury and unnecessary suffering).

opposed to law.¹⁴²

Article 36 of AP I states:

In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.¹⁴³

Currently, there are more than 170 States Parties to AP I that are expressly legally bound to conduct such legal reviews.¹⁴⁴ Notable exceptions in the field of weapons development include the U.S., Israel, Iran, Pakistan, India, and Turkey.¹⁴⁵ However, in spite of this, the U.S. and Israel at a minimum conduct legal reviews meeting the requirements of Article 36.¹⁴⁶ In fact, as mentioned, the U.S. policy predates AP I and is by far the most robust system of review. Most unfortunately, only approximately 25 States are known to have a formal process for conducting weapon reviews in accordance with AP I, meaning more than 150 States Parties to AP I are not in compliance with their legal

142. See LOW MANUAL, *supra* note 29, at ¶ 6.2.

143. Protocol Additional to the Geneva Conventions of August 12, 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol I) art. 36, June 8, 1977, 1125 U.N.T.S. 3 [hereinafter AP I].

144. See *Treaties, State Parties and Commentaries*, INT'L COMM. OF THE RED CROSS, https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/States.xsp?xp_viewStates=XPages_NORMStatesParties&xp_treatySelected=470 (identifying the States that have ascended to AP I).

145. See *id.* (examining the list of countries who have ratified AP I, the countries listed above are not among those who have ratified the Protocol); see also INT'L COMM. FOR THE RED CROSS, ANNUAL REPORT 2016 (2016) (illustrating in a map the nations that have ratified certain Protocols); see also Theodor Meron, *The Time Has Come for the United States to Ratify Geneva Protocol I*, 88 AM. J. INT'L L., 678, 686 (1994) (arguing that if the U.S. had adopted the Protocol, states such as Pakistan, India, and other nations would have followed suit).

146. See DOD DIRECTIVE 5000.01, *The Defense Acquisition System*, ¶ E1.1.15 (May 12, 2003, certified current as of Nov. 20, 2007) ("The acquisition and procurement of DoD weapons and weapon systems shall be consistent with all applicable domestic law and treaties and international agreements."); see also LOW MANUAL, *supra* note 29, at ¶6.2; Statement of Israel, *supra* note 135 (agreeing that LAWS, like any other weapon systems, should undergo legal review before they are deployed).

obligations.¹⁴⁷

In its report, HRW implies that the conduct of weapon reviews may not be a requirement under customary international law (CIL); but, in spite of the apparent lack of affirmative compliance, various legal manuals view it as clear CIL.¹⁴⁸ HRW uses this opinion of CIL and lack of compliance with existing positive law as part of its argument for an international treaty banning not only LAWS, but all AWS.¹⁴⁹ This is a counter-intuitive argument because creating more law when the existing law is ignored will not miraculously result in compliance. The immediate focus should be on increasing compliance with the existing law.

The requirement to conduct weapon reviews begins at the point of conception of an idea for a new weapon or weapon system. A review should be conducted, especially regarding emerging technologies, at a preliminary stage of concept prior to development, and once again before a weapon or weapon system goes into production.¹⁵⁰ There are three primary questions that

147. See Gilles Giacca, *Legal Reviews of New Weapons: Process and Procedures*, in WEAPONS AND THE INTERNATIONAL RULE OF LAW, INT'L INST. OF HUMANITARIAN L. (Baldwin De. Vidts ed., 2016) (acknowledging that most nations do not have formal mechanisms in place to carry out legal reviews of new weapons); see also *Legal Review of New Weapons: Scope of the Obligation and Best Practices*, HUMANITARIAN L. & POL'Y (Oct. 6, 2016), <http://blogs.icrc.org/law-and-policy/2016/10/06/legal-review-new-weapons/> (Statement of Gilles Giacca: "Of the 174 States having ratified AP I, between 15 and 20 States are known to conduct their own legal reviews . . . many others rely on manufacturer information and on the reviews conduct by others.").

148. Schmitt, *supra* note 2, at 28.

149. See *generally id.* (critiquing HRW's argument regarding CIL as means of ensuring legal reviews are conducted as a movement is made towards prohibitions on certain autonomous weapon systems); see also HUM. RTS. WATCH, *supra* note 3 (citing examples within numerous contexts that would constitute illegal uses of force against civilian populations, injured combatants, proportionality that is beyond the scope of military necessity, and ultimately premising arguments on morality rather than CIL); JEAN-MARIE HENCKAERTS & LOUISE DOSWALD-BECK, CUSTOMARY INTERNATIONAL HUMANITARIAN LAW 244–45, 248 (2005) (establishing that under Rule 71, the use of weapons that are by nature indiscriminate, as such is the problem with LAWS, they are prohibited as a matter of customary international law in international and non-international conflicts).

150. See SECNAVIST 5000.2E, *supra* note 55, at ¶ 1.6.1(a) (detailing that all potential weapon systems acquired or developed are reviewed by the Judge Advocate General of the Navy to insure the intended uses of these systems are compliant with national and international law).

must be addressed in any weapon review: (1) whether the intended use of the weapon is calculated to cause unnecessary suffering; (2) whether it is inherently indiscriminate; and (3) whether it is specifically prohibited by existing international arms control agreements such as the protocols to the CCW.¹⁵¹ The first two principles are unquestionably CIL.¹⁵² In addition to these three questions, the ICRC has proposed that all reviews must take into account the effect of the Martens Clause as well.¹⁵³ Realistically, this is more pertinent to emerging weapons technology as opposed to new conventional munitions considering such have long been accepted by the “public conscience.”¹⁵⁴

Turning to the third question up front, there are indisputably no specific international legal instruments or positive law that prohibit the development, stockpiling, or use of AWS or LAWS explicitly.¹⁵⁵ This does not mean that LAWS are lawful as a

151. LOW MANUAL, *supra* note 29, at ¶ 6.2.2; *see also* Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, ¶¶ 78–79 (Jul. 8) [hereinafter Nuclear Weapons Advisory Opinion] (stating the “cardinal principles contained in the texts constituting the fabric of humanitarian law” are distinction and unnecessary suffering).

152. *See* Nuclear Weapons Advisory Opinion, *supra* note 151, at ¶ 79 (referring to the principles articulated in ¶ 78, the court holds that these fundamental rules “constitute intransgressible principles of international customary law.”).

153. *See* KATHLEEN LAWAND, *A Guide to Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977* 17, INT’L COMMITTEE OF THE RED CROSS [ICRC] (Jan. 2006, rev. Nov. 2006), http://www.article36.org/wpcontent/uploads/2011/12/icrc_002_0902.pdf (last visited Jan. 23, 2018) (articulating that the Martens Clause adds another layer of review to determine whether a weapon should be prohibited or restricted if such weapon would be contrary to the principles of humanity).

154. *See* Nuclear Weapons Advisory Opinion, *supra* note 151, at ¶¶ 78–79 (noting the usefulness of the Martens Clause to address emerging weapons technology where the codification of law and development of CIL cannot keep pace).

155. *See* Amitai Etzioni & Oren Etzioni, *Pros and Cons of Autonomous Weapons Systems*, MILITARY REVIEW (May–June 2017), <http://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/May-June-2017/Pros-and-Cons-of-Autonomous-Weapons-Systems/> (citing arguments in support and opposed to AWS, with emphasis on the distinction between AWS and LAWS being unlawful for their use in a certain manner); *see also* Jeffrey S. Thurnher, *The Law That Applies to Autonomous Weapon Systems*, 17 AM. SOC’Y INT’L L. 4 (2013) (acknowledging that there are advocates pushing for an international treaty that would ban the development and use of AWS and LAWS, though in the meantime, the law of armed conflict applies).

category of weapons; only that the subject matter has not resulted in a specified agreement. Next, we will seek to analyze the first two questions based on existing knowledge of LAWS, addressing arguments on both sides of the debate.

But, before doing that, the most important takeaway regarding the legal review of new weapons and weapon systems is to highlight that the purpose is to analyze whether its employment “in some or all circumstances” would be prohibited.¹⁵⁶ Far too often by those that are not practitioners in the field of weapons law, the notion of weapons that are unlawful *per se* is conflated with weapons that are only lawful under certain circumstances.¹⁵⁷ Throughout HRWs report on LAWS, it cites numerous operational environments in which the employment of a LAWS may be unlawful and cites intentional misuses of a LAWS to inappropriately justify a claim that LAWS are unlawful *per se*.¹⁵⁸

To be clear, for a weapon to be unlawful *per se* under CIL as a result of distinction arguments there cannot be any circumstance or operational environment in which it can lawfully be employed.¹⁵⁹ As an example, look at the Massive Ordnance Air Burst (MOAB) (colloquially known as “the Mother of All Bombs”), which is a 21,000-pound non-nuclear conventional bomb, the largest non-nuclear munition in the U.S. arsenal.¹⁶⁰ In April 2017,

156. AP I, *supra* note 143, art. 36.

157. See Schmitt, *supra* note 2, at 2–3 (using a rifle and biological weapon as an illustrative example to explain the distinction between weapons that are unlawful *per se* and lawful in certain situations).

158. See HUM. RTS. WATCH, *supra* note 3, at 34–35 (asserting that fully autonomous robot sentries would use force beyond the force of military necessity when determining to re-engage an intruder).

159. See *id.* at 30–31 (exemplifying the type of argument that is based on the use of a weapon that is unlawful rather than assessing the weapon capabilities under a criteria that represent a legal review of lawful uses); see also Michael J. Deegan, *Unmanned Aerial Vehicles: Legitimate Weapon Systems or Unlawful Angels of Death*, 26 PA. J. INT'L L. 249, 276 (2014) (discussing that mortars operated without regard to where the projectiles land is a lawful weapon used in an unlawful matter, even though technically it has no ability to distinguish between civilians and combatants the use of the weapon itself is not *per se* unlawful).

160. *Pictures Reveal Inside of Afghan Caves at ‘Mother of All Bombs’ Blast Site*, TELEGRAPH (Apr. 24, 2017), <http://www.telegraph.co.uk/news/2017/04/24/pictures-reveal-inside-afghan-caves-mother-bombs-blast-site/> (stating that the MOAB is one of the largest

the U.S. employed the MOAB in a highly remote area of Afghanistan to attack Islamic State in the Iraq and the Levant (ISIL) militants, and their cave network.¹⁶¹ As a result, nearly 100 ISIL militants were killed with zero reported civilian casualties.¹⁶² Based on the HRW rationale in its report, the MOAB would be an unlawful weapon because it cannot be lawfully employed in the middle of an urban terrain, which itself would be a misuse of the concept of employment for the weapon and almost certainly contrary to the proportionality and distinction principles.¹⁶³

1. Military Necessity

The military necessity of a weapon system is not specifically carved out in the same manner as that of the distinction requirement and prohibition of unnecessary suffering. However, it is necessary to analyze the military necessity of a proposed weapon system because it serves as the measure for whether the suffering produced by the effects of a weapon or weapon system is superfluous.¹⁶⁴

Without having a specific weapon system to evaluate, the military necessity analysis will have to be limited to general arguments as to what military purposes LAWS could fulfill. The most common argument that is put forth by opponents and advocates of LAWS, and quite frankly other modern means of war such as remotely piloted vehicles, is that the employment of

explosive weapons short of a nuclear weapon).

161. See Enhsan Popalzai & Laura Smith-Spark, *'Mother of all Bombs' Killed 94 ISIS Fighters, Afghan Official Says*, CNN (Apr. 15, 2017), <http://www.cnn.com/2017/04/15/asia/afghanistan-isis-moab-strike/index.html> (reporting that strike targeted a network of ISIL forfeited tunnels they have been using in the Nangarhar province).

162. See *id.* (citing to statements made by an Afghan official stating the number of Daesh fighters to have been killed included four commanders within the ISIL network in Afghanistan).

163. See HUM. RTS. WATCH, *supra* note 3, at 30–32 (contending that because an autonomous weapon is unable to assess a situation in urban zones, these weapons are unable to possess the necessary qualities such as distinction in order to be deployable under international law).

164. See Nuclear Weapons Advisory Opinion, *supra* note 151, at ¶ 78 (defining unnecessary suffering as “harm greater than that unavoidable to achieve legitimate military objectives”).

LAWS would reduce the manpower and fiscal requirements of a State engaged in military operations.¹⁶⁵ Additionally, they serve the purpose of protecting the owning State's troops from the physical risks of the battlefield.¹⁶⁶

These are perfectly valid reasons for developing new weapon systems but are typically presented in a negative context without a full understanding of why they are important to the conduct of military campaigns, especially in liberal democratic states. The support of the population for the conduct of military operations in a liberal democratic state will ultimately be determinative of whether the State is able to achieve its grand strategic objectives.¹⁶⁷ Populations that do not support a conflict protest paying taxes to fund operations, and do not volunteer to serve in the military, and conscription is seen as undesirable.¹⁶⁸ Further, when national security interests or strategic priorities are not easily reducible to catch phrases in our modern communication environment, or simply the level of detachment individuals have from notions of community or a shared humanity, the loss of family members in a conflict can quickly result in a lack of public support to continue such operations.

Lastly, with regard to manpower issues, if a role in the military can be replaced by an autonomous system, just like those

165. See HUM. RTS. WATCH, *supra* note 3, at 3 (stating that “[m]ilitary [forces] value these weapons because they require less manpower, reduce risks to their own soldiers, and can expedite response time”).

166. See *id.* (addressing how militaries value the reduction in risk to their own soldiers and have focused on completing autonomy for robots in order to achieve the goal of minimizing risk to deployed serviceman).

167. See Adam J. Berinsky, *Assuming the Costs of War: Events, Elites, and American Public Support for Military Conflict*, J. POL. 975, 976 (Nov. 2007) (recognizing that the greater perceived stakes, the clearer the objectives, and the higher probability of success, does bear relevance on the level of public support for military intervention or war).

168. See Charles Davis, *Is It Immoral to Pay Your Federal Income Tax?*, VICE (Apr. 14, 2014), https://www.vice.com/en_us/article/4w7ayn/dont-pay-your-taxes (explaining how “war-tax resisters” cannot in good conscience finance the federal government per se, when their tax payer dollars go towards funding war efforts); see also Jacob Weisberg, *The Gross Unfairness of an All-Volunteer Army*, SLATE (Mar. 22, 2006), http://www.slate.com/articles/news_and_politics/the_big_idea/2006/03/rough_draft.html (arguing that because young men do not want to endure the ordeals of war, there is little incentive to enlist for ideals that are not of their own, however, because conscription has little appeal to the majority of Americans there are a few who enlist for the purposes of social mobility).

by civilian contractors, then the States may have more troops available to serve in roles that cannot be replaced by machines.¹⁶⁹ For example, there will always be a need for troops on the ground to secure tactical successes, or to build coalitions of support in counter-insurgency (COIN) operations.¹⁷⁰

With regard to maintaining host nation support, and domestic and international legitimacy, a vital military interest in developing LAWS could in fact be for the purpose of creating weapon systems that enhance protections for civilians. Assuming for a moment, *arguendo*, that a LAWS developed in the future can be proven through realistic testing that its level of precision, computing power, and ability to distinguish could reduce civilian casualties in warfare by reducing collateral damage or misidentification of civilians as combatants, this would serve a strong military objective.

Some opponents of LAWS insinuate that militaries only develop new weapons to increase destructive power and lethality.¹⁷¹ This is an insinuation that is counter-factual. The trend in recent decades has been the development of new weapons and weapon systems that enhance precision of attacks, such as

169. See Evan Ackerman, *U.S. Army Considers Replacing Thousands of Soldiers with Robots*, IEE SPECTRUM (Jan. 22, 2014), <https://spectrum.ieee.org/automaton/robotics/military-robots/army-considers-replacing-thousands-of-soldiers-with-robots> (discussing the tooth-to-tail ratio in the context of possibly having more serviceman replaced by unmanned robots in roles that would free up soldiers for other positions).

170. See generally Steven Metz & Douglas C. Lovelace Jr., *Don't Give Up on Ground Troops*, NEW REPUBLIC (Apr. 8, 2013), <https://newrepublic.com/article/112860/us-military-should-not-give-ground-troops> (recognizing that the modern U.S. military strategy has faced challenges, from sequestration of military budgets to force reductions, the national security questions following such challenges are not answered with high-tech military weapons that are expensive and unable to be adapted to armed conflicts against inferior conventional armed forces capable of avoiding direct confrontation of with high-tech weapons, instead, it should be answered with the deployment of human teams that are more adaptable and versatile in responding to exigencies across the globe and building security before conflict erupts).

171. See FUTURE OF LIFE INST., *Autonomous Weapons: An Open Letter from AI & Robotics Researchers*, <http://futureoflife.org/open-letter-autonomous-weapons/> (last visited Jan. 23, 2018) (advocating for a preventive ban on autonomous weapons that are beyond meaningful human control because of the propensity autonomous weapons have for inciting a global arms race in the field of autonomous weapons that are only designed and destined to increase the lethality and destructive capabilities of military powers).

precision-guided munitions (PGMs), that serve the purpose of reducing collateral damage, or less-than-lethal weapons designed to capture versus kill combatants, which also assist in preventing inadvertent deaths of civilian bystanders.¹⁷²

The last military advantage that would hypothetically be gained through the development of LAWS is an increased decision-making cycle.¹⁷³ United States Air Force Colonel John Boyd coined the term OODA loop in the 1950s to illustrate a model of combat decision making that has become prevalent in professional militaries throughout the world.¹⁷⁴ The OODA loop stands for Observe, Orient, Decide, Act.¹⁷⁵ Observe refers to the collection or receipt of all relevant information of the operational environment.¹⁷⁶ Orient refers to the processing of that information in order to form a cohesive perspective.¹⁷⁷ Once oriented, a combatant can Decide among various possible courses of action, and then Act to execute the decision made.¹⁷⁸

Success in military operations largely depends upon going through the OODA loop faster than the enemy; it is said that you get inside the OODA loop of the enemy to crush his ability to make decisions.¹⁷⁹ The operational advantage gained from any

172. See MATTHEW WAXMAN, INTERNATIONAL LAW AND THE POLITICS OF URBAN AIR OPERATIONS xiv (2000) (referencing that “technological advances, by reducing the probability and extent of collateral damage, can be liberating for planners: together with new operational concepts, they can help reduce the risk and extent of collateral damage”).

173. See McFarland, *supra* note 101, at 1324–25 (noting that “in terms of the OODA loop, the purpose of developing autonomous systems is to assign part or all of the loop to a machine in order to realize some operational advantage such as greater speed or endurance, lower cost, or less risk to the operator’s life. A highly autonomous system is one that can execute most or all of the OODA loops required to achieve some goal, using only the operator’s high-level instruction as guidance in the decision stage of a loop, such that the ‘nearest’ human functions similarly to a commander.”).

174. *Id.* at 1324.

175. *Id.*

176. See *id.* at 1325 (referencing that in a manual loop all the steps are completed by humans, including “observing the environment to extract raw information, orienting oneself in relation to the environment by processing that information to form a useful model, making a decision based on that model and acting on the decision”).

177. *Id.*

178. *Id.*

179. See DEP’T OF THE NAVY, U.S. MARINE CORPS, MCDP 1–3, TACTICS 71 (1997) [hereinafter MCDP 1–3] (“[T]he Boyd theory helps to define the word ‘maneuver.’ It means being consistently faster than our opponent. As our enemy observes and orients on our

capability that improves the speed at which combat decisions are made is significant. Of course, that speed must be related to making proper decisions such as modern technology in the realm of intelligence, surveillance, and reconnaissance (ISR) that has provided significant operational advantages.¹⁸⁰ On the tactical level of war, the advantage is mostly gained not from machines, but shared cultural understandings, rehearsal, training, experience, and the courage to make decisions within the fog of war.¹⁸¹

The question, however, of the legitimacy of this purported military advantage leads back to the earlier discussion of “automation bias.” In a true LAWS, human-on-the-loop or human-out-of-the-loop, targeting ‘decisions’ are in fact not decisions; instead, they are the playing out of mathematical calculations.¹⁸² “A military decision is not merely a mathematical computation. Decision-making requires both the situational awareness to recognize the essence of a given problem and the creative ability to devise a practical solution.”¹⁸³ Combat decisions do not exist in a vacuum; any and all decisions are made with the mindset that all tactical level decisions can have operational and strategic consequences.¹⁸⁴ They are not isolated upon a small group of data that can be produced or deduced by a machine, but they include a synthesis of the concepts of honor, law, and

initial action, we must be observing, orienting, deciding, and acting upon our second action. As we enact our third, fourth, and fifth move, the time gap between our actions and our enemy’s reactions increasingly widens.”)

180. *See id.* at 78 (explaining that in tactical decision making processes, success is dependent on effectively and efficiently making decisions more quickly than the opposing side); *see also* McFarland, *supra* note 101, at 1315 (defining ISR systems as those that collect surveillance information in order to relate them to a decision maker).

181. *See* DEP’T OF THE NAVY, U.S. MARINE CORPS, MCDP 1, WARFIGHTING 86 (1997) [hereinafter MCDP 1] (referencing that “decision making requires both the situational awareness to recognize the essence of a given problem and the creative ability to devise a practical solution. These abilities are the products of experience, education, and intelligence”).

182. *See* McFarland, *supra* note 101, at 1316 (arguing that all automated or autonomous weapons systems are machines programmed to relieve human decision makers of the responsibility).

183. MCDP 1, *supra* note 181, at 86.

184. *See id.* (arguing that proper decision making requires situational awareness and the ability to develop a practical solution and accept the consequences of that decision once made).

morality with professional judgments “gained from experience, knowledge, education, intelligence, and intuition.”¹⁸⁵ “Commanders continuously combine intuitive and analytic approaches” to make decisions.¹⁸⁶ This is the *coup d’oeil*, a French term used in the study of the art of war meaning “stroke of the eye,” or otherwise known as a “tactical sense.”¹⁸⁷

An excellent example of this is contained in an anecdote from then-General James Mattis (now U.S. Secretary of Defense) based on his experiences as a commander in combat.¹⁸⁸ When he was being interviewed regarding a decision he made as a commander to engage a target that, while accomplishing the military objective, resulted in some civilian casualties, he was asked how long he spent considering the decision to engage. He responded, “About 30 years. I spent 30 years getting ready for that decision that took 30 seconds.”¹⁸⁹

In the case of missile defense systems that are more akin to automatic responses to a pre-determined stimulus, autonomous features are needed to ensure that an incoming munition can be engaged in time.¹⁹⁰ However, as noted earlier, even these systems as they exist today still require human execution.

In essence, even if in the distant future sophisticated AI is developed that closely replicates human-like cognition, it could never truly decide in the way humans make decisions, especially in a combat environment.¹⁹¹ Combat decision making requires

185. Expert Meeting on AWS, *supra* note 27, at 57.

186. *Id.*

187. MCDP 1–3, *supra* note 179, at 27.

188. James Mattis, Ethical Challenges in Contemporary Conflict: The Afghanistan and Iraq Cases 27 (lecture taught at the U.S. Naval Academy on Feb. 23, 2006), https://www.usna.edu/Ethics/_files/documents/MattisPg1-28_Final.pdf.

189. *Id.*

190. See Armin Krishnan, *Robots, Soldiers, and Cyborgs: The Future of Warfare*, ROBOHUB (Feb. 5, 2014), <http://robohub.org/robots-soldiers-and-cyborgs-the-future-of-warfare/>; see also Paul Scharre & Michael Horowitz, *An Introduction to Autonomy in Weapons Systems* 3 (Ctr. For a New Am. Sec., Working Paper No. 021015, 2015), <https://www.cnas.org/publications/reports/an-introduction-to-autonomy-in-weapon-systems> (noting that the design of the LAWS is to create a network capable of intercepting and destroying weapons during any phase).

191. See generally Olivia Goldhill, *Can We Trust Robots to Make Moral Decisions?*, QUARTZ (Apr. 3, 2016), <https://qz.com/653575/can-we-trust-robots-to-make-moral-decisions/> (explaining how morality and the ability to program moral decision making is a

that creative genius that can only come from a human mind. Humans possess conscience, which gives us the power of reason, not simply calculation. As Thomas Aquinas noted, conscience involves understanding the “relation of knowledge to something else.”¹⁹² That is, “we by our conscience judge that we should or should not do something.”¹⁹³ It is the “natural power of judgment . . . the law of our intellect.”¹⁹⁴ The “something else” is the effect of the “principles implanted in us by nature” and through interaction in civilized society.¹⁹⁵

It is thus why natural law cannot be ignored or believed to be non-existent, as the positive law is only one of the products that come from our application of natural law.¹⁹⁶ To deny it is to deny our conscience, and to threaten the bedrock of humanity.¹⁹⁷

Despite a general negation to the necessity of the increased decision-making argument, the other stated reasons are legitimate concerns of a military to be served by new weapons. But, the notion of military necessity should not be accepted as a given in any situation. “We must be very careful about the economic logic that could push the development of these robotic technologies simply for reasons of financial gain and not for genuine needs of security and defense.”¹⁹⁸

concern in the AI community. This is because the human values and decision making processes differ and the AI codes may have compatibility issues).

192. AQUINAS, *supra* note 23, at 3–4.

193. *Id.* at 4.

194. *Id.*

195. *See id.* at 2 (referencing that the principles about practical matters, principles implanted in us by nature, likewise do not belong to a special power but to a characteristic disposition from nature and that we call this disposition synderesis).

196. *See* Theodor Meron, *The Martens Clause, Principles of Humanity, and Dictates of Public Conscience*, 94 AM. J. INT’L L. 78, 88–89 (2000) (quoting Oscar Schachter: “It had become evident to international lawyers [. . .] that States that made and applied law were not governed by morality or ‘natural reason’; they acted for reasons of power and interest.”).

197. *See id.* at 89 (arguing that the principles of humanity, seen as principles of natural law, are a precursor for accepted standards of international law and humanitarian restraints).

198. U.N. Convention on Certain Conventional Weapons (CCW), *2016 Meeting of Experts on Lethal Autonomous Weapon Systems* (Apr. 11–15, 2016), Working Paper presented by the Holy See, [hereinafter Holy See Working Paper].

2. Unnecessary Suffering

As noted earlier, suffering is unnecessary when it is excessive in relation to the military advantage that is to be gained from the employment of the weapon. In any review of a weapon, the immediate question is whether it is calculated to, or in other words designed for the purposes of, inflicting unnecessary suffering.¹⁹⁹ As noted by Professor Michael Schmitt of the U.S. Naval War College in his article replying to the critics of LAWS, a discussion of unnecessary suffering is conspicuously absent from HRW's report on *Losing Humanity*.²⁰⁰ He makes the observation to point out in his mind a significant flaw in HRW's reasoning, and to generally support his position of analyzing LAWS on a case-by-case basis as they may be developed as opposed to negotiating international legal instruments for weapon systems of which we do not yet know the characteristics, capabilities, and effects.²⁰¹

He is correct in that it is simply not possible to analyze the legality of LAWS with respect to the rule against unnecessary suffering.²⁰² As he states, this is a principle based on effects produced from the engagement of a weapon or weapon system, and not related to the manner of engagement—autonomy.²⁰³ The current debate is unlike that of chemical or biological weapons in which the basic effects are inherent in the category of weapon, and have been internationally condemned as producing unnecessary suffering. But, a LAWS may employ standard conventional munitions, similar to RPVs utilizing the same ordinance as manned aircraft.²⁰⁴ This does present a serious flaw

199. LOW MANUAL, *supra* note 29, at ¶ 6.2.2.

200. See Schmitt, *supra* note 2, at 9 (noting that *Losing Humanity* does not mention the prohibition. Further noting that “perhaps this is because autonomy is unlikely to present unnecessary suffering and superfluous injury issues since the rule addresses a weapon system's effect on the targeted individual, not the manner of engagement (autonomous)”).

201. *Id.* at 8.

202. *Id.*

203. *Id.* at 9.

204. See *id.* at 25–26 (noting that “human-supervised autonomous weapon systems may be used to select and engage targets, with the exception of selecting humans as targets, for local defense to intercept attempted time-critical or saturation attacks for: (a) Static defense of manned installations and/or (b) Onboard defense of manned platforms”).

in an argument that LAWS as a category are unlawful from a traditional standpoint of a weapon review. It could lend credence to the “wait and see” approach.

Another viewpoint however, which may be quite controversial is that there may be a potential to evaluate the psychological effect or suffering of being killed or targeted by a LAWS. Historically in the weapons context, suffering has been evaluated only as it relates to the physical effects caused by a weapon system.²⁰⁵ The Holy See, in its working paper at the Third Informal Expert Meeting on LAWS (CCW) in April 2016, alluded to the psychological impact of LAWS on people.²⁰⁶ The argument seemed to be directed more towards a general policy stance as opposed to a nuanced interpretation of the law.²⁰⁷ However, it is worth considering that mental harm could be incorporated into any analysis of unnecessary suffering in the future in light of modern developments in understanding psychological injury. The law already accounts for such harms with respect to torture and terrorizing civilian populations.²⁰⁸ It is of course very difficult to measure such effects due to the variability of how individual human minds are impacted by experiences as opposed to physiology. It simply could be impossible to apply such a standard, but it should not be ignored as it is an integral part of our shared humanity.

Ultimately, it is unlikely that any LAWS would be calculated to cause unnecessary suffering. The unique features of LAWS are their method of engagement, autonomy, and not the means by

205. See generally Int'l Comm. of the Red Cross [ICRC], *Weapons That May Cause Unnecessary Suffering or Have Indiscriminate Effects*, Expert Meeting, (1973) (referencing the international definitions and guidelines on what is considered suffering, focusing on the unnecessary suffering and injuries).

206. Holy See Working Paper, *supra* note 198, at 3.

207. *Id.*

208. Mark Costanzo, Ellen Gerrity, & M. Brinton Lykes, *The Use of Torture and Other Cruel, Inhumane, or Degrading Treatment as Interrogation Devices*, THE SOC'Y FOR THE PSYCHOL. STUDY OF SOC. ISSUES, <https://www.spssi.org/index.cfm?fuseaction=page.viewpage&pageid=1460> (last visited Jan. 22, 2018); Laura Paredi, *The War Crime of Terror: An Analysis Of International Jurisprudence*, INTERNATIONAL CRIMES DATABASE 1 (June 2015), http://www.internationalcrimesdatabase.org/upload/documents/20150610T161554-Laura%20Paredi%20ICD%20Brief_final.pdf.

which they produce kinetic effects.²⁰⁹ Certainly, a LAWS could be designed to facilitate the employment of a weapon that produces unnecessary suffering, but that would play out in a weapon review of that weapon without bearing on the weapon system itself.²¹⁰

3. Distinction

In *Losing Humanity*, HRW summarily asserts that LAWS are incapable of complying with the operational principle of distinction; an argument which is completely circular.²¹¹ The organization effectively starts with the premise that LAWS cannot distinguish between combatants and non-combatants, and then supports this premise with additional conclusions that do not seem to be based on any testing or expertise in robotics and AI.²¹²

Similar to the analysis of unnecessary suffering, this seems actually impossible to do without an actual LAWS to review. Reviewing a hypothetical notion of LAWS will only result in the conclusion the party doing the analysis desires on a political level.²¹³ As example, HRW notes that contemporary operational environments are plagued by unprivileged belligerents that have no respect for the law of war so they hide among the civilian population, or regularly use civilians as human shields.²¹⁴ As they do not wear military uniforms identifiable at a distance, HRW

209. Christof Heyns, *Autonomous Weapons Systems: Living a Dignified Life and Dying a Dignified Death*, in *AUTONOMOUS WEAPONS SYSTEMS: LAW, ETHICS, POLICY* 3, 4 (Nehal Bhuta et. al. eds. 2016) (defining autonomous weapon systems as robotic weapons that can engage targets without human intervention after activation due to their situational awareness, computer processing of information, and weapons that can implement the decision).

210. Schmitt, *supra* note 2, at 9.

211. HUM. RTS. WATCH, *supra* note 3, at 3.

212. *Id.* at 30–32.

213. See Schmitt, *supra* note 2, at 37 (stating that due to the hypothetical nature of LAWS it is too early to make a policy decision regarding them).

214. See HUM. RTS. WATCH, *supra* note 3, at 30; DEP'T. OF DEF., Press Briefing by General Townsend via teleconference from Baghdad, Iraq (Aug. 31, 2017), <https://www.defense.gov/News/Transcripts/Transcript-View/Article/1297228/departments-of-defense-press-briefing-by-general-townsend-via-teleconference-fro/> (an example of the use of human shields in the type of operational environment discussed by HRW).

presumes that LAWS therefore are not capable of distinction.²¹⁵ The nature of the current operational environment does present distinction difficulties, including misidentification of civilians as belligerents, even for trained human combatants.²¹⁶

However, if a specific LAWS is not capable of distinguishing between unprivileged belligerents and civilians directly participating in hostilities due to the lack of uniform that in of itself does not render the LAWS unlawful.²¹⁷ Use of such a LAWS in that operational environment would be unlawful, but that does not mean it would be incapable of meeting a threshold of distinction for a different operational environment—think back to the earlier discussion of the MOAB. The HRW report does not take into account variances in operational environments.²¹⁸

Not all operational environments are open unstructured environments where it is even a challenge for a human combatant. Take the Sentry Tech system described earlier that is employed at the de-militarized zone (DMZ) between North and South Korea.²¹⁹ As mentioned, it is not a LAWS as defined in this paper because a human operator must decide to engage a proposed target, but it possesses autonomous features to search for, detect, and identify targets.²²⁰ Within the DMZ, neither civilians nor military personnel are permitted to traverse the area.²²¹ It is undoubtedly the most controlled and closed physical operational environment in the world today.²²² If the Sentry Tech

215. *Id.* at 30–31.

216. *Id.* at 30.

217. See JHA, *supra* note 84, at 72–73.

218. See Schmitt, *supra* note 2, at 11 (giving examples of environments where LAWS would be lawful irrespective of their ability to distinguish between civilians and belligerents that are not considered by HRW).

219. See Expert Meeting on AWS, *supra* note 27, at 73–74 (providing examples of the various anti-personal sentry systems being employed in South Korea); John Rabirot, *Machine Gun-Toting Robots Deployed on DMZ*, STARS AND STRIPES (July 12, 2010), <https://www.stripes.com/machine-gun-toting-robots-deployed-on-dmz-1.110809#.Wd6p-LpFxPY>.

220. Roni A. Elias, *Facing the Brave New World of Killer Robots: Adapting the Development of Autonomous Weapon Systems into the Framework of the International Law of War*, 21 TRINITY L. REV. 70, 75 (2016).

221. Heather M. Haley, *Defoliating Fence and Foxhole: An Unconventional Response to an Irregular Threat Along the Korean DMZ, 1967–1969*, 9 FED. HIST. J. 69, 70 (2017).

222. Erin Burnett, *Inside the DMZ: One of the World's Most Dangerous Places*, CNN

detects humans and notifies the operator, it would be a virtual certainty that the identified target is not a civilian.²²³

The DMZ scenario is not suggested in any way to opine that LAWS are a lawful weapon of war, but merely that at this point, without a specific LAWS to evaluate, it is not possible to conclude them unlawful as inherently indiscriminate weapons as if they are a chemical weapon. Further, if a specific LAWS was found to be indiscriminate then employment of such a LAWS would already violate the law of war so there is little utility of having a wide spread international legal instrument banning all LAWS.²²⁴ The same rationale for the Chemical Weapons Convention or the Biological Weapons Convention does not seem to exist with LAWS as a category.

It very well could be the case that a particular LAWS will enhance distinction; thus, resulting in less civilian casualties. In a more traditional combat setting where combatants are wearing recognizable uniforms as required by the law of war, a LAWS that employs supervised learning in robotics as discussed earlier very well could be properly programmed to recognize combatant targets among civilians just as the faces program can identify an isolated person amidst a photo with multiple subjects.²²⁵ Considering that any LAWS would likely be designed with this goal in mind as most emerging weapons technology has been, there may be a legitimate concern in pre-emptively banning a weapon system that could enhance the overarching objective of the law of war to mitigate suffering that occurs in war.

Any discussion of LAWS must be based on genuine legal thought and knowledge of military operations, not circular reasoning or unreasonable interpretations of the law. As noted,

(APR. 10, 2015), <http://www.cnn.com/videos/tv/2015/04/10/erin-burnett-north-korea-dmz.cnn>.

223. See Elias, *supra* note 220, at 75 (inferring that together the sentry robots and human operator make a virtually certain identification).

224. See HUM. RTS. WATCH, *supra* note 3, at 7 (stating that a weapon review should begin with possible prohibitions under existing weapon treaties, including the rule of distinction).

225. Expert Meeting on AWS, *supra* note 27, at 37 (statements of representatives of Germany); Biersdorfer, *supra* note 77 (describing that just like civilian robots being able to recognize cats or specific faces, LAWS could be programmed to recognize combatant uniforms.).

Article 36 of AP I specifically envisions looking to the legality of a weapon in a multitude of circumstances.²²⁶ It is not an all-or-nothing approach.

B. Proportionality

The rule of proportionality is an operational principle that is not associated with a weapon review typically, but is related to the employment of an otherwise lawful weapon.²²⁷ It is very much a reflection of the general nature of the law of war as a licensing body of law in that it envisions the legal acceptance that innocent civilians will die in war, and in fact, it expressly permits a certain degree of it as long as it is not a result of intent.²²⁸ The rule stipulates that an attack is prohibited if it “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.”²²⁹

Of the five main arguments typically associated with opponents of LAWS this is the first one addressed directly that seems to hold a lot of merit. As stated, proportionality does not typically come in to play in advance of the actual employment of a weapon or weapon system, but LAWS are unique in that a human-on-the-loop and human-out-of-the-loop LAWS would be designed, unlike any other weapon system, to make the proportionality assessment through application of its programming algorithms. This is a decision that is the province of the commander, which would now be delegated to a machine, resulting in even greater moral, physical, and psychological distancing from the cruel realities of war.

The discussion in the section on military necessity above regarding the combat decision making process is directly on point for a discussion of proportionality as well. In light of the earlier discussion, it is extraordinarily difficult to envision that a full and

226. AP I, *supra* note 143, art. 36.

227. See HUM. RTS. WATCH, *supra* note 3, at 32 (The rule of proportionality states that the expected civilian harm from an attack cannot be excessive in relation to the anticipated military advantage and does not take into account the legality of the weapon.).

228. AP I, *supra* note 143, art. 51(2)(b).

229. *Id.* at art. 57(2)(a)(iii).

appropriate proportionality assessment can be made by algorithm. Taking into account the previous discussion of reinforcement learning of robots, which is seen as the highest level of learning capability currently possible—and likely ever possible—for a LAWS to conduct a proportionality assessment, the expected military advantage to be gained, along with the cost of civilian lives, would have to be reduced to a quantifiable value.²³⁰ This is simply not realistically possible, and maybe better said, it is not appropriate to attempt to quantify unquantifiable concepts in order to allow combatants and commanders to evade demonstrating the moral courage to make decisions in combat.

Professor Schmitt notes in his article that computer systems already exist to calculate a collateral damage estimate (CDE) that take into account factors such as blast effect, attack profile, probability of civilian presence, precision of the weapon, composition of structures, etc.²³¹ This is certainly true, but the present argument is not that machines cannot aid a commander in making a proportionality assessment by providing more thorough and detailed real-time information. Instead, the argument is that while aspects of CDE can be calculated by machines with generally much greater accuracy than humans (the quantifiable data), they cannot calculate the dynamic nature of the value of a military advantage sought on the battlefield or that of a human life, and cannot infuse political factors that may influence whether an otherwise lawful strike is to be conducted.²³² Unlike the human commander who must make a decision in the face of his shared humanity with the enemy combatant; his shared sense of warrior culture; and the effect of social mores against killing that can produce a lifetime of guilt and shame—all of which that result in a natural inclination to conservatively apply a proportionality assessment—the machine has no

230. See Schmitt, *supra* note 2, at 19–21 (giving examples of how expected military advantage gained and cost of civilian lives could be quantified for proportionality assessment).

231. Schmitt, *supra* note 2, at 19.

232. Expert Meeting on AWS, *supra* note 27, at 58 (statements of representatives of the United Kingdom) (distinguishing the analytic and intuitive approaches to military decision making with machines being incapable of the intuitive approach which is the only one able to take core values into consideration).

humanity to respect the lives it may take. Value in the sense of a military advantage is better thought of in the sense of artistic value in that it is a subjective assessment based on understanding of the strategic objectives, operational design, higher level commander's intent, years of experience, training, and education as well as intuition and creativity.²³³

As stated by the delegation of the Holy See in its working paper for the Third Informal Expert Meeting on LAWS (CCW), “[h]umans have this ability to be able at any time to innovate out of the shackles of rigid rules, taking into account the unexpected, the unusual event.”²³⁴ That is, humans have free will and even advanced AI is shackled by the rules of its program.

In assessing proportionality with regard to LAWS, we should also look to the historical development of the rule and its underlying constructs, both of a moral and practical nature. This is necessary because the nature of LAWS could undermine the entire justification for having the flexibility that the rule of proportionality provides to belligerents by which the law does not expect perfection of result.

As understood in the normal application, proportionality allows a “fairly broad margin of judgment” based on the decision of a reasonable commander in good faith.²³⁵ But, as discussed earlier, machines do not make decisions based on judgment, they merely execute functions of a program. Is it possible that a LAWS could execute an attack that has proportionate results? Quite likely, but that is not the relevant question for analysis. Proportionality, as indicated above, is a rule of application, not a rule of result. So, although a LAWS may be able to affect an attack that produces proportionate results, it has not satisfied the legal application of proportionality, which judges the intent and reasonability of the decision to attack.

Professor Schmitt argues that, “[n]either the human nor the machine is held to a standard of perfection; on the contrary, in international humanitarian law the standard is always one of

233. *Id.* at 57–58 (explaining that military decision making is primarily guided by professional judgment which is closely related to the intuitive approach while the analytic approach that machines could utilize is used as time permits).

234. Holy See Working Paper, *supra* note 198, at 3.

235. HUM. RTS. WATCH, *supra* note 3, at 33.

reasonableness.”²³⁶ Yet, when the moral and practical reasons for the flexibility provided by proportionality are suspect in the context of LAWS, it does lead to the question of why would perfection not be expected of a LAWS if it was permitted to deploy?

The historical development of the principle of proportionality emerged from the Just War theory of Thomas Aquinas.²³⁷ While this is a moral argument, it is directly on point with the proportionality discussion, and distinct from the Martens Clause so it will be discussed in this section. The basis in morality that lead to the development of the legal standard of proportionality is what became known as the double-effects doctrine.²³⁸ The doctrine is based on the premise that a single action can have two effects: one good (i.e. saving own life); and one negative (i.e. killing another human being).²³⁹ As long as the action is taken with the intent to achieve the good effect, the action is not to be considered unlawful as long as it is additionally proportionate.²⁴⁰ That is, the action taken was only to the degree required to achieve the good effect.²⁴¹ Citing Augustine, Thomas Aquinas notes that “accidental homicides may occur when a person seeks to do good things and that person should not be imputed with liability for that unintended consequence.”²⁴² Arguably, this moral justification for collateral damage is nullified with a LAWS because a LAWS does not, and cannot, have intention.²⁴³ It does not make a moral judgment intending to do good things, it merely reacts as programmed to do so.²⁴⁴ The program may have been coded with the purpose of doing a good thing, but the temporal

236. Schmitt, *supra* note 2, at 21.

237. AQUINAS, *supra* note 23, at 165.

238. *See id.* at 170 (stating that nothing prevents one action from having two effects, one of which is intended and the other of which is unintended).

239. *Id.*

240. *See id.* (stating that defending one’s life is not unlawful, but using greater force than necessary in protecting one’s life is disproportionate and is thus unlawful).

241. *Id.*

242. *Id.* at 171.

243. Expert Meeting on AWS, *supra* note 27, at 57.

244. *See* HUM. RTS. WATCH, *supra* note 3, at 38 (“[A] robot in a combat zone might shoot a child pointing a gun at it, which might be a lawful response but not necessarily the most ethical one.”).

and operational distance between the intention of the programmer and the double-effects no longer has validity, especially considering any intention of the programmer is not specific to the engagement.²⁴⁵

From a practical perspective, one of the justifications for proportionality is one of a negotiated balance in the interest of not placing unattainable and unrealistic expectations upon human commanders, and that in the heat of battle to achieve military objectives and protect one's own combatants there must be operational flexibility.²⁴⁶ If there is an operational environment in which a LAWS is employed where there is zero risk—physically and psychologically—to friendly combatants, there is intuitively a reluctance to accept that proportionality should apply in the same manner as it would when conducting close air support of troops-in-contact.²⁴⁷ This argument as it pertains to physical risk applies equally to the targeted killing operations with RPVs (drones), and has yet to be resolved in favor of tightening the legal standard. However, it is clear that this almost instinctual belief has dramatically impacted the perceived legitimacy of such operations with lay people, which assuming the same result if LAWS were employed would run counter to one of the stated military objectives the system would be designed to serve—to maintain public support.²⁴⁸

It is unlikely that the scope of the proportionality rule will change in the near future as a result of the changing dynamics of the elimination of physical risk for many operations and highly particularized targeting operations. But, it is important that they are addressed and that the debate continues, because the law should evolve with significantly changed circumstances that could result in absurd results when the old is applied to the new.

Even in consideration of the acceptance of the current standards for proportionality, the analysis leads to the reasonable

245. *Id.* at 43–44 (explaining that there should be no accountability for any miscoding by the programmer that was inadvertent or produced unforeseeable effects).

246. *Id.* at 32.

247. ALEX LEVERINGHAUS, *ETHICS AND AUTONOMOUS WEAPONS* 17, 54–55 (2016).

248. *Id.* at 122 (arguing that depending on the outcome of an interdisciplinary analysis of risk, if risks are reasonable, there might be no reason to reject the use of autonomous weapons).

conclusion that LAWS cannot make an independent proportionality analysis. So, as a result, a human-out-of-the-loop system would not be able to be lawfully deployed to operate in its framework algorithm.²⁴⁹ But, with respect to a human-on-the-loop system there would still be a feasible opportunity for a human operator to confirm or disagree with a purported proportionality assessment made by a LAWS prior to engagement.²⁵⁰ It is still however suspect as to how meaningful this potential for intervention would be considering the *roboticization* of the original combat “decision,” which will likely result in the “automation bias” phenomenon.

C. The Responsibility Gap: Fact or Fiction?

One of the major arguments against LAWS has been the notion that employment of a human-out-of-the-loop and possibly a human-on-the-loop system as well would create a legal void for liability for the commission of war crimes by a LAWS.²⁵¹ There have been questions of whether the computer programmer, the human operator, or responsible commander could or should be held liable for war crimes committed by a machine.²⁵² In the end, however, this argument holds limited persuasive authority. Much detailed analysis has been conducted on this question by various scholars, and has been more often rejected as not having enough merit to support a pre-emptive ban of LAWS.²⁵³ In various scenarios, any one of the three subjects could be found liable.

Further, regardless of criminal liability, the liability of the State for actions of its agents is unquestionable. Attribution pursuant to the laws of State responsibility does not require a

249. HUM. RTS. WATCH, *supra* note 3, at 32–33 (arguing that the robot’s problems with analyzing so many situations would interfere with its ability to comply with the proportionality test).

250. *Id.* at 12.

251. *Id.* at 4.

252. *Id.*

253. *See, e.g.,* LEVERINGHAUS, *supra* note 247, at 73–74 (arguing that machine warfare does not amount to “warfare without responsibility”); Schmitt, *supra* note 2, at 33 (arguing that commanders are accountable for those war crimes if they knew or should have known that the LAWS had been so programmed); *see also* Expert Meeting on AWS, *supra* note 27, at 44 (describing that various parties may be held to account for actions of a LAWS thus it may be difficult in some cases to reach the ICC standard of direct intent).

showing of intent.²⁵⁴ States would unquestionably be obligated to compensate victims of the wrongful acts of its agents, including a machine agent.²⁵⁵

More importantly, the criminal liability gap argument overstates the significance of international criminal law as a means to enforce compliance, and deter violations of the law of war.²⁵⁶ Law-abiding States and their professional warriors, predominantly, do not comply with the law of war because of some fear of being prosecuted in a national or international court, they do so because of a culture of honor within the professional military organization and societal dedication to the rule of law, along with the achievement of strategic and operational objectives, which are closely linked to compliance with the law of war.²⁵⁷

International criminal law is just one tool in the tool box to encourage compliance with the law of war.²⁵⁸ Like a domestic criminal justice system, it is mostly a reactive system of punishment that vindicates community interests. Historically, a failure to comply with the law of war was most often dealt with through the laws of State responsibility.²⁵⁹ Mechanisms of collective responsibility, especially in a military culture, tend to be much more effective.²⁶⁰

D. Threshold to Resort to Force

The next argument made by opponents of LAWS is that their availability will result in more armed conflict because political leaders will have the flexibility to lower the threshold to resort to force. With no risks of combatants being injured or killed as the argument goes, the public will idly stand by while a nation

254. Expert Meeting on AWS, *supra* note 27, at 17.

255. *Id.*

256. See Anderson & Waxman, *supra* note 14, at 17 (recognizing that accountability for criminal liability is just one of many mechanisms for promoting and enforcing compliance with the laws of war).

257. *Id.*

258. *Id.* (recognizing that post-hoc judicial accountability is just one of many mechanisms for promoting and enforcing compliance with the laws of war).

259. *Id.*

260. *Id.*

employs armed force in the territory of other States. This argument seems to make some sense, but ultimately there is no empirical data to prove its contention.²⁶¹

Further, at its root, this is another counter-logical argument in that it purports a need to create more law on the premise that if another law is not created, States will disregard the laws that already prohibit the actions sought to be prevented by a new law. If States have a practice of disregarding the *jus ad bellum*, a treaty banning LAWS is not going to change that behavior.

On the flip side of the negative implications, it could be argued that if this premise is true then it would not only potentially result in aggressive war, but it also may make States more apt to engage in humanitarian intervention operations to prevent mass atrocities that have not been adequately addressed by the international community as a whole.²⁶² At least in one example, that of the Kosovo campaign by NATO forces, modern technology enabled States to intervene in a humanitarian disaster almost exclusively through the use of air power without “boots on the ground.”²⁶³ The air power made it possible for democratic states with populations not amenable to sending in ground forces to fight in a foreign war detached from their perceived national security interests to defend humanity.²⁶⁴

In the scheme of grand strategy, the introduction of LAWS would not greatly contribute to a lowering of the threshold to resort to force. They absolutely do not with respect to the law, but also with practice contrary to the law too. First, it is rarely in a State’s interest to engage in armed conflict, and when it is, the presence of LAWS is not going to significantly impact that decision.²⁶⁵ Second, LAWS, like RPVs, may provide significant operational advantages to achieve tactical successes with little expenditure in manpower, material, and pecuniary resources of a State, but ultimately individual tactical successes alone cannot

261. LEVERINGHAUS, *supra* note 247, at 13–14.

262. *Id.* at 14.

263. See JHA, *supra* note 84, at 109.

264. *Id.* at 109–10.

265. See LEVERINGHAUS, *supra* note 247, at 14 (arguing that it is hard to see States ignoring restrictions on the declaration of war just because they had access to autonomous weapons).

produce the strategic objectives that drive a State to conflict in the first place.²⁶⁶ If a State wants to achieve its strategic objectives it will have no choice in the long run but to employ human forces to consolidate tactical objectives into cohesive operation plans that will result in strategic success.

Machines will never be able to provide security for a populace the way human troops can that display empathy, build local relationships, and that are guided by concepts of morality and honor.²⁶⁷ Machines cannot restore governance, employ rule of law through a justice system, provide jobs to the poor, food to the hungry, or shelter to the homeless.²⁶⁸ All of which are essential to stability operations during an occupation that lead to enabling local civil authorities and transitioning authority that create the conditions necessary to sustain peace *post bellum*.²⁶⁹ Additionally, during active combat phases of a military operation, the actions which a State uses in order to secure tactical objectives may have long term strategic consequences that prevent the healing process of peace to occur, such as the wholesale killing of all status-based targets that the law allows absent consideration of policy, or factors of the human psyche that may caution against killing.²⁷⁰

Preserving resources and public support are important to military operations, but a balanced sacrifice is always required; otherwise the State will engage in perpetual warfare.²⁷¹ The case in point may be the RPV targeted killing program of the United States in its current conflict, which provides tactical gains while

266. Anderson & Waxman, *supra* note 14, at 2; LEVERINGHAUS, *supra* note 247, at 14.

267. Anderson & Waxman, *supra* note 14, at 14.

268. *See id.* (stating that no machine can, through its programming, replace the key elements of human emotion and affect).

269. LEVERINGHAUS, *supra* note 247, at 18; *see also* Carsten Stahn, *Jus Post Bellum: Mapping the Discipline(s)*, in *JUS POST BELLUM: TOWARDS A LAW OF TRANSITION FROM CONFLICT TO PEACE* 93, 108 (Carsten Stahn & Jann K. Kleffner eds., 2008); Michael Pugh, *Challenges of Post-Conflict Intercession: Three Issues in International Politics*, in *JUS POST BELLUM: TOWARDS A LAW OF TRANSITION FROM CONFLICT TO PEACE* 115, 127 (Carsten Stahn & Jann K. Kleffner eds., 2008).

270. *See* Anderson & Waxman, *supra* note 14, at 18–19 (arguing that precision and remoteness might result in a greater propensity to wage war or resort to military force).

271. *See id.* at 3 (balancing technological and military secrecy against expectations about appropriate designs).

preventing the enemy from achieving operational objectives.²⁷² But, ultimately, it does not result in the achievement of strategic objectives. The technology cannot address the underlying causes of the conflict, and in reality, the failure to address such, separately may exacerbate such causes, and mitigate any tactical gains made by killing terrorist leaders.²⁷³

If AWS were developed and employed by a state, to have potential success, it would have to be one system in a highly integrated combined arms force including AWS, manned and unmanned systems, and of course the “boots on the ground.”²⁷⁴ The notion of full-scale robot wars is best left for Hollywood. LAWS could augment and support a military force, but as indicated, LAWS could never fully eliminate the need for human combatants on the ground whether serving in civil affairs or ground combat roles.²⁷⁵

E. Martens Clause and Related Concerns of Honor, Ethics, and Morality

Turning to the last major argument proposed to justify a determination that LAWS are unlawful without regard to whether an international treaty is negotiated and ratified: that LAWS are contrary to notions of natural law as manifested through principles of humanity, and that the notion of machines making life and death decisions even in war shocks the public conscience.²⁷⁶ The composition of the Martens Clause consists of arguments in the field of ethics and those spawning from the

272. See *id.* at 5 (pointing out that targeted killing operations bring up arguments over ethical legitimacy).

273. See *id.* at 14 (noting that technology cannot address the fundamental ethical and legal principles that are uniquely human).

274. See Schmitt, *supra* note 2, at 6 (“Autonomous weapon systems will be integrated into human warfare, but are highly unlikely to replace it.”).

275. See *id.* (pointing out that a Department of Defense Task Force noted “the true value of these systems is not to provide a direct human replacement, but rather to extend and complement human capabilities by . . . reducing human exposure to life-threatening tasks, and . . . reducing the high cognitive load currently placed on operators/supervisors”).

276. See HUM. RTS. WATCH, *supra* note 3, at 1 (proposing that the clause requires that means of warfare be evaluated according to the “principles of humanity” and the “dictates of public conscience”).

concepts of honor and morality.²⁷⁷ Although there is overlap, we will next discuss the debate over the Martens Clause generally, followed by arguments in the subsidiary elements of honor, ethics, and morality.

1. Martens Clause

First and foremost, the clause itself:

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.²⁷⁸

The clause is eponymously named after F. de Martens, a well-known jurist and scholar of his time who was the Russian delegate to the Hague Peace Conference of 1899.²⁷⁹ Although *Hague II of 1899* was the first codified iteration of the concepts in which the Clause seems to represent, it has “ancient antecedents rooted in natural law and chivalry,” chivalry referring to the warrior honor code of the West arising in the medieval period.²⁸⁰

To deny that there is a natural law is to deny the entire foundation for international human rights law; it is simply not consistent with the sense of a common humanity that also supports the law of war. Since its inception, it has been replicated with slight variations in multiple succeeding international legal instruments governing the law of war, including Article 1(2) of AP I where it was included as a substantive provision.²⁸¹ It is

277. See Meron, *supra* note 196, at 79 (noting that the clause is based on the sources of morality, has ancient antecedents rooted in chivalry, and is articulated in strong language, both rhetorically and ethically).

278. Hague II 1899, *supra* note 34, at 247.

279. See Meron, *supra* note 196, at 79 (recognizing the eminent jurist and Russian delegate who proposed the Martens Clause to The Hague Peace Conference).

280. See *id.* (holding the clause is rooted in “natural law and chivalry”); Mull, *supra* note 10, at 7 (“Chivalry was the honor code of Western feudal knights.”).

281. See AP I, *supra* note 143, art. 1 (proposing that “in cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the

understood to be of applicability to all aspects of the law of war.²⁸²

Some prominent scholars, such as Professor Yoram Dinstein, have argued that the Martens Clause has no substantive effect, and only contains concepts that inform the development of the law of war.²⁸³ Others, like Professor Michael Schmitt, have argued that it “only applies in absence of treaty law.”²⁸⁴ That it is only a “failsafe mechanism meant to address lacuna in the law,” and according to Schmitt, it is not an overarching principle that should be considered in every case.²⁸⁵ However, as the International Court of Justice (ICJ) stated in the *Nuclear Weapons Advisory Opinion*, the Martens Clause’s “continuing existence and applicability is not to be doubted.”²⁸⁶ And, consistent with the ICJ’s analysis of the nuclear weapons question, as we have not found a treaty of “customary rule specifically proscribing” LAWS, the question of the legality of LAWS must be considered in light of the principles of the law of war, including the Martens Clause.²⁸⁷

During the International Military Tribunal at Nuremberg the Tribunal provided validation for the substantive viability of the Martens Clause in its response to defense arguments that the crimes of which they were charged were not law at the time of the acts.²⁸⁸ The Tribunal stated: “[t]he Preamble is much more than a pious declaration. It is a general clause, making the . . . laws of humanity and the dictates of public conscience into the legal yardstick to be applied” when the specific law of war issue (e.g. legality of LAWS) is not covered by specific provisions of codified

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

282. See Meron, *supra* note 196, at 79 (proposing that the Martens clause goes a long way toward the formation and interpretation of the law of war).

283. YORAM DINSTEIN, *THE CONDUCT OF HOSTILITIES UNDER THE LAW OF INTERNATIONAL ARMED CONFLICT* 57 (2004) (noting that, while the International Court of Justice acknowledges the clause’s applicability, the clause does not directly affect the legality of weapons).

284. Schmitt, *supra* note 2, at 32.

285. *Id.*

286. *Nuclear Weapons Advisory Opinion*, *supra* note 151, at ¶ 87.

287. See *id.* at ¶¶ 74, 87.

288. See Meron, *supra* note 196, at 80 (noting that the Martens clause was invoked in response to assertions that the Nuremberg Charter constituted retroactive penal legislation).

law or well-established CIL.²⁸⁹ In the absence of the specific, the general principles should be “applied to the specific situation and out of that particular application a rule of greater specificity emerges.”²⁹⁰

Admittedly, in the present case dealing with the legality of LAWS, it is only in “extreme cases” in which the Martens Clause acting alone could delegitimize a weapon.²⁹¹ However, the introduction of LAWS on the battlefield could very well be such an extreme case due to the strong public outrage that has arisen from the thought of “death by algorithm” as described by Christof Heyns.²⁹² In the *Nuclear Weapons Advisory Opinion*, the ICJ specifically noted that the Martens Clause is especially helpful in assessing emerging weapons technology because both treaty law and CIL are always vastly outpaced by the development of technology.²⁹³ In such situations, the Martens Clause can govern.²⁹⁴

The notion of public conscience certainly considers at a minimum public opinion. Public opinion alone is neither enough nor should it be, but it is a factor of consideration. Since 2015, the Open Roboethics Initiative of Canada has conducted a dynamic poll online that solicits participants across the globe.²⁹⁵ Their most recent report of the results includes participants from 49 countries. Eleven percent of the respondents served in the military and 44 percent have at least one family member that serves or has served in the military.²⁹⁶ The level of participation

289. *Id.* (citing Lord Wright, the editor of the *Law Reports of Trials of War Criminals*).

290. *Id.* at 87 (citing Judge Weeramantry’s dissenting opinion in the *Nuclear Weapons Advisory Opinion*).

291. *Id.* at 88.

292. See Heyns, *supra* note 209, at 11 (arguing that death by algorithm means that people are treated simply as targets and not as complete and unique human beings).

293. *Nuclear Weapons Advisory Opinion*, *supra* note 151, at ¶ 87.

294. See *id.* at ¶ 84 (recalling that all States are bound by those rules in Additional Protocol I which were merely the expression of the pre-existing customary law, such as the Martens Clause).

295. OPEN ROBOETHICS INITIATIVE, *The Ethics and Governance of Lethal Autonomous Weapons Systems: An International Public Opinion Poll 1* (Nov. 9, 2015), http://www.openroboethics.org/wp-content/uploads/2015/11/ORi_LAWS2015.pdf.

296. *Id.* at 4.

with some degree of relation to military service is particularly important because one of the supposed military advantages attained with LAWS is elimination of risks of human combatants.

The resulting data is not fully unexpected, but informative:

- 67 percent of participants favor a pre-emptive international ban of LAWS
- 85 percent said LAWS should not be used for offensive strikes
- 71 percent said they would rather their state use RPVs as opposed to LAWS
- 60 percent said if their State was to be attacked they would rather the enemy have RPVs over LAWS.²⁹⁷

The data in the poll above is striking in that it shows that people do find a very meaningful difference between killing the enemy by remote control versus killing them through machine autonomy, the application of algorithms.²⁹⁸ This is important in part because much of the arguments based in honor and ethics against LAWS have also been employed against RPVs for more than a decade, so there does appear to be something more about LAWS that offends the public conscience.²⁹⁹

Another global survey conducted on the issue found more than a majority of the participants viewed the delegation of the decision of life and death, whether in open warfare or covert operations, is viewed as unacceptable.³⁰⁰ Two-thirds of participants in the survey said that if LAWS were employed, the legal standards regarding when it could engage and acceptable collateral damage under proportionality should be higher.³⁰¹

2. Honor

In the modern anti-honor culture of Western Liberal societies, many are dismissive of any arguments based on the concept of

297. *Id.* at 1.

298. *See id.* (indicating that the survey participants are reluctant to endorse the development and use of LAWS for waging war).

299. Anderson & Waxman, *supra* note 14, at 8. *See supra* notes 46–50, 54, 248 and accompanying text.

300. JHA, *supra* note 84, at 112.

301. *Id.* at 113.

honor.³⁰² However, this is an error when it comes to analyzing issues involving professional warrior cultures. Even in Western Liberal societies like the United States, professional warriors are a part of a separate and distinct honor culture.³⁰³ It is that honor of professional warriors that has been the most effective compliance mechanism for the law of war.³⁰⁴ The point of this section is not to repeat the arguments regarding dishonorable weapons that has been asserted throughout the centuries every time a new weapon enables the attacker to do so from a greater physical distance at less physical risk to himself.

It cannot be doubted that weapons such as RPVs will have a negative impact on the preservation of the warrior honor culture that fosters the development of virtues such as loyalty, integrity, courage, mercy, and compassion.³⁰⁵ These virtues are intrinsic to the notion of professional warriors; virtues which cannot be replicated by a machine.

The demonstration of these virtues by honorable warriors on the battlefield is an integral component of the consolidation of tactical gains, preservation of political and moral legitimacy, support of the local population during transition periods, and sustaining the peace *post bellum*.³⁰⁶

Warrior honor at its most basic summation is the demonstration of mutual respect among warriors.³⁰⁷ In the past this required combat of skill and courage.³⁰⁸ Many like to defend weapon systems such as RPVs and LAWS on the grounds that the law does not specifically require combatants to place themselves at risk when conducting attacks.³⁰⁹ This is true regarding positive

302. See generally Mull, *supra* note 10, at 2–5, 31 (discussing critics of honor-based arguments such as retired JAG Corps officers and law professors Rachel Van Landingham and Sean Watts).

303. *Id.* at 2 (arguing that honor is the heart of the warrior ethos).

304. See *id.* at 2–3 (recognizing that honor is not only a fundamental principle of the law of war, but the progenitor principle of the body of law).

305. See JHA, *supra* note 84, at 111; see also Sparrow, *supra* note 52, at 85–86; for an in-depth discussion of warrior cultures and their honor codes, see Mull, *supra* note 10.

306. See Mull, *supra* note 10, at 5 (arguing that honor supports the entire system because it is the honor code of the professional warrior ethos).

307. *Id.* at 21.

308. *Id.*

309. See Anderson & Waxman, *supra* note 14, at 8 (finding that the law makes no

law, but as a matter of honor, warriors are expected to place themselves at some risk in the interest of protecting the innocent from the effects of war.³¹⁰ It may not be in of itself an expectation of positive law, but the honorable conduct of warriors should be considered in a calculation of the Martens Clause as it is a corollary to humanity and the “public conscience.”³¹¹ LAWS take the mitigation of risk to an entirely different level in that troops would not only be capable of completely removing themselves physically from the hazards of combat, but they would also be able to psychologically and morally separate themselves from their duty.³¹²

At a minimum, honor among warriors must be understood to require enough respect to not delegate the decision of death to a machine. To do otherwise is to treat other warriors as if they are not worthy of respect; thus, dishonoring the unit and State, abrogating their warrior culture.³¹³

3. Ethics

Ethical dilemmas with LAWS are abound with some overlap with the concepts of honor and morality as well, most specifically dealing with the physical and psychological distancing from the harsh decisions that have to be made in war.

The lack of human capacities such as mercy to the vanquished and sympathy may not be a concern in all battlefield roles as Professor Schmitt notes in pointing out that various combatants in fire support roles operating beyond visual range weapons do not see the people they kill, and cannot show them compassion or mercy.³¹⁴ Further, to be fair, machines are also free of emotions

requirement that sides limit themselves of available weapons).

310. See Mull, *supra* note 10, at 18–19 (explaining that honor has evolved similar to dignity).

311. Meron, *supra* note 196, at 79.

312. See generally JHA, *supra* note 84, at 112; Haiigarth, *supra* note 12, at 3; Heyns, *supra* note 209, at 4.

313. See Cora Sol Goldstein, *Drones, Honor, and War*, MILITARY REV., NOV.–DEC. 2015, at 70, 73 (citing Matt Walje, *Drone Warfare and Jus ad Bellum: Mala Prohibita under Right Intention*, POLEMISTES ETHOS WEBLOG (accessed Sept. 1, 2015), <http://thepolemistesethos.wordpress.com/2012/09/27/hello-world/>).

314. Schmitt, *supra* note 2, at 12.

such as anger, hatred, and desires for revenge.³¹⁵ Although emotions such as these are mitigated or suppressed to a great extent through the intensive training and cultural development of professional warriors whose honor demands placing duty above individual desires such as revenge.³¹⁶

From an ethical standpoint, we cannot ignore the second and third order negative effects that can come from a society in which we have consciously allowed the moral and psychological borders to humans killing other humans to erode.³¹⁷ The physical and psychological removal from the battlefield reduces the killing of other human beings to a simple occupational task with no need to reflect upon.³¹⁸ We as a civilization must “seriously consider whether the use of LAWS is at all compatible with a respect for the humanity of those being killed.”³¹⁹

The removal of the human combatant on the battlefield would “induce the disappearance of what the relationship of a person to a person and the discovery of the face of the other could provoke” such as empathy, mercy, reconciliation, unexpected forgiveness, and a conscious choice to capture instead of kill when killing would be lawful.³²⁰ The human combatant does not make life and death decisions on the battlefield simply by what the expansive limits of the law of war permit. In his book *On Killing*, Lieutenant Colonel (retired) Dave Grossman cites studies of combatants in WWII, which reflected large percentages of troops that never fired at the enemy.³²¹ He notes that the average person, and even the average combatant, has such a “usually unrealized resistance towards killing a fellow man that he will not of his own volition

315. *Id.*

316. See Mull, *supra* note 10, at 7 (explaining that honor, which informs warriors decisions, is not about revenge (citing Joseph Hamilton, *The Dueling Handbook* 1 (1829))).

317. See generally JHA, *supra* note 84, at 110 (arguing that in distant killing by LAWS, killing becomes too easy as the natural moral-psychological barrier to killing is removed).

318. See DAVID L. PERRY, PARTLY CLOUDY: ETHICS IN WAR, ESPIONAGE, COVERT ACTION, AND INTERROGATION 78 (Jan Goldman ed., 2009) (explaining the ethical risks associated with distancing the act of killing from soldiers).

319. JHA, *supra* note 84, at 110.

320. Holy See Working Paper, *supra* note 198, at 3–4.

321. DAVE GROSSMAN, ON KILLING: THE PSYCHOLOGICAL COST OF LEARNING TO KILL IN WAR AND SOCIETY 3–4 (rev. ed. 2009) [hereinafter GROSSMAN, ON KILLING].

take life if it is possible to turn away from that responsibility” even when faced with imminent death.³²² The combatant “comes from a civilization in which aggression, connected with the taking of life, is prohibited and unacceptable,” which “stays his trigger finger even though he is hardly conscious that it is a restraint upon him.”³²³

Grossman’s work illustrates two aspects of the LAWS debate. One, it explains one of the underlying reasons why States may want to develop LAWS: they want to psychologically distance themselves from the shame or guilt associated with killing other humans.³²⁴ To treat war like an engineering operation seeks to eliminate the inefficiency of the friction caused by the perceived frailty of the human mind’s propensity towards application of honorable, moral, and ethical concepts.³²⁵ It seeks a combatant that is shackled only to mathematical calculations of black-and-white legal rules.³²⁶ Two, it explains one of the primary factors why LAWS are so concerning. The psychological distance eliminates the application of the shared sense of humanity all humans have, whether conscious or not.³²⁷ The natural resistance to killing another human can act to reduce what would otherwise be legally acceptable errors of judgment in combat, prevent unnecessary status-based killing that would otherwise be lawful, and most importantly for the long term, it reinforces the ability of both sides to restore peace *post bellum*.³²⁸

Life and death decisions need to respect and acknowledge our shared humanity, not reduce people to objects. Marcus Aurelius

322. *Id.* at 30.

323. DAVE GROSSMAN, ON COMBAT: THE PSYCHOLOGY AND PHYSIOLOGY OF DEADLY CONFLICT IN WAR AND PEACE 163 (3d ed. 2008).

324. *See id.* at 199 (describing the psychological resistance to killing one’s own species).

325. *See id.* at 158 (quoting RUSS CLAGETT, AFTER THE ECHO: A SURVIVAL GUIDE FOR POLICE & MILITARY SNIPERS (2003)).

326. *See id.* at 198–99 (explaining the importance of man’s psychological limitations in battle when compared to his physical limitations).

327. *See generally* GROSSMAN, ON KILLING, *supra* note 321, at 98 (charting the correlation between the physical distance to the target and the killer’s resistance to killing).

328. *See* Mull, *supra* note 10, at 5 (explaining the role honor plays in a warrior’s life and the inability of outsiders, namely lawyers, to understand that role).

nearly two thousand years ago recognized this notion when he said:

Every individual dispensation, . . . is one of the causes of the prosperity, success, and even survival of that which administers the universe. To break off any particle, no matter how small, from the continuous concatenation—whether of causes or of any other elements—is to injure the whole.³²⁹

That is, to kill another human being is to chip away at all of humanity, and as such, decisions in war must be placed in the hands of other humans that are capable of making honorable, ethical, and moral judgments.³³⁰

Throughout this paper, we have been mindful of considering second and third order effects regarding the employment of LAWS. Even outside the strict contours of military operations and grand strategy, the vast potential cultural impact to society as a whole must be considered when virtues that have historically been developed through military service may fade, resulting in States engaging in war with a moral compass that cannot find true north.

4. Morality

In the midst of war, even if a LAWS could potentially prove to be as effective in distinction as a human operated weapon system, the overarching concern of “moral agency” still demands the human operator.³³¹ As noted earlier, proportionality is judged based on application of good faith judgments and intention, not simply the results of such attacks. “War must never be reduced to a merely amoral, technical, or instrumental endeavor.”³³²

As Christof Heyns notes in his description of his concept of death by algorithm, the use of LAWS does not treat a human as a human but instead reduces his importance to that of an object,

329. GROSSMAN, ON KILLING *supra* note 321, at 39.

330. See Heyns, *supra* note 209, at 10–11 (contending that a machine’s ability to determine whether or not to use force against a particular individual destroys that individual’s humanity).

331. LEVERINGHAUS, *supra* note 247, at 114.

332. PERRY, *supra* note 318, at 79.

taking from him moral worth and respect.³³³ If a LAWS was deployed in an infantry combat setting in the future, it would not make a moral judgment or exercise situational awareness to determine whether that combatant should pay the ultimate price.³³⁴ Simply because the law permits status-based targeting in certain operational environments does not mean the goal of the law is that all such eligible targets are killed, but instead, the licensing nature of the standard serves only to prevent second guessing a decision made by a combatant amidst the fog of war.³³⁵ Further, that license can be provided with a presumption that moral, ethical, honor, policy, and professional reasons will restrain unnecessary application of the full license. Supporters of LAWS in the legal realists crowd tend to dismiss moral arguments as irrelevant because if the rule of distinction is applied, then the law allows the combatant to be killed.³³⁶ But, in light of the concerns of the underlying principles of the law of war, including humanity and honor, along with concerns of the public conscience such as public opinion, ethics, and morality, it would seem that there is an “implicit requirement” in international law (considering the law of war and human rights law) that only humans may be legally and morally empowered to kill other humans.³³⁷ Delegating the decisions of death to a machine is inherently wrong and an inherently arbitrary deprivation of life.³³⁸ Thus, a true LAWS would be contrary to the *lex lata*.

IV. CONCLUDING REMARKS

At the beginning of this process, the goal was to attempt to objectively evaluate the legality of LAWS with consideration of

333. Heyns, *supra* note 209, at 11.

334. *See generally* Holy See Working Paper, *supra* note 198, at 3 (expounding on the effect that the lack of accountability for robotic weapons will have on warfare).

335. *See generally* Anderson & Waxman, *supra* note 14, at 16 (contrasting past campaigns to stop the use of landmines with LAWS).

336. *See id.* (finding that because every weapon must meet the fundamental requirements of the laws of war to be used in combat by nations, the weapon’s agency is inconsequential).

337. *See* Heyns, *supra* note 209, at 10–11 (arguing that a machine’s ability to use force against an individual destroys that individual’s humanity).

338. *Id.* at 10.

positive law and CIL, the process for conducting weapon reviews, and the Martens Clause with its constituent parts. Taking a completely objective approach of potential arguments on both sides of the equation in light of this author's own frame of reference as a military professional and former government attorney in the field of weapons law was without difficulty through much of the analysis. The ease of objectivity became difficult during the discussion of the principle of proportionality. At that point, it started to become more apparent that LAWS may simply not have a place on the battlefield. But, when assessing the validity of LAWS in light of the principles and concerns resident within the Martens Clause, holding on to any sense that LAWS were just another emerging weapon technology that will face some opposition in the beginning, but eventually be accepted, was untenable.

From the foregoing analysis it seems that LAWS may likely be able to satisfy the distinction principle at least on a *per se* level, and particular LAWS could be advanced enough to be able to discriminate in a multitude of operational environments. There are articulable justifications of military necessity to develop LAWS even though they are somewhat suspect in that most of the articulated reasons can be achieved the same through RPVs. This is especially true in light of the highly successful missile and rocket defense systems with autonomous features currently employed that still require a human moral agent. The scenario of defending against an incoming missile represents the height of necessity to make quick decisions. If looking at LAWS in the very general sense of a typical weapon review as articulated in the U.S. Department of Defense regulations, the "wait and see" approach is persuasive.

But, in light of the true need to subsequently assess the concept under the standards of the Martens Clause as an emerging weapon technology, the clear and present dangers to humanity of the *roboticization* of war conspicuously emerge. As noted earlier, it is only a rare case where the Martens Clause alone could justify a determination that a weapon or method of warfare is unlawful. With respect to LAWS, it may very well be that rare case. However, as noted it is not simply a matter of the Martens Clause because it is in conjunction with the impossibility of LAWS to conduct a proportionality analysis.

The conclusion of this analysis is not necessarily in favor of an international legal instrument regarding LAWS with the ultimate objective of banning them. Such a treaty would be extraordinarily difficult to negotiate, especially considering the group of experts cannot agree on a singular textual definition after three years of meetings. Broad treaty bans like that typically result in negative consequences tangential to the regulation, and largely only impact law-abiding States.³³⁹ Additionally, the proposed plans of HRW would seem to cover missile and rocket defense systems or other anti-material AWS, which is an absolutely undesirable option and only reflects a political agenda absent sound legal thought and knowledge of military operations.

Instead, the point of the conclusions made is that LAWS—autonomous weapon systems designed to attack personnel targets that delegate the actual decision to engage a personnel target to a machine without human review and conscious approval—is contrary to the laws of humanity and public conscience.³⁴⁰ And it is therefore an unlawful weapon system in design.³⁴¹ As such, a treaty purporting to prohibit that which is already unlawful as a matter of natural law, existing operational legal principles, and the positive law as manifested in the Martens Clause would only provide support to non-States Party to claim that they are not bound by such provision.

The simple test to be proposed to supporters of LAWS that see no problems of honor, morality, or ethics: would you trust a machine to serve as your psychologist, or to be your judge or jury in a courtroom? The complexity of these roles is a fraction of the representation of the level of human judgment needed to make combat decisions.³⁴² If the answer is no, then a machine should never be entrusted to take lives. To answer the title question of

339. DAVID J. GERBER, *GLOBAL COMPETITION: LAW, MARKETS, AND GLOBALIZATION* 278 (2010) (explaining the disparity in benefits from country to country because of anticompetitive conduct, among other things).

340. See Meron, *supra* note 196, at 79 (explaining the Martens Clause and its drafters' belief in humanity during warfare, which LAWS violate).

341. See *supra* notes 58, 59 and accompanying text.

342. JHA, *supra* note 84, at 116 (finding that if the answer to this question is in the negative, the State must never allow a machine to make the decision to kill a human being).

this analysis, the potential development of and employment of LAWS is a threat to not only our bedrock understanding of humanity, but would likely result in the continued erosion of social virtues integral to civilization and facilitate social detachment from the realities of war.