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NOTE

REGULATING LETHAL AUTONOMOUS ROBOTS IN UNCONVENTIONAL WARFARE

PETER B. POSTMA*

INTRODUCTION

Nations, including the United States, are currently developing lethal autonomous robots ("LARs") without significant consideration of how this technology will be used on the battlefield. In the future, LARs will conduct lethal operations with complete autonomy, involving no human interaction in the targeting process.[1] However, the technology is still developing and is not fully operational. As this technology advances, various organizations and legal scholars have called for a complete ban on their use in combat or a moratorium on LAR development.[2] Both a prohibition on LAR use and a moratorium on LAR development are based on the premise that LARs in-

* Peter Postma is a 2014 graduate of the University of St. Thomas School of Law. The proposed ban on the use of lethal autonomous robots in counterinsurgency operations was developed in part from his combat experience in Iraq while serving with the United States Army. These are the personal views of the author and do not reflect those of the U.S. Government. He wishes to thank Professor Robert Delahunty for his support and guidance during the development of this Note.

1. *See generally* Rep. of the Spec. Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Human Rights Council, 23d Sess., May 27–June 14, 2013, U.N. Doc. A/HRC/23/47 (April 9, 2013) [hereinafter U.N. Report]. This report states: "Lethal autonomous robotics (LARs) are weapon systems that, once activated, can select and engage targets without further human intervention. They raise far reaching concerns about the protection of life during war and peace." *Id.* at 1. The important distinction of a LAR is "that the robot has an autonomous 'choice' regarding selection of a target and the use of lethal force." *Id.* at 7–8.

2. For example, the United Nations has recommended a moratorium on the development and use of LARs, also known as Autonomous Weapon Systems by some commentators. *Id.* at 1, 20. Additionally, other organizations have developed specifically to encourage the development of international legal principles banning the development and use of LARs. *See, e.g.*, HUMAN RIGHTS WATCH, LOSING HUMANITY: THE CASE AGAINST KILLER ROBOTS 2 (2012), *available at* http://www.hrw.org/reports/2012/11/19/losing-humanity-0 [hereinafter HUMAN RIGHTS WATCH]. The International Committee on Robot Arms Control (ICRAC) was formed to promote such a ban. *See Statements*, ICRAC, http://www.icrac.net/statements (last visited Sep. 24, 2014). The ICRAC is seen as the most prominent group calling for a complete prohibition. Furthermore, scholars and commentators have written on the legal and moral implications that LARs will have in future combat and some argue that until these issues are resolved, LARs should not be used in operational combat. *See generally* Mary Ellen O'Connell, *Banning Autonomous Killing*, *in* THE AMERICAN WAY OF BOMBING: HOW LEGAL AND ETHICAL NORMS CHANGE (Matthew Evangelista &

volve legal and moral problems, which must be addressed before the technology advances to the point of operational use.[3] Some countries, such as the United States, set moratoriums on the use of LARs.[4] However, these countries continue developing LAR technology.[5] While the debate focuses on the problems that LARs pose under current international law, the actual uses of this new technology in combat have not yet been debated. This Note seeks to begin filling that void by proposing that LARs should be prohibited from use in counterinsurgency operations.

Commentators focus on the potential problems that fully-autonomous LARs will pose under the laws of armed conflict ("LOAC"). Current writing focuses almost entirely on legal and moral problems under *jus in bello* principles, such as discrimination, proportionality, necessity, and command responsibility. These *jus in bello* principles will briefly be discussed in Part I of this Note. Additionally, scholars fear the increasing distance that modern technology puts between weapons users and the projected lethal impact of that technology.[6] In Part II, this Note will describe the current development of LARs and explain commentators' concerns with LAR use in combat[7] as well as the scholarly responses to the call for complete prohibition.[8] Despite the current scholarly debate, governments are continuing to advance LAR technology.[9] This advancement is consistent with historical precedent of other weapons technologies as described in Part III. Although other technologies, such as the crossbow, chemical weapons, the dum-dum

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Henry Shue eds., 2013) (introducing and evaluating the future development of automated weapons and suggesting a treaty ban on removing humans too far from decisions to kill).

3. *See* U.N. Report, *supra* note 1, at 6.

4. *See* U.S. DEP'T OF DEF., DIR. 3000.09, AUTONOMY IN WEAPON SYSTEMS (2012).

5. *See* U.N. Report, *supra* note 1, at 8–10, 20.

6. *Id.* at 5–7. Additionally, "LARs may . . . lower the threshold for States for going to war or otherwise using lethal force, resulting in armed conflict no longer being a measure of last resort." *Id.* at 11.

7. *See* Benjamin Kastan, *Autonomous Weapons Systems: A Coming Legal "Singularity"?*, 2013 U. ILL. J.L. TECH. & POL'Y 45, 47. Kastan states:

> Many commentators claim that [LARs] may pose serious challenges to existing legal regimes, especially the international law of armed conflict (LOAC). Some fear that Autonomous Weapons Systems (AWS) will operate in a lawless zone where the LOAC does not apply, a sort of legal "singularity." Others foresee the need for a "revolution in military legal affairs" to address the problems with autonomous or near-autonomous weapons.

Id.; *see also* Nick Cumming-Bruce, *U.N. Expert Calls for Halt in Military Robot Development*, N.Y. TIMES, May 30, 2013, http://www.nytimes.com/2013/05/31/world/europe/united-nations-armed-robots.html?_r=0.

8. *See, e.g.*, Kenneth Anderson & Matthew C. Waxman, *Laws and Ethics for Autonomous Weapons Systems: Why a Ban Won't Work and How the Laws of War Can*, *in* HOOVER INSTITUTION (JEAN PERKINS TASK FORCE ON NATIONAL SECURITY AND LAW) (2013), *available at* http://www.ssrn.com/abstract=2250126; Michael Schmitt, *Autonomous Weapons Systems and International Humanitarian Law: A Reply to the Critics*, HARV. J. NAT'L SEC. J. FEATURES (2013), *available at* http://harvardnsj.org/2013/02/autonomous-weapon-systems-and-international-humanitarian-law-a-reply-to-the-critics/.

9. *See* U.N. Report, *supra* note 1, at 8–10.

bullet, submarines, and nuclear weapons, were limited or criticized under international law during their development, these limitations and criticisms did not prevent their use during international armed conflict.

Similar to these historical technologies, LARs continue to develop, and operational deployment will soon be possible. However, no current laws or treaties specifically govern LARs.[10] Instead, LARs are governed by a patchwork inadequate to provide meaningful standards for the operational use of LARs in combat.[11] However, LARs have significant implications for the military and for society.[12] The international community, therefore, must face reality and begin developing a set of guidelines or rules for LAR use in armed conflict.[13] The need for the development of operational rules is described in Part IV.

There are multiple ways in which LAR technology could be restricted. LARs could be regulated by restricting the number or types of LARs that a country may possess.[14] Additionally, LARs could be restricted to only specified missions, such as specified long-range aerial bombardment.[15] While these limitations could be useful, this Note will focus on proposing a distinction between LAR use in high-intensity conflict and their use in counterinsurgency operations. Part V concludes by proposing that, while LAR use in high-intensity conflicts should be allowed,[16] LAR use in

10. Gary E. Marchant et al., *International Governance of Autonomous Military Robots*, 12 COLUM. SCI. & TECH. L. REV. 272, 289 (2011); Kastan, *supra* note 7, at 54 ("[L]ike all other weapons systems, [LARs] . . . are subject to the general principles of LOAC.").

11. Marchant et al., *supra* note 10, at 289, 291; Vik Kanwar, *Post-Human Humanitarian Law: The Law of War in the Age of Robotic Weapons*, 2 HARV. NAT'L SEC. J. 577, 586 (2011). *But see* Eric T. Jensen, *Future Ware, Future Law*, 22 MINN. J. INT'L L. 282, 284 (2013) ("[While] it is likely that the contemporary LOAC will be sufficient to regulate the majority of future conflicts, [the international community] must be willing . . . to evolve the LOAC in an effort to ensure these future weapons and tactics remain under control of the law."). But Jensen does acknowledge that future weapons, including LARs, present options that are difficult to analyze under existing law. *Id.* at 320.

12. Marchant et al., *supra* note 10, at 274; Jensen, *supra* note 11, at 282.

13. Marchant et al., *supra* note 10, at 315; *see* Kanwar, *supra* note 11, at 582.

14. Similar to the restrictions placed on Nuclear Weapons. *See infra* Part III.D.

15. The use of LARs to conduct targeted bombardments would reduce operations and maintenance costs and keep pilots out of harm's way. Additionally, LARs will be able to fly at altitudes over 50,000 feet and loiter on target for as long as 22 hours, similar to remotely piloted aircraft, which could increase the ability to ensure targeting that conforms to rigorous legal standards. Aaron M. Drake, *Current U.S. Air Force Drone Operations and Their Conduct in Compliance with International Humanitarian Law – An Overview*, 39 DENV. J. INT'L L. & POL'Y 629, 632, 637 (2011). The problem with autonomous robots is the dual-use nature of the technology. Autonomous robots will be used for both civilian and military purposes. Even within the military purposes, the technology may creep from non-lethal to lethal use because of its dual nature. *See* FRED C. IKLÉ, ANNIHILATION FROM WITHIN: THE ULTIMATE THREAT TO NATIONS 65 (2006).

16. *See generally* THOMAS X. HAMMES, THE SLING AND THE STONE: ON WAR IN THE 21ST CENTURY 23–31 (2004) (explaining that high-intensity conflicts, sometimes labeled force-on-force or third generation warfare, are characterized by conventional military forces fighting against other conventional military forces).

counterinsurgency operations should be prohibited.[17] Part V will provide four reasons for the distinction. These are: (1) the distinction problem in counterinsurgencies; (2) the decreasing political cost of going to war with advancing technology; (3) winning people's hearts and minds in a successful counterinsurgency requires capabilities beyond programmed algorithms; and (4) the perception of unfair military advantage when LARs are used in a counterinsurgency, which will not allow the winning of hearts and minds. Additionally, prohibiting LARs in counterinsurgency operations lessens the potential violations of discrimination, proportionality, necessity, and command responsibility. As LAR technology develops, standards regarding this technology will continue to adapt and change; however, this does not mean the international community should delay in crafting standards today.[18] Treaties, rules, and codes can shape how nations conduct future armed conflict with LARs.[19] While these future regulations may not be perfect,[20] the international community should start by banning LARs in unconventional warfare.

I. Customary International Law Problems Related to the Use of LARs in Military Conflict

In order to understand commentators' concern with LAR use under the LOAC, one must first understand the general *jus in bello* principles: distinction, proportionality, military necessity, and command responsibility.[21] Because LARs, once activated, will be able to select and engage targets without human interaction, LARs ignite deep concerns regarding the protection of life during war under *jus in bello* principles.[22] The detachment of technology, it is feared, may intensify the "indiscriminate character of combat."[23] Because no specific laws or treaties currently regulate the combat

17. Counterinsurgency is defined as "comprehensive civilian and military efforts taken to defeat an insurgency and to address core grievances. Also called COIN." U.S. Dep't of Def., J. Publication 1-02: Dictionary of Military and Associated Terms 85 (2010) [hereinafter JP 1-02].

18. Kastan, *supra* note 7, at 81; *see* Franklin D. Rosenblatt, *Wired for War: The Robotics Revolution and Conflict in the Twenty-First Centur*y, 203 Mil. L. Rev. 381, 382, 386–88 (2010); *see generally* P.W. Singer, Wired for War: The Robotics Revolution And Conflict in the Twenty-First Century (2009).

19. *See generally* Gregory P. Noone, *The History and Evolution of the Law of War Prior to World War II*, 47 Naval L. Rev. 176 (2000) (evaluating the role of treaties, rules, and codes in conflicts throughout history).

20. "Laws are never perfect either in their creation or their enforcement. Certainly, the laws that are intended to regulate something as drastic as war will fall prey to the same pitfalls as simpler and more pedestrian laws." *Id.* at 207.

21. Marchant et al., *supra* note 10, at 295. "These principles . . . impose ethical and arguably legal restraints on at least some uses of lethal autonomous robots. *Id.*

22. U.N. Report, *supra* note 1, at 1.

23. Drake, *supra* note 15, at 653 (citing Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol

use of LARs,[24] an understanding of these general principles provides a necessary foundation for later discussion of LAR concerns.

A. *Distinction/Discrimination*

Distinction, or discrimination, is the ability to differentiate between actors on the battlefield.[25] The hallmark of distinction is "to channel most harm in war towards combatants, while shielding as much as possible civilians and civilian objects."[26] In armed conflict, civilians are presumed to be innocent and must not be targeted.[27] Generally, during warfare, combatants can be told apart from civilians because combatants wear uniforms.[28] However, this is changing as warfare is increasingly focused on fighting insurgencies.[29] Furthermore, distinction requires the ability to distinguish between legal and illegal orders.[30] Thus, distinction may require moral judgment,[31] which some say LARs lack the ability to possess.

B. *Proportionality*

The principle of proportionality prohibits "an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated . . . ."[32] In other words, if the loss of life or damage is greater than the military advantage gained, the use of force violates proportionality.[33] To determine this balance, one must consider the military necessity of a particular use and evaluate the benefits of that use against the potential collateral damage.[34] Some have stated that proportionality in today's world cannot be measured

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I) art. 36 ¶ 1476, Dec. 7, 1978, 1125 U.N.T.S. 3, *available at* http://www.icrc.org/IHL.NSF/COM/470-750113?OpenDocument [hereinafter Protocol I]).

24. Marchant et al., *supra* note 10, at 289.

25. Jensen, *supra* note 11, at 300; *see* Marchant et al., *supra* note 10, at 296; *see also* Eric A. Posner, *A Theory of the Laws of War*, 70 U. CHI. L. R. 297, 298–99 (2003) (summarizing and giving examples of the four principles).

26. Gabriella Blum, *The Fog of Victory*, 24 EUR. J. INT'L L. 391, 416 (2013).

27. *Id.* at 417.

28. *Id.*

29. *See* MAX BOOT, INVISIBLE ARMIES: AN EPIC HISTORY OF GUERRILLA WARFARE FROM ANCIENT TIMES TO THE PRESENT xx, 559–60 (2013) (describing an increase in insurgencies after 1945 and how insurgents seek to blend into the local population); *see also* Blum, *supra* note 26, at 417–19 (summarizing the difficulties in distinguishing citizens from combatants in different modern warfare situations).

30. U.N. Report, *supra* note 1, at 11. The U.N. Special Rapporteur noted that the ability to distinguish between legal and illegal orders is a concern that relates specifically to LARs because of their "restricted abilities to interpret context and to make value-based calculations." *Id.*

31. Marchant et al., *supra* note 10, at 296.

32. JEAN-MARIE HENCKAERTS & LOUISE DOSWALD-BECK, CUSTOMARY INTERNATIONAL HUMANITARIAN LAW VOLUME 1: RULES 46 (2005).

33. Marchant et al., *supra* note 10, at 296; Blum, *supra* note 26, at 419; *see* Posner, *supra* note 25, at 298.

34. Marchant et al., *supra* note 10, at 296.

by reference only to the immediate threats, but includes the greater positive goals the conflict seeks to accomplish.[35] But even a long-range view of proportionality, taking into account the greater goals of a conflict, cannot extend infinitely to justify any measure of violence.[36] Proportionality requires continual assessment throughout the armed conflict based on the current military advantage sought and what is excessive in relation.[37] In sum, "[p]roportionality is largely a qualitative, subjective decision."[38] LARs may be unable to frame and contextualize the environment; consequently, LARs might decide to launch an attack based on incomplete and flawed understandings of the circumstances.[39] However, it should be recognized that basing decisions on flawed understandings happens to humans as well. Yet, humans can take into account the social and political ramifications that the lethal use of force may have on a civilian population and can continuously update this assessment. Thus, LARs may not have the ability to continuously adapt and may not be able to apply proportionate force.

C. Military Necessity

Military necessity "justifies measures of regulated force, not forbidden by international law, which are indispensable for securing the prompt submission of the enemy, with the least possible expenditures of economic and human resources."[40] Put differently, military necessity "holds that the amount of suffering caused by a weapon (in the form of death, serious injuries, and so forth) should not be more than necessary to achieve a legitimate military aim."[41] Necessity focuses on the force actually required to suppress an attack or the requirement of a target to the overall military campaign. Military necessity both enables and limits war, permitting force to the extent required for the "complete or partial submission of the enemy at the earliest possible moment."[42] Military necessity ensures the avoidance of wanton destruction, which serves no purpose to end a conflict. In a high-

35. Blum, *supra* note 26, at 413.

36. *Id.*

37. *Id.* at 413, 419.

38. Kastan, *supra* note 7, at 62.

39. The U.N. Special Rapporteur noted that "concerns have been expressed that the open-endedness of the rule of proportionality combined with the complexity of circumstances may result in undesired and unexpected behaviour by LARs, with deadly consequences. The inability to 'frame' and contextualize the environment may result in a LAR deciding to launch an attack based not merely on incomplete but also on flawed understandings of the circumstances" U.N. Report, *supra* note 1, at 13–14.

40. Marchant et al., *supra* note 10, at 296 (citing Roy Gutman & Daoud Kuttab, *Indiscriminate Attack*, *in* CRIMES OF WAR 2.0: WHAT THE PUBLIC SHOULD KNOW (2007), *available at* http://www.crimesofwar.org/a-z-guide/indiscriminate-attacks/ (last visited Sept. 25, 2014)).

41. Posner, *supra* note 25, at 298.

42. Blum, *supra* note 26, at 415 (internal quotations omitted). Military necessity justifies a nation's use of force but also places limits on the amount of force that the nation can use by focusing on the target of that force. If the target serves no purpose in ending the conflict, then the target is not necessary.

intensity conflict, LARs, through objective assessment of the battlefield and algorithmic calculations, may be able to conduct precision targeting of the opposing side's center of gravity to bring an end to the conflict sooner. Furthermore, the use of LARs puts fewer humans in danger during combat operations. However, in an unconventional conflict LARs may calculate that significant force is needed to achieve military victory when the focus should be on building the economy and governance for long-term stability. Thus, LARs may meet the military necessity principle in high-intensity conflicts, but fall short of meeting the principle in unconventional wars.

D. Command Responsibility

Command responsibility requires soldiers to act under the command and control of superiors who have determined when and how those soldiers should act.[43] Commanders are under a responsibility to take steps to prevent a subordinate's criminal behavior.[44] This principle is not only enforced by international military tribunals but also by the United States Supreme Court. In *Yamashita*, the Court held that it is a violation of the laws of war when a commander fails to control the operations of members of his command who commit atrocities.[45] This principle reflects the need for battlefield control.[46] However, command responsibility may be problematic for LARs, since LARs will not be directly controlled by humans, unlike current technologies like a remotely piloted aircraft, which remains under human control throughout its missions.[47]

II. Call for the Prohibition on the Use of Lethal Autonomous Robots Due to International Concern

Autonomous robot development is at various stages by multiple countries;[48] however, the U.S. Air Force estimates that by 2025 fully autonomous flight will be possible and by 2047 autonomous target engagement will be possible.[49] Some see LAR development as a coming revolution in

43. Marchant et al., *supra* note 10, at 296.

44. U.N. Secretary-General, Letter dated 24 May 1994 from the Secretary-General to the President of the Security Council, U.N. Doc. S/1994/674, ¶¶ 55–60 (May 27, 1994); *see also* Drake, *supra* note 15, at 657 (citing Henckaerts & Doswald-Beck, *supra* note 32, at 558).

45. *See generally In re* Yamashita, 327 U.S. 1 (1946); *see also* Drake, *supra* note 15, at 655–56.

46. Marchant et al., *supra* note 10, at 296–97.

47. *See* Drake, *supra* note 15, at 635 (noting that current U.S. Air Force remotely piloted aircraft (RPA) operations on the battlefield exercise command responsibility because at no time during the mission is the RPA without human command and control).

48. Kastan, *supra* note 7, at 52; *see* ICRAC, *supra* note 2.

49. U.S. Air Force, Unmanned Aircraft Systems Flight Plan 50 (2009), *available at* http://www.fas.org/irp/program/collect/uas_2009.pdf; *see generally* Drake, *supra* note 15, at 648 ("The USAF has . . . projected other advances in RPA technology to address or overcome current vulnerabilities or limitations.").

military affairs similar to gunpowder or nuclear weapons.[50] Because a legal framework is currently lacking, multiple commentators claim that this technology will pose serious challenges for the international community.[51] Because of these challenges, these commentators advocate for a complete prohibition on LARs in armed conflict or a moratorium on their development until enhanced legal parameters are established for their use.[52] This section provides an overview of the current state of LAR development,[53] arguments made by commentators regarding why LARs should be prohibited, and scholarly responses to these arguments. This debate has largely focused on whether current international law is sufficient to regulate LARs, but the discussion has yet to go into detail about how LARs should be used in armed conflict.

A. Current State of Development of LARs

Robotics is an ever-increasing field that is able to utilize an immense amount of data to perform a variety of tasks.[54] Because technology is increasing exponentially, it is difficult to regulate due to the unknowns that may be in the future. While the Defense Advanced Research Projects Agency ("DARPA") and other governmental agencies are working on military robotics technology,[55] some robotics technology is being developed solely for the civilian marketplace.[56] However, there is the possibility for "technology creep" from the civilian marketplace into armed conflict due to the dual-use nature of robotics.[57] Yet, within the military alone, significant improvements to LARs are underway and it is estimated that by 2047 technology will have the capability for fully autonomous operations and lethal

50. Kastan, *supra* note 7, at 47; U.N. Report, *supra* note 1, at 5; SINGER, *supra* note 18, at 203.

51. Kastan, *supra* note 7, at 47; Marchant et al., *supra* note 10, at 315.

52. The U.N. Report advocates for a moratorium on the development of LARs as well as for the international community to come together to develop legal principles to guide the use of LARs in armed conflict. U.N. Report, *supra* note 1, at 20.

53. When describing the status of LAR development this Note will generally focus on the development in the United States.

54. *Id.* at 7–8; *see* IKLÉ, *supra* note 15, at 3, 27 (looking at technology in general and perceiving that technology is transforming capacity of humans, while the international order remains generally unchanged).

55. Heather Kelly, *Meet DARPA's 6'2" Disaster Response Robot*, CNN (July 16, 2013), http://whatsnext.blogs.cnn.com/2013/07/16/meet-darpas-62-disaster-response-robot/.

56. U.N. Report, *supra* note 1, at 9; *see* John Markoff, *Google Cars Drive Themselves, in Traffic*, N.Y. TIMES (Oct. 9, 2010), http://www.nytimes.com/2010/10/10/science/10google.html; Brian Naylor, *Hitting the Road Without a Driver*, NPR (Aug. 19, 2013), http://www.npr.org/blogs/alltechconsidered/2013/08/13/19/212683617/hitting-the-road-without-a-driver.

57. U.N. Report, *supra* note 1, at 9–10.

targeting without human interaction.[58] However, at this time "no country has publicly revealed plans to use fully autonomous weapons."[59]

The United States and other countries have used semi-automated systems since the 1970s; however, no system has achieved true autonomous operations yet. For example, in the 1970s the United States developed the Aegis Combat System which was designed to semi-autonomously defend ships against multiple incoming high-speed threats.[60] Today, the U.S. Navy utilizes the Phalanx System, which "is a 20mm Gatling Gun mounted on the deck of U.S. Navy ships that autonomously performs 'search, detect, evaluation, track, engage, and kill assessment functions.' "[61] The Phalanx System will identify, track, and destroy targets approaching a ship by firing hundreds of armor-piercing rounds at the target.[62] This process takes only seconds to accomplish, beyond the capabilities of humans to enter the decision-making loop.[63] This technology is also employed on land using a variant of the Phalanx, which was introduced into Iraq in 2005 to combat indirect fire threats, such as mortars.[64] The Phalanx and Aegis Combat Systems are defensive weapons systems that demonstrate the increasing capabilities and the nearing autonomy of military technology.

Automated technology has advanced beyond immobile weapons platforms. Today, technology allows military equipment to become increasingly robotic. For example, during the recent wars in Iraq and Afghanistan, the United States became increasingly dependent on human-controlled robots to disable improvised explosive devices ("IEDs").[65] In addition to disabling IEDs, robots were developed to employ lethal force under human control.[66] For example, the Talon SWORDS is a robot originally designed to disable IEDs, which can now be equipped with a machine gun and oper-

58. By fully autonomous it is meant that LARs will be able to conduct ground operations, maintenance, and repair to sustain itself and prepare for future combat operations. Once a mission set has been developed, the LARs will conduct its own mission planning, scheme of maneuver, weapons selection, and targeting and engagement actions without human involvement in the decision-making loop. LARs will be fully capable of completing tactical operations that nest within the strategic and operations objectives established by human commanders. *See* U.S. AIR FORCE, *supra* note 49, at 33–36.

59. Kenneth Anderson & Matthew C. Waxman, *Killer Robots and the Laws of War*, WALL ST. J. (Nov. 3, 2013), http://online.wsj.com/news/articles/SB10001424052702304655104579163361884479576.

60. *Id.*

61. Drake, *supra* note 15, at 652 (citing Phalanx Close-In Weapons System (CIWS), RAYTHEON http://www.raytheon.com/capabilities/products/phalanx (last visited Nov. 11, 2013) [hereinafter Phalanx]).

62. *Id.*

63. *Id.*

64. *Id.*

65. Russ Mitchell, *Robot Warriors in Iraq*, CBS NEWS (Feb. 11, 2009), http://www.cbsnews.com/8301-18563_162-3389513.html.

66. Marchant et al., *supra* note 10, at 278.

ated remotely by a human.[67] Such robots exhibit the lethal potential that LARs will bring to the battlefield.

But in the future, robots may not be tied to a human operator as demonstrated by the MQ-8C Fire Scout helicopter. In November 2013, Northrop Grumman successfully tested the MQ-8C Fire Scout, a "fully autonomous, four-blade, single-engine unmanned helicopter."[68] While the Fire Scout can take-off, land, and fly autonomously, it depends on human input for its mission planning and sustainment.[69] In other words, the Fire Scout must still rely on humans for its operational capability. Additionally, the Fire Scout does not have a lethal capacity. Instead, the Fire Scout will be used for resupply missions and intelligence collection missions.[70] Robotics technology advancements, such as combining characteristics of the Fire Scout's autonomy and the Talon SWORDs' lethality, will continue to bring military technology closer to fully lethal, autonomous operations.

Beyond advances in robotics technology, artificial intelligence is advancing. One example that showcases artificial intelligence's extraordinary potential is that of the IBM supercomputer "Watson."[71] Watson gained fame for beating human competitors in *Jeopardy* in 2011.[72] Watson was able to rapidly sort through databases using over one hundred statistical algorithms to "learn" the right answers.[73] Similar technology will likely be "adapted to assist LARs in the future."[74] As robots are able to "learn" they will gain increasing abilities to become completely autonomous. Additionally, this capability will enable robotic use in combat with ever-increasing distances between humans and the destructive impacts of war.

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67. Noah Shachtman, *First Armed Robots on Patrol in Iraq*, WIRED (Aug. 2, 2007), http://www.wired.com/dangerroom/2007/08/httpwwwnational. There are now robots being developed solely for armed combat, such as the Modular Advanced Armed Robotic System (MAARS) by QinetiQ which has similar capabilities to the Talon SWORDS. Modular Advanced Armed Robotic System (MAARS), QINETIQ, https://www.qinetiq-na.com/wp-content/uploads/data-sheet_maars.pdf (last visited Nov. 11, 2013).

68. *MQ-8C Fire Scout*, NORTHROP GRUMMAN, http://www.northropgrumman.com/Capabilities/FireScout/Documents/pageDocuments/MQ-8C_Fire_Scout_Data_Sheet.pdf (last visited Nov. 11, 2013) [hereinafter *Fire Scout*]; *see* Allison Barrie, *Fire Scout helicopter can fly itself*, FOX NEWS (Nov. 7, 2013), http://www.foxnews.com/tech/2013/11/07/fire-scout-helicopter-can-fly-itself. It should be noted that technologies such as the Fire Scout are not without fault. In 2010, an earlier version of the Fire Scout had a software issue that caused the aircraft to travel 23 miles off course and within 40 miles of Washington D.C., which is restricted airspace. Drake, *supra* note 15, at 647.

69. *See Fire Scout*, *supra* note 68; *see also* Barrie, *supra* note 68.

70. *See Fire Scout*, *supra* note 68; *see also* Barrie, *supra* note 68.

71. Bruce Upbin, *IBM Opens Up Its Watson Cognitive Computer For Developers Everywhere*, FORBES (Nov. 14, 2013), http://www.forbes.com/sites/bruceupbin/2013/11/14/ibm-opens-up-watson-as-a-web-service/.

72. Jeffrey S. Thurnher, *No One at the Controls: Legal Implications of Fully Autonomous Targeting*, NATIONAL DEFENSE U, http://www.ndu.edu/press/fully-autonomous-targeting.html (last visited July 25, 2013).

73. *Id.*

74. *Id.*

One developing technology that combines the abilities of robotics and artificial intelligence is self-driving automobiles. Companies such as Google and General Motors, as well as multiple educational institutions, are developing vehicles that can drive autonomously on roadways. A team funded by Google has driven autonomously and accident-free for over 140,000 miles on California roadways.[75] General Motors, along with Carnegie Mellon University, also developed a self-driving car, which they are testing on U.S. roadways.[76] These self-driving cars can navigate, avoid objects, merge into traffic, and obey traffic control signals without human intervention.[77] Although improvements to self-driving cars are needed before autonomous cars are marketable,[78] it represents a vast leap forward for autonomous robotics technology. It is predicted that by 2020 technology for driverless cars on U.S. roadways will be ready.[79] Likewise, it can be predicted that autonomous vehicles for the military will also be utilized by 2020. However, this technology will not have lethal capacity and, therefore, will not be considered a LAR.

Despite continual developments in robotics and artificial intelligence, there are still no truly autonomous robotic weapons systems.[80] As Professor Armin Krishnan notes, robotic weapons systems are currently operated by humans, but they have the potential of becoming completely autonomous "relatively soon."[81] As the international community looks at robotic developments, it is not hard to foresee "thinking" robots in the near future. Furthermore, "technology drives weapon development and those developed are eventually used in warfare."[82] This will likely hold true for LARs as well. But as LARs develop, their contemplated future use in warfare causes concern for some, while others disregard these concerns.

B. Calls for Prohibition on the Use of Lethal Autonomous Robots or a Moratorium on Development

Once developed, a technology is weaponized and it will end up on the battlefield.[83] This was recognized in 2011 by U.S. Deputy Secretary of Defense William J. Lynn III who stated that "few weapons in the history of

75. Markoff, *supra* note 56.

76. Naylor, *supra* note 56.

77. *Id.*

78. *Id*. In self-driving cars, "[t]he drive is not always smooth. The car tends to wait until the last minute before braking and floors it when accelerating to its desired speed." *Id.*

79. *Id.*

80. ARMIN KRISHNAN, KILLER ROBOTS: LEGALITY AND ETHICALITY OF AUTONOMOUS WEAPONS 1–2 (2009); Kanwar, *supra* note 11, at 582–83.

81. KRISHNAN, *supra* note 80, at 1–2.

82. Jensen, *supra* note 11, at 315.

83. *Id.*

warfare, once created, have gone unused."[84] Because of this perceived inevitability, organizations and commentators have suggested either a prohibition on LAR use in armed conflict or a moratorium on LAR development until an enhanced legal framework is established. In essence, both of these trains of thought seek to limit future LAR use in combat.

First, some organizations and scholars seek a blanket prohibition on LAR use in armed conflict.[85] These commentators suggest that the deployment of LARs against anyone is unacceptable because humans would no longer make the determination to use lethal force.[86] These commentators perceive that the complexity of circumstances involved in armed conflict would lead to unacceptable and unexpected actions by LARs.[87] They argue that when humans are no longer in the decision-making loop and unexpected actions occur, a vacuum of legal and moral responsibility develops.[88] For many, the "human element" is indispensable in order to provide judgment, restraint, and responsibility for combat decisions.[89] Rather than setting regulations for this developing technology, these commentators and organizations seek a blanket prohibition on LARs.[90]

Commentators are also concerned about the effects of LAR technology on decisions to go to war. It is asserted that LARs decrease the cost of going to war.[91] For example, P.W. Singer notes that taking the human factor out of war "make[s] it easier for leaders to go to war."[92] This ease is caused by the increasing distance between society and the lethal force that is projected by society.[93] Additionally, as technology progresses, military planners will not be limited by human restrictions[94] or by public pressure.[95] Without the potential loss of human life in war, an increase in international armed conflict is foreseen.

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84. John D. Banusiewicz, *Lynn Outlines New Cybersecurity Effort*, FED. INFO. & NEWS DISPATCH, INC. (June 16, 2011), http://www.defense.gov/news/newsarticle.aspx?id=64349; Jensen, *supra* note 11, at 315.

85. HUMAN RIGHTS WATCH, *supra* note 2. *But see* Schmitt, *supra* note 8. The International Committee on Robot Arms Control (ICRAC) was formed to promote such a ban. *See* ICRAC, *supra* note 2. The ICRAC is seen as the most prominent group calling for a complete prohibition. Kastan, *supra* note 7, at 62–63.

86. U.N. Report, *supra* note 1, at 17.

87. *Id.* at 13–14.

88. *Id.* at 17.

89. Kanwar, *supra* note 11, at 581.

90. Cumming-Bruce, *supra* note 7. "Nongovernmental organizations and human rights groups are campaigning to ban fully autonomous weapons to pre-empt deployment in the same way as the ban on blinding laser weapons." *Id.*

91. Tony Rock, *Yesterday's Laws, Tomorrow's Technology: The Laws of War and Unmanned Warfare*, 24 N.Y. INT'L L. REV. 39, 65 (2011); *see generally* SINGER, *supra* note 18.

92. SINGER, *supra* note 18, at 319–20.

93. U.N. Report, *supra* note 1, at 5.

94. Jensen, *supra* note 11, at 287; U.N. Report, *supra* note 1, at 5.

95. SINGER, *supra* note 18, at 319.

Alternatively, other commentators and organizations advocate for a temporary moratorium on LAR development to allow time to develop an international framework. This framework would regulate LAR use in armed conflict. This idea was recommended by the U.N. Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions[96] and groups such as the International Committee for Robot Arms Control ("ICRAC") advocate for such a position.[97] Commentators suggesting a moratorium would eventually allow LAR use under an enhanced international law framework, which would ensure compliance with international law.[98] But the improved legal framework must be in place before LARs could be used in combat.[99] The international community should come together in a concerted effort to develop comprehensive regulations to ensure the operational compliance of LARs within the existing laws of war.

C. Scholarly Response to Critics' Concerns

While some criticize the development and future use of LARs, as described above, others see LAR development as a legitimate military advancement. Rather than undermining the LOAC principles, some suggest that LARs will "make armed conflict more humane and will save lives on all sides."[100] I agree with these scholars that, at some point, the technology will be "good enough" to comply with the law of armed conflict[101] and that a blanket ban on LAR technology will not be possible.[102] While it is probable that at some point LARs can comply with the LOAC, the technology must mature significantly to reach that point.[103]

LAR technology, at some point in the near future, will advance to a point where the technology can, in some instances, comply with the LOAC. For example, when sensor technology and artificial intelligence advance to the point where a LAR can identify an object as either military or civilian, LAR technology will be able to comply with the distinction principle.[104]

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96. U.N. Report, *supra* note 1, at 20. One of the Rapporteur's recommendations was "to declare and implement national moratoria on at least the testing, production, assembly, transfer, acquisition, deployment, and use of LARs until such time as an internationally agreed upon framework on the future of LARs has been established." *Id.*

97. Kastan, *supra* note 7, at 62–63. The ICRAC, as previously mentioned, is the most prominent group calling for an all-out ban on the development of LARs; however, it also advocates for alternative positions. *See* ICRAC, *supra* note 2.

98. RONALD ARKIN, GOVERNING LETHAL BEHAVIOUR IN AUTONOMOUS ROBOTS (2009); *see generally* Anderson & Waxman, *supra* note 8.

99. The Statement of the 2010 Expert Workshop on Limiting Armed Tele-Operated and Autonomous Systems, Berlin, Sept. 22, 2010, *available at* http://icrac.net/statements/. *See* Marchant et al., *supra* note 10, at 275.

100. U.N. Report, *supra* note 1, at 6.

101. Kastan, *supra* note 7, at 64–65.

102. *See generally* Schmitt, *supra* note 8.

103. Kastan, *supra* note 7, at 64.

104. *Id.* at 58–59.

Some assert that "in the future autonomous robots may be able to perform better than humans . . . . [because of] the ability to act conservatively."[105] Ronald Arkin, in *Governing Lethal Behavior in Autonomous Robots*, asserted that robots will not only be able to conform to international law, but will actually "outperform" humans and will exceed human capacity for ethical use of force.[106] Additionally, a U.S. Air Force Assessment stated that by "2030 machine capabilities will have increased to the point that humans will have become the weakest component in a wide array of systems and processes."[107] In other words, robots will not be influenced by emotions like humans. As Professors Kenneth Anderson and Matthew C. Waxman note, "weapons systems with greater and greater levels of automation can—in some battlefield contexts, and perhaps more and more over time—reduce misidentification of military targets, better detect or calculate possible collateral damage, or allow for using smaller quanta of force compared to human decision-making."[108] Thus, it is foreseeable that LARs, in the future, may be able to better comply with the principles of distinction and proportionality than humans.

However, these views assume foreknowledge of technological developments, which have not yet occurred and may never occur. We simply do not know what developmental levels LARs will rise to until the technology is fully developed. This has been true of every technology. For instance, despite rockets being used for over one thousand years, their use continues to be refined through increasing technological developments.[109] It is doubtful that in 1805, when the Congreve rocket was developed, that one could have foreseen the level of precision that a Tomahawk Cruise Missile currently achieves.[110] Similarly, future LARs may be as capable as humans are of distinguishing military from civilian targets.

The opposing view seems to overlook human misjudgment. Humans may be error-prone in ways that robots will not be, because LARs will not be susceptible to human emotions such as revenge, which can influence behavior. LARs may be able to make lethal decisions based solely on objective factors, whereas human decision-making is influenced by subjective

105. Marchant et al., *supra* note 10, at 281.

106. ARKIN, *supra* note 98, at 7; Kanwar, *supra* note 11, at 587.

107. Cumming-Bruce, *supra* note 7 (citing unnamed U.S. Air Force Assessment). Today remotely piloted aircraft (RPAs) have the ability to loiter over a target for an extended period of time which allows time for an extended legal review based on access to greater information. Rock, *supra* note 91, at 65. Similar to RPAs, LARs may be able to collect significantly more information and analyze it under a legal framework to ensure compliance with the distinction principle.

108. Anderson & Waxman, *supra* note 8, at 15.

109. *See* MAX BOOT, WAR MADE NEW: TECHNOLOGY, WARFARE, AND THE COURSE OF HISTORY, 1500 TO TODAY 50–76, 320–22 (2006).

110. *See British Rockets*, NATIONAL PARK SERVICE, *available at* http://www.nps.gov/history/history/online_books/hh/5/hh5l.htm (last visited Dec. 7, 2013) (describing the Congreve rocket); *Tomahawk Cruise Missile*, RAYTHEON, http://www.raytheon.com/capabilities/products/tomahawk (last visited Dec. 7, 2013).

factors. Also, LARs' decision-making may be quicker, enabling LARs to analyze more data to reach their objective decision.

Additionally, we cannot be certain to what extent robotic weaponry will raise or lower the overall cost of going to war. To be certain, a country using LARs will not be risking its personnel. Although the human cost of war will decline, the economic cost of researching and developing LARs will raise the cost of war. This research and development cost will continue to rise as other nations develop their own LARs and as the nation who first develops LARs seeks to remain globally competitive. This would be similar to the nuclear arms race. It is impossible to determine what the cost of war will be in the future when LARs are used. Also, robots might lower casualty levels because they more accurately target. But the converse is true that, because of their increased accuracy, they will be used more frequently. This again is an area fraught with uncertainty.

Since LARs will likely be able to comply with the LOAC, and may even supersede human capability, a full ban on LARs is not probable. In fact, some commentators doubt that the international community will ever ban LARs.[111] Professors Anderson and Waxman assert that treaties banning LAR technology "will have little traction among those most likely to develop and use them,"[112] such as the United States and China. Additionally, if such an international ban were adopted there is a problem of how compliance will be enforced.[113] Both prohibiting technology and ensuring compliance with a prohibited technology has been problematic throughout history, as will be seen in Part III.[114] Furthermore, the compliance problem with LARs is only compounded by the dual-use nature of the robotics technology in both military and civilian capacities.[115] Thus, a complete ban on LARs is misguided because it will not gain international support and will not be enforceable if adopted.

Because a complete ban is unlikely, an enhanced legal framework for LAR use is preferable. Even though LARs' critics seek a moratorium on legal development, a moratorium would also likely be ineffective. To discuss such an enhanced legal framework, countries would have to be willing to divulge their LARs' capabilities. However, "[t]he natural instinct of the U.S. defense community—likewise that of other major state powers—will be to discuss little or nothing, for fear of revealing capabilities or programming details to adversaries, or enabling industrial espionage and reverse-engineering of systems."[116] If a moratorium is instituted against LARs, such a moratorium may not apply to civilian development of autonomous tech-

111. Kastan, *supra* note 7, at 63; Anderson & Waxman, *supra* note 8, at 15.
112. Anderson & Waxman, *supra* note 8, at 21.
113. *Id.*
114. *See infra* Part III.
115. IKLÉ, *supra* note 15, at 65; Anderson & Waxman, *supra* note 8, at 21.
116. *Id.* at 25.

nology, which could be converted to military capabilities. As Professor Eric T. Jensen stated, "fully autonomous weapon systems will absolutely make their way onto the battlefield and eventually become predominant actors."[117] Because of the perceived inevitability of LARs on the battlefield, these scholars insist that the international community must come together to develop a new legal framework for LARs.[118] The U.N. Special Rapporteur advocated the development of this framework by calling for the establishment of a high-level panel by 2014 to assess whether existing rules are adequate for LARs[119] and to "[p]ropose a framework to enable the international community to address effectively the legal and policy issues arising in relation to LARs, and make concrete substantive and procedural recommendations in that regard."[120] The moratorium on LAR development would allow additional time for the improvement of the existing legal frameworks.[121] One such improvement would be to prohibit LAR use in counterinsurgencies, as will be described in Part V.[122] Such a prohibition would allow LARs to be used in high-intensity conflicts, which are not as prevalent, and would consequently allow additional time for a more comprehensive legal framework. Thus, the focus should not be on setting a moratorium on LAR development, but on enhancing the existing legal framework to ensure countries who develop LARs comply with the LOAC.

III. Historical Attempts to Prohibit Technological Advances in Warfare

As mentioned previously, throughout history, banning the use of developing technologies has been problematic. Typically, there is a

> fundamental tension in the governance of new technologies—prior to the development and deployment of the technology, not enough is known about its potential risks to warrant or guide any restrictions or limitations, whereas once the technology has been developed and deployed, it is often too late to undertake meaningful regulations.[123]

This tension constantly exerts itself with technological advances on the battlefield, from the use of the crossbow in the 12th Century[124] to remotely

117. Jensen, *supra* note 11, at 307; *see* Marchant et al., *supra* note 10, at 281.

118. *See* Kanwar, *supra* note 11, at 582–83, 586; Marchant et al., *supra* note 10, at 314; Kastan, *supra* note 7, at 64.

119. Cumming-Bruce, *supra* note 7.

120. U.N. Report, *supra* note 1, at 21.

121. The U.N. Special Rapporteur advocates for a moratorium on the development; however, this moratorium is to allow the international community more time to assess the current legal framework that applies to LARs and how this framework may need to change. *See id* at 20.

122. *See infra* Part V.

123. Marchant et al., *supra* note 10, at 314 (citing David Collingridge, The Social Control of Technology (1980)).

124. Noone, *supra* note 19, at 186.

piloted aircraft in the present day.[125] This section will demonstrate that once technological advancement is acquired it cannot be lost or easily reversed.[126] While there is some success with specific arms control regimes, once technology is developed it is used in warfare.[127] This reinforces the assertion that a complete ban on LARs would be unproductive. Rather, developing an enhanced legal framework is necessary.

A. Banning the Crossbow

The crossbow was an early example of the international community seeking to ban a developed technology. In 1137, the Lateran Council sought to ban the crossbow in armed conflict.[128] The crossbow concerned knights because it not only allowed a person to be killed at a distance,[129] but also the crossbow allowed an untrained peasant, of little military value, to kill a knight, who had great military value.[130] This ban was enacted by Pope Innocentius III, because the crossbow was "odious to God."[131] Yet the ban did not stop the use of the crossbow nor technological advances that allowed killing from a distance, such as the development of the firearm.[132] Similar to the crossbow, a ban on LARs by the United Nations or the international community may not prevent the employment of LARs on the battlefield because of the military advantage gained by employing LARs. This would be especially true if the international community sought to ban LARs after complete development and first use, which was problematic for banning crossbows.

B. Prohibiting Chemical Weapons

Similar to an attempted ban on crossbows, the attempted ban by the Hague Conference of 1899 on asphyxiating gases[133] did not prevent the widespread use of chemical weapons during World War I.[134] The 1899 Hague Conference sought to limit the use of chemical weapons, but limited

125. Kanwar, *supra* note 11, at 585.

126. IKLÉ, *supra* note 15, at 14; *see* U.N. Report, *supra* note 1, at 6.

127. Jensen, *supra* note 11, at 315.

128. Noone, *supra* note 19, at 186.

129. Martin van Creveld, *The Clausewitzian Universe and the Law of War*, J. CONTEMP. HIST. 403, 416 (1991).

130. Jensen, *supra* note 11, at 284; van Creveld, *supra* note 129, at 416.

131. NAGENDRA SINGH, NUCLEAR WEAPONS AND INTERNATIONAL LAW 18 (1959); Paula B. McCarron & Cynthia A. Holt, *A Faustain Bargain? Nuclear Weapons, Negative Security Assurances, and Belligerent Reprisal*, 25 FLETCHER F. WORLD AFF. 203, 205 (2001).

132. Noone, *supra* note 19, at 187; BOOT, *supra* note 109, at 22.

133. Final Act of the International Peace Conference, The Hague, sec. IV art. 2, 29 July 1899, *available at* http://www.icrc.org/applic/ihl/ihl.nsf/Article.xsp?action=openDocument&documentId=8FCF14D950797012C12563CD00515C0A [hereinafter 1899 Hague Conference]. The parties agreed "[t]o prohibit the use of projectiles, the only object of which is the diffusion of asphyxiating or deleterious gases." *Id.*

134. Noone, *supra* note 19, at 195.

it to *projectiles*.[135] However, on April 22, 1915, the German army released clouds of chlorine gas from *cylinders* in order to create a gap in the front lines.[136] The literal language of the agreement did not prevent chemical weapons use. Once released by cylinders, "[g]as-filled artillery shells became the favored means of delivery [by both sides] as the war went on," which violated the 1899 Hague Conference.[137] During World War I, each nation declared "its respect for the laws of war while condemning the illegal acts of its adversary"[138] even though each side violated the 1899 Hague Conference. Prior to World War II, nations sought to further regulate chemical weapons because chemical weapons were viewed as highly effective;[139] but the international community was unable to reach an agreement in the interwar years.[140] Instead, during World War II, each country maintained that they would only use chemical weapons if chemical weapons were first used against it.[141] The 1899 Hague Conference demonstrates that "[a]ny attempt to look into the future is fraught with difficulty and the likelihood that much of it will be wrong."[142] In 1899 nations attempted to regulate 20th Century technology with old legal regimes,[143] and the same is true today as LARs develop. Also, as nations began to regulate chemical weapons in 1899, there was no enforcement mechanism. When a legal regime is designed for LARs, it will likely be similarly incomplete. However, a fear of incompleteness should not dissuade nations from beginning to design such a framework. Therefore, as advocated by the U.N. Special Rapporteur, the international community must come together to address the legal issues pertaining to LARs, such as their use in counterinsurgencies.[144]

C. Banning the Exploding Bullet and Submarines to Preserve Military Advantage

Limiting or banning developing technology to preserve a military advantage does not produce workable agreements, as evidenced by attempts to

135. 1899 Hague Conference, *supra* note 133, at sec. IV art. 2.

136. LARRY H. ADDINGTON, THE PATTERNS OF WAR SINCE THE EIGHTEENTH CENTURY 148 (2d ed. 1994).

137. *Id.*

138. Chris Jochnick & Roger Normand, *The Legitimation of Violence: A Critical History of the Laws of War*, 35 HARV. INT'L L.J. 49, 80 (1994); *see* Noone, *supra* note 19, at 200.

139. Posner, *supra* note 25, at 312.

140. Noone, *supra* note 19, at 201–02.

141. Adam Roberts, *Land Warfare: From Hague to Nuremberg*, *in* THE LAWS OF WAR: CONSTRAINTS ON WARFARE IN THE WESTERN WORLD 130–31 (Michael Howard, George J. Andreopoulos & Mark R. Shulman eds. 1994).

142. Louise Doswald-Beck, *Implementation of International Humanitarian Law in Future Wars*, *in* 71 NAVAL WAR COLLEGE INT'L L. STUDIES 39, 39 (Michael N. Schmitt & Leslie C. Green eds., 1998); *see* Jensen, *supra* note 11, at 283.

143. Doswald-Beck, *supra* note 142, at 39.

144. U.N. Report, *supra* note 1, at 21.

ban the dum-dum bullet and the submarine.[145] Exploding and expanding bullets, under four hundred milligrams, were banned by the 1868 St. Petersburg Declaration[146] and the 1899 Hague Convention.[147] Great Britain wanted to continue to allow dum-dum bullets because of their effectiveness, whereas others sought to limit this technology—not based on humanitarian reasons, but because the technology was militarily effective.[148] Similarly, after World War I, Great Britain sought to restrict the advances in submarine technology in order to maintain a naval advantage.[149] These agreements demonstrated how the asymmetrical power positions of states can be a significant barrier in drafting agreements to adopt regulations for developing technologies.[150] While Great Britain feared the unrestricted submarine warfare demonstrated in 1917[151] and sought to restrict submarine use, other states opposed the British position.[152] At the time that Britain sought increased controls to maintain its naval dominance, others continued to increase development and production. This development and production allowed submarines to play a dominant role in the German naval strategy during World War II.[153] Today, as states consider developing a legal framework for LARs, they must be cognizant of their power position in the world. States with great world influence, such as Great Britain, may lose access to technological developments such as the dum-dum bullet, whereas they may not be able to prevent technological advances such as the submarine where the rationale is based on maintaining the state's international power-position. A complete ban on LAR technology will likely not be possible as it was for the dum-dum bullet. While nations in weaker negotiating positions may not attain a complete ban, they may be able to protect their interests by advocating a prohibition on LAR use in unconventional warfare.

145. Dum-dum bullets, also known as expanding bullets or hollow-point bullets. The bullet was designed to disable an enemy combatant rather than kill the enemy because a wounded enemy soldier requires other combatants to take care of the person, where as a killed enemy combatant could be left alone. *See The New Mushroom Bullet: Gen. Tweedie's Design Thought Highly of by English Experts*, N.Y. TIMES (June 15, 1892), http://query.nytimes.com/mem/archive-free/pdf?res=F50F14F83E5C17738DDDAC0994DE405B8285F0D3.

146. Declaration Renouncing the Use, in Time of War, of Certain Explosive Projectiles, entered into force Nov. 29/Dec. 11, 1868, 18 Martens Nouveau Recueil (ser. 1) 474, 138 Consol. T.S. 297 [hereinafter Declaration of St. Petersburg of 1868].

147. 1899 Hague Convention, *supra* note 133.

148. Posner, *supra* note 25, at 303.

149. *See id.* at 300, 310.

150. *Id.*

151. ADDINGTON, *supra* note 136, at 149, 151, 158.

152. Posner, *supra* note 25, at 310.

153. ADDINGTON, *supra* note 136, at 223.

D. Limiting Nuclear Weapons

Nuclear weapons provide another illustrative example of the international community's inability to ban a technological development after first use, as well as its ability to provide minor restrictions and limitations on the use only after a significant arms race. While former U.S. Undersecretary of Defense (Policy) Fred Iklé describes nuclear weapons as "the quintessential expression of mankind's cultural split—the inability . . . to rein in runaway science,"[154] there have been efforts to control nuclear weapons, such as the Non-Proliferation Treaty[155] and the Strategic Arms Reduction Treaties of 1991[156] and 1993.[157] In the 1950s, there was hope that prohibiting nuclear weapons would prevent nuclear war.[158] However, this hope quickly passed as deterrence became the leading theory. Under deterrence, nuclear war could only be prevented by deterring the enemy with the knowledge that upon aggressive nuclear action, the other side would launch its nuclear weapons.[159] This led to a buildup of nuclear weapons arsenals.[160] Rather than banning nuclear weapons altogether, treaties have focused on other aspects, such as testing, proliferation, and the possession of nuclear weapons.[161] As noted above, it is unlikely LARs will be banned,[162] similar to nuclear weapons. Therefore, it is essential that a legal framework be designed for LAR use in armed conflict.

E. Remotely Piloted Aircraft/Unmanned Aerial Vehicles

Remotely piloted aircraft ("RPAs") is the latest example of a developing technology that is used, despite calls for a closer look at legal implications of their use.[163] Once RPAs were introduced into combat theaters, their use grew rapidly. For example, between 2004 and 2007 there were only nine RPA attacks in Pakistan; however, in 2010 alone there were 118.[164] Additionally, the number of U.S. RPAs grew exponentially from having

154. IKLÉ, *supra* note 15, at 39.

155. The Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968, 21 U.S.T. 483, 729 U.N.T.S. 161, *available at* http://www.un.org/events/npt2005/npttreaty.html [hereinafter NPT]; *see* David Fidler, *International Law and Weapons of Mass Destruction: End of the Arms Control Approach?*, 14 DUKE J. COMP. & INT'L L. 39, 56 (2004).

156. Treaty on the Reduction and Limitation of Strategic Offensive Arms, July 31, 1991, U.S.-U.S.S.R., http://www.state.gov/www/global/arms/starthtm/start/start1.html [hereinafter START I]; *see* ADDINGTON, *supra* note 136, at 301, 315.

157. Treaty on the Further Reduction and Limitation of Strategic Offensive Arms, U.S.-Russ., Jan. 3, 1993, S. TREATY DOC. NO. 103-1 (1993) [hereinafter START II]; *see* ADDINGTON, *supra* note 136, at 307, 317.

158. FRED C. IKLÉ, EVERY WAR MUST END 118–19 (2d ed. 2005).

159. *See id.* at 122; *see also* Posner, *supra* note 25, at 306; Fidler, *supra* note 155, at 56.

160. ADDINGTON, *supra* note 136, at 288; Fidler, *supra* note 155, at 56.

161. McCarron & Holt, *supra* note 131, at 206.

162. *See* Schmitt, *supra* note 8.

163. Rock, *supra* note 91, at 84.

164. *Id.* at 58.

only a handful in 2003 to having over 5,300 now.[165] While the use of force in an RPA strike may be legal under particularized circumstances,[166] the increasing use of RPAs may lessen the political cost for leaders to go to war.[167] Until this point, fighting a war would "cost more in blood and money than any other undertaking in which nations engage."[168] However, when the nation's blood is no longer in danger, it is easier to enter a conflict. RPAs are an example where humans are no longer in danger in combat, which will only be improved upon by the use of LARs.[169] When political power is lacking to enter a war, there may be even less political power to stop a war where there is no human cost for the nation waging the war.[170] On the other hand, it should be noted that technological developments like RPAs are expensive and few countries can afford them.[171] Similarly, LAR development is expensive, with the United States alone spending $6 billion annually on developing autonomous and unmanned technology.[172] Therefore, beyond just the use of LAR weapons systems, there is a need for an enhanced legal framework that will not mitigate the lessening political cost for leaders to go to war.

IV. Facing Reality: Future Military Use of Autonomous Robots

Once a LAR is developed, the country that developed it will employ the technology. Following the trend from RPAs, as discussed previously, "autonomous robots will ultimately be deployed to conduct warfare."[173] While nations have committed not to use LARs in the future, strong forces are pushing against this commitment.[174] Once the technology is available, it is likely that populations will push for the deployment of robots rather than humans to avoid military casualties. Also, when LARs can distinguish be-

165. Rosenblatt, *supra* note 18, at 385.

166. Kanwar, *supra* note 11, at 585.

167. Rock, *supra* note 91, at 84.

168. Iklé, *supra* note 158, at 1.

169. P.W. Singer explained that RPAs "are like the Model-T Fords compared to what's coming." Interview by Jon Stewart with P.W. Singer, in New York, N.Y., *The Daily Show with Jon Stewart* (Comedy Central television broadcast Jan. 29, 2009), *available at* http://www.thedailyshow.com/watch/thu-january-29-2009/p-w—singer.

170. Fred Iklé noted that "[t]hose with the power to start a war frequently discover that they lack the power to stop it." Iklé, *supra* note 158, at 106. It could be foreseen that when citizens of a nation are no longer killed or maimed in combat, there would be less of a political outcry to end the war because the country is devoid of the human capital in the conflict.

171. For example each MQ-1 Predator costs approximately $4.5 million. *See* Christopher Drew, *Drones are Weapons of Choice in Fighting Qaeda*, N.Y. Times, Mar. 16, 2009, http://www.nytimes.com/2009/03/17/business/17uav.html?pagewanted=all&_r=0. The RQ-4 Global Hawk costs $222.7 million each and costs $35,000 per flight hour to operate. W.J. Hennigan, *Global Hawk Drone Flies Into Budget Battle Between Pentagon, Congress*, L.A. Times, Dec. 6, 2013, http://www.latimes.com/business/la-fi-spy-drone-lives-20131206,0,3203229.story#axzz2mqHgCyzr.

172. *See* Human Rights Watch, *supra* note 2, at 6.

173. Arkin, *supra* note 98, at 281.

174. Cumming-Bruce, *supra* note 7.

tween military and civilian targets, civilian casualties may be minimized. For example, Harold Koh, when U.S. State Department Legal Advisor, asserted that advancing technology, which complies with the law of war, can ensure civilian casualties are minimized.[175] LAR technology, beyond reducing casualties, will expand the battlespace and extend the warfighter's reach.[176] Therefore, this extended reach and expanded battlespace, coupled with reduced casualties, will be sufficient for a country to use a functional LAR.

Once a country deploys a LAR in armed conflict, a significant escalation of LAR development will occur, improving and increasing LAR capabilities. This increase in LARs, after an initial deployment, will be akin to the exponential increase in nuclear weapon technology after Hiroshima and Nagasaki.[177] For example, Fred Iklé foresees such a race regarding artificial intelligence with the Chinese.[178] Once multiple countries have developed LAR technology, the risk of proliferation increases.[179] Additionally, as noted in Part III, there have been few times in the history of warfare that, once a technology is created, it has gone unused.[180] Each country which possesses LARs will face political pressure to protect the lives of their armed forces and thus deploy LARs in their place. Therefore, once one nation deploys LARs, it is likely others will soon follow with LARs that have increased capabilities.

V. Call for a Distinction Between High-Intensity Conflicts and Counterinsurgency Operations in the Use of LARs in Armed Conflict

There is wide agreement that LARs will eventually be used in armed conflict, and many scholars believe that LARs will one day meet the principles of the LOAC. The nature of robotic development makes it a difficult subject for regulation,[181] but it is necessary for the international community

175. Harold Hongju Koh, Legal Advisor, U.S. Dep't of State, The Obama Administration and International Law, Address at the Annual Meeting of the American Society of International Law (Mar. 25, 2010), http://www.state.gov/s/l/releases/remarks/139119.htm. This position was also supported by Jeh Johnson, General Counsel for the U.S. Department of Defense. *See* Jeh C. Johnson, *National Security Law, Lawyers, and Lawyering in the Obama Administration*, 31 Yale L. & Pol'y Rev. 141 (2012).

176. Marchant et al., *supra* note 10, at 275.

177. *See generally* Addington, *supra* note 136, at 261–88 (describing the nuclear arms race).

178. Iklé, *supra* note 15, at 32.

179. *See* Scott Shane, *Coming Soon: The Drone Arms Race*, N.Y. Times, Oct. 8, 2011, http://www.nytimes.com/2011/10/09/sunday-review/coming-soon-the-drone-arms-race.html?pagewanted=all&_r=0 (discussing how foreign militaries and terrorist groups may obtain drone technologies which may also apply to LARs in the future).

180. Banusiewicz, *supra* note 84 (citing U.S. Deputy Secretary of Defense William J. Lynn III).

181. *Id.* at 9.

to address the developing LAR technology.[182] Although restrictions on technology typically focus on acquisition, stockpiling, research and development, testing, and proliferation,[183] the remainder of this Note will focus exclusively on the deployment and use of LARs in armed conflict, particularly in regard to use in counterinsurgency operations. While each of the typical arms control areas deserves attention, some have been addressed in other scholarly articles.[184] This Note focuses on creating a deployment distinction between high-intensity conflicts[185] and counterinsurgencies.[186] I advocate that nations should form an agreement that would allow LAR use in high-intensity conflict but prohibit their use in counterinsurgencies. There are four reasons for this distinction: (1) the significant distinction problem that exists in counterinsurgencies; (2) LAR use will continue to decrease the cost of going to war, especially as the rate of unconventional war increases; (3) winning hearts and minds in a successful counterinsurgency requires capabilities beyond programmed algorithms; and (4) the perception of unfair military advantage when LARs are used in a counterinsurgency, which will not allow the winning of hearts and minds—which is central to counterinsurgency operations. I acknowledge that autonomous robots will serve a purpose in counterinsurgencies such as explosive ordinance disposal (EOD) missions; humanitarian convoys; and intelligence, surveillance, and reconnaissance (ISR) missions that RPAs currently conduct. However, these operations do not involve lethality—the use of weapons systems incorporated into the autonomous robotics to classify these as LARs.

A. The Distinction Problem in Counterinsurgencies

LARs will struggle with distinction;[187] that is, distinguishing combatant from non-combatant, especially in counterinsurgencies. Under international humanitarian law, prior to attacking, an aggressor has a duty to "do everything feasible to verify that the objectives to be attacked are neither civilians nor civilian objects . . . ."[188] In unconventional conflicts, insurgents often blend into the civilian population, utilizing hit-and-run tac-

182. *Id.*

183. *Id.* at 19.

184. *See generally* Anderson & Waxman, *supra* note 8; *see also* Schmitt, *supra* note 8.

185. HAMMES, *supra* note 16, at 23–31. High-intensity conflicts, sometimes labeled force-on-force or third generation warfare, is characterized by conventional military forces fighting against other conventional military forces.

186. "Counterinsurgency is defined as comprehensive civilian and military efforts taken to defeat an insurgency and to address core grievances. Also called COIN." JP 1-02, *supra* note 17, at 62.

187. Kanwar, *supra* note 11, at 584.

188. Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol I) art. 57 ¶ 2(a)(i), Dec. 7, 1978, 1125 U.N.T.S. 3, *available at* https://treaties.un.org/doc/Publication/UNTS/Volume%201125/volume-1125-I-17512-English.pdf.

tics.[189] Although some assert LARs will be able to make certain assessments more accurately and faster than humans, they may be limited in their ability to interpret the context of the situation.[190] The inability to understand context may present a significant barrier in distinguishing civilians from lawful targets.[191] In unconventional wars, often the only way to identify combatants is interpreting the conduct of the actor on the battlefield.[192] In the modern, fluid, unconventional battlefield "actors are seldom clearly identified and often not even present at the place of attack."[193] Although such a situation could be true in a high-intensity conflict as well, the situation is much more prevalent in counterinsurgencies. In counterinsurgency warfare, it is difficult to distinguish between a person carrying a rifle and one carrying a hoe, and even more difficult to distinguish between a combatant carrying a rifle and a non-combatant carrying a rifle where neither is in uniform.[194] It is predicted that future armed conflict will increase the difficulty in the ability to distinguish between combatants and non-combatants based on external factors as the insurgents will seek to blend into the population as new techniques are developed which enable distinction.[195] Thus, it is foreseeable that LARs will have difficulty distinguishing between combatants and non-combatants on the battlefield similar to humans.

While there is a distinction problem for LARs in counterinsurgency operations, the future development of LAR technology is uncertain. We cannot be certain that developers will not create algorithms enabling LARs to adequately distinguish between combatant and non-combatant. As technology, sensors, and artificial intelligence develop, it is probable that algorithms may be developed that will bring LARs' distinction capability to the level equivalent with humans even in unconventional warfare. LARs may be able to process context in a faster, more detailed manner than humans will ever be capable of. Alternatively, LARs could be programmed to be risk-averse, where lethal measures by LARs would not be used unless the LARs were first engaged by insurgent combatants. However, if such a risk-averse programming were incorporated, insurgents would quickly adapt their techniques to gain the tactical advantage against LARs.[196] Although the technology is not there yet, I agree with commentators who assert that

189. IKLÉ, *supra* note 158, at xxiv; *see* JOHN A. NAGL, LEARNING TO EAT SOUP WITH A KNIFE 21–29 (2005); MAO TSE-TUNG, ON GUERRILLA WARFARE 41 (Classic House Books 2009) (1937) (noting that the guerrilla must swim in people as the fish swims in the sea).

190. U.N. Report, *supra* note 1, at 13; Kastan, *supra* note 7, at 51.

191. U.N. Report, *supra* note 1, at 13.

192. *Id.*

193. Jensen, *supra* note 11, at 297–98; Kastan, *supra* note 7, at 51.

194. *Id.* at 60. Rock provides an illustrative example of this by describing how in February 2002 Daraz Khan, an Afghan civilian, was killed along with two others in a RPA strike in Khost, Afghanistan because the CIA operative controlling the Predator believed Khan to be Osama bin Laden. Rock, *supra* note 91, at 39–40.

195. Jensen, *supra* note 11, at 298.

196. *See* BOOT, *supra* note 29, at 567.

LARs will one day be equivalent to humans and their ability to distinguish will, therefore, be no worse than humans.[197] This future technological development of LARs is uncertain and how LARs will meet the distinction is not yet established. Therefore, until such time as technology achieves such levels, LARs should be prohibited from counterinsurgency operations.

Humans often have trouble distinguishing who is a legitimate target on the battlefield, which may lead to innocents being killed. While soldiers may bring error and immorality to the battlefield, humans also bring compassion and grace that some assert a computer algorithm would not be capable of.[198] Furthermore, in the absence of a legitimate target for LARs, civilians may become the "best available" targets within the LARs algorithm and thus targeted, which will lead to retaliation and reprisals.[199] Humans, while error-prone, will make value judgments that LARs may be incapable of. Therefore, in counterinsurgencies human actors will be advantageous and a prohibition of LARs in counterinsurgencies should be pursued.

On the other hand, in a high-intensity conflict, the battlefield actors are more limited to legitimate enemy targets who will not pose as large of a distinction problem. There will still be civilians on the battlefield in a high-intensity conflict, but not to the same extent as counterinsurgencies. The combat action is focused on force-on-force operations. LARs could be programmed to distinguish friendly military units from enemy units. Additionally, LARs could be programmed where if the object cannot be identified as either friendly or enemy, such as a civilian non-combatant, that object cannot be lethally targeted. Therefore, because fewer civilians will be on the battlefield and LARs could be programmed to target only identifiable enemy objects more prevalent in force-on-force operations, the problem of distinction will be lessened in high-intensity conflicts.

B. Laws of War Affect How Nations Fight

The law of armed conflict affects how nations fight wars, especially their willingness to enter armed conflict. As noted earlier, LARs will increase countries' force projection capabilities by allowing fewer people to do more.[200] Robots are designed to do the dirty, dull, and dangerous work,

197. *See* Kastan, *supra* note 7, at 64.

198. U.N. Report, *supra* note 1, at 18. *But see Computers Will Have Emotions in 2013*, COMPASSIONATE COMPUTING PROJECT, Jan. 22, 2013, https://web.archive.org/web/20130607172637/http://compassionatecomputing.org; Anne Eisenberg, *When Algorithms Grow Accustomed to Your Face*, N.Y. TIMES, Nov. 30, 2013, http://www.nytimes.com/2013/12/01/technology/when-algorithms-grow-accustomed-to-your-face.html (describing current developments to develop such capacity through computer algorithms, which in the future may be able to replicate compassion and grace, but this is uncertain).

199. U.N. Report, *supra* note 1, at 16; Kastan, *supra* note 7, at 51.

200. U.N. Report, *supra* note 1, at 10.

which in the future will include warfare.[201] LARs will lessen the human cost of going to war and thereby make it easier for nations to go to war.[202] In the future, war will increasingly be unconventional, although a constant threat of conventional war persists.[203] However, using LARs in combat will not be without cost. Countries utilizing LARs will incur significant research and development as well as product development costs.[204]

By allowing LARs to conduct counterinsurgency operations, nations will be more likely to intervene in unconventional conflicts. Some may assert that this would serve humanitarian values by making war an unattractive option,[205] or by allowing countries to intervene where they would not otherwise because of political costs. However, the alternative may be true as well. Nations may intervene at an increased rate. No longer would there be significant political cost to intervening in conflicts as there was during the Cold War. For example, during the 1960s and 1970s, there was great political unrest when the United States intervened in Vietnam.[206] When countries increasingly intervene, conflict will become more prevalent, which will not serve humanitarian purposes. By limiting LAR use to only high-intensity conflicts, LARs will not be deployed in a majority of conflicts. Beyond allowing LARs to be tested in combat before expanding their use, limiting LARs to only high-intensity conflicts will serve to limit the escalation of war globally. Therefore, by limiting LARs from use in counterinsurgencies, nations will still have to internalize the cost of most wars, which will not increase the number of armed conflicts.

On the other hand, LARs may change the frequency of unconventional wars. LARs may lessen the number of insurgencies that occur because of their ability to store and analyze significant amounts of data. Additionally, LARs will not encounter issues of unit rotation which undermined the United States counterinsurgency efforts in Iraq and Afghanistan.[207] I acknowledge that it may be too early to determine whether LARs will have an

201. *Id.*

202. Rock, *supra* note 91, at 80.

203. BOOT, *supra* note 29, at xx, 559. Although there is increasing use of unconventional warfare, I acknowledge there is a continuing threat of conventional warfare in the world. *See, e.g.*, Choe Sang-hun, *South Korea Announces Expansion of its Air Defense Zone*, N.Y. TIMES, Dec. 8, 2013, http://www.nytimes.com/2013/12/09/world/asia/east-china-sea-air-defense-zone.html?_r=0; *see also* Mark Landler, *Biden Urges Restraint by China in Airspace Dispute*, N.Y. TIMES, Dec. 4, 2013, http://www.nytimes.com/2013/12/05/world/asia/biden-arrives-in-china-seeking-restraint-from-beijing.html. Such a global threat cannot be dismissed. However, over the last seventy years insurgencies have become more prevalent, whereas high intensity conflicts have dwindled. *See* BOOT, *supra* note 29, at 589.

204. Currently, the United States alone is spending approximately $6 billion per year on unmanned systems, to include autonomous systems, a number that is likely to increase. *See* HUMAN RIGHTS WATCH, *supra* note 2, at 6.

205. Posner, *supra* note 25, at 299.

206. BOOT, *supra* note 29, at 415–21.

207. JAMES A. BAKER, III & LEE H. HAMILTON, THE IRAQ STUDY GROUP REPORT 12 (2006), *available at* http://bakerinstitute.org/files/1296/.

impact on the number of insurgencies in the future. However, historically, insurgencies are used by the weak against the strong, and despite technological advances, insurgencies have not only increased, but become more successful.[208] Additionally, while the hope is that technological advances will decrease warfare, the violence in warfare constantly proves that to be untrue. For example, in 1621 it was noted by poet John Donne how the invention of better cannons would help limit the cruelty and crimes of war. Later, "Richard Gatling hoped his new fast-firing gun would serve to reduce the bloodshed of war, while Alfred Nobel believed the explosives he invented would make war unthinkable. Now, some analysts believe that robot warriors can help reduce the flow of blood and perhaps make war more moral."[209] As with other forms of technology, it is doubtful that LARs will make a significant difference in the frequency of unconventional wars. Rather, LARs' use in unconventional warfare will change the tactics and techniques which insurgents use to gain an advantage over counterinsurgents. Therefore, it is more likely that allowing LAR use in unconventional warfare will increase the willingness of nations to enter armed conflict, increasing the prevalence of war globally.

C. Emotion Required Beyond the Algorithm

LARs should be prohibited from counterinsurgency operations because, in counterinsurgency operations, emotions—beyond computer algorithms—are required to win the hearts and minds of the host-nation populace. Although robots will not be susceptible to emotional responses such as "revenge, panic, anger, spite, prejudice, or fear,"[210] they also will not be capable of compassion and grace.[211] In the future, such emotions may be programmed into LARs; however, the programming of subjective qualities may prove difficult for programs designed to achieve an objective right answer. Armed conflict, particularly counterinsurgency, requires appreciation of the "larger picture, understanding of the intentions of people's actions, and understanding of values and anticipation of the directions in which events are unfolding."[212] In counterinsurgency, the destruction of enemy forces is not the primary objective; rather, it is the political factors. "Military actions executed without properly assessing their political effects

208. *See generally* BOOT, *supra* note 29, at 559–67 (provides a brief overview of the history of insurgency). Max Boot describes that since 1945 insurgencies have not only become more frequent, but have also become more successful. This rise in success occurred despite great advances in military technology. *See id.* at 567.

209. Peter W. Singer, *Military Robots and the Laws of War*, BROOKINGS INSTITUTION, Winter 2009, http://www.brookings.edu/research/articles/2009/02/winter-robots-singer.

210. U.N. Report, *supra* note 1, at 10.

211. *Id.* at 18.

212. *Id.* at 10. This large picture understanding of values and extensions is one of the main aspects of counterinsurgency doctrine. *See* U.S. ARMY FIELD MANUAL 3-34 COUNTERINSURGENCY 1–23 (2006) [hereinafter COUNTERINSURGENCY].

at best result in reduced effectiveness and at worst are counterproductive."[213] Although programming LARs to evaluate near-term lethal use of force against long-term consequences may be possible, emotions are required to understand the political factors such as insurgent organizations, relationships, and particularly insurgent motivations. Robots that lack emotion cannot have the true social interaction needed to fully grasp these concepts.[214] Furthermore, counterinsurgencies are not reduced to a single battle or campaign,[215] rather they last for years.[216] Actions taken by a few counterinsurgents can affect wide-spread political support for the insurgency. While LARs may be compatible with winning battles, such as in high-intensity conflicts, they are less suited for winning hearts and minds in a long, drawn-out counterinsurgent conflict.

D. Problem of Perceived Military Advantage

Finally, there is a policy argument to banning LARs in counterinsurgencies because LARs may provide a perception of unfair military advantage. Such a perception may not be conducive to winning hearts and minds during counterinsurgency operations. Although this is a policy argument and not a legal argument for banning LARs in counterinsurgencies, such policy decisions should influence statesmen when crafting regulation for LAR use. Policy decisions will impact the duration and cost of the armed conflict. Because using LARs may increase the conflict due to a perception of unfair military advantage, policymakers should consider banning their use in counterinsurgency operations.

It is quite understandable that nations who use LARs will gain a significant military advantage.[217] Yet, military advantage gained from technology does not always assist in ending unconventional wars. For example, during the *Intifada* in Israel during 1987–88, Palestinian teenagers faced down the superior Israeli military technology, such as tanks, with only rocks.[218] As a result of world-wide public perceptions, the Palestinians were able to gain monetary support as well as political support, which led to concessions by the Israelis.[219] More recently, the United States military in Iraq had a military technological advantage. The use of technology, such as armored vehicles, did not assist in diminishing insurgent group presence where soldiers only conducted mounted vehicle-patrols.[220] Instead, the U.S. counterinsurgency doctrine, authored by General David Petraeus, focused on placing

213. *Id.*
214. IKLÉ, *supra* note 15, at 29.
215. Blum, *supra* note 26, at 393.
216. HAMMES, *supra* note 16, at 221; COUNTERINSURGENCY, *supra* note 212, at 1–24; BOOT, *supra* note 29, at 565.
217. U.N. Report, *supra* note 1, at 10.
218. HAMMES, *supra* note 16, at 108.
219. *Id.* at 107–10.
220. The Counterinsurgency manual states:

boots on the ground and interaction with the local populace.[221] It was only when human interaction occurred that the United States was able to enhance security and governance in Iraq.[222] LAR use in future unconventional wars may have effects similar to the *Intifada* and Iraqi insurgency. Also, LARs may induce more of the population to move to the insurgent side because of the impersonal perception LARs will bring to a conflict. If this holds true, then LARs will increase the conflict length, which will lead to greater destruction. Thus, to ensure a quicker end to hostilities, LARs should be prohibited from conducting counterinsurgency operations.

A policy decision to ban LARs to enable enhanced population-focused operations is beyond a truly legal argument. Even if LARs exceed the human ability to distinguish, and are therefore lawful under international law, LAR use in unconventional wars may still be an awful policy decision.[223] For the United States and other countries likely to possess LARs, a perceived unfair military advantage could have immense cost impacts. While the United States may at times want another country to be perceived as having an unfair military advantage when the United States intervenes on an insurgent's behalf,[224] more often than not the United States should endeavor to create conditions which will allow quick, successful completion of counterinsurgent operations.[225] Such conditions will allow the United

> Successful conduct of [counterinsurgency] COIN operations depends on thoroughly understanding the society and culture within which they are being conducted. Soldiers and Marines must understand the following about the [area of operations] AO: Organizations of key groups in the society; relationships and tensions among groups, ideologies and narratives that resonate with groups, values of groups (including tribes), interests, and motivations, means by which groups (including tribes) communicate, and the society's leadership system.

COUNTERINSURGENCY, *supra* note 212, at 1–22. This thorough understanding cannot be learned from inside an armored vehicle, rather soldiers must actively patrol. *Id.* at A-4.

221. *Id.* at 1–1, 1–22; *see* HAMMES, *supra* note 16, at 186–89.

222. *See generally* Michael E. O'Hanlon & Jason H. Campbell, *Iraq Index: Tracking Variables of Reconstruction & Security in Post-Saddam Iraq*, BROOKINGS INSTITUTION, Dec. 18, 2008, http://www.brookings.edu/~/media/Centers/saban/iraq%20index/index20081218.pdf (provides statistical data that indicates a significant change in 2007 in the political, economic, and security situation in Iraq). This significant change corresponds to the surge of U.S. armed forces to Iraq. DAVID KILCULLEN, THE ACCIDENTAL GUERRILLA: FIGHTING SMALL WARS IN THE MIDST OF A BIG ONE 130–35 (2009). *See* HAMMES, *supra* note 16, at 107–10 (shifting from a focus on technology to a focus on people to win insurgencies).

223. Harold Koh, Address at the Annual Meeting of the American Society of International Law (Mar. 25, 2010), *available at* http://www.state.gov/s/l/releases/remarks/139119.htm (asserting that some decisions are lawful but are awful policy choices).

224. *See* BOOT, *supra* note 29, at 485–500 (describing United States assistance to the Mujahedeen in Afghanistan from 1980–89).

225. The author acknowledges that recent counterinsurgent operations have not seemed quick to the U.S. public. For example, the U.S. involvement in Iraq lasted from 2003 to 2011, and Afghanistan from 2001 to present. Both Iraq and Afghanistan have lasted longer than most other U.S. conflicts. However, it is noted that conflicts involving counterinsurgency operations have, on average, lasted fourteen years since 1945. *Id.* at 564. While neither Iraq nor Afghanistan's counterinsurgent operations appear quick, they have concluded faster than the average counterinsurgent operations in recent history.

States to complete counterinsurgency operations around the globe. While this may at times have drawbacks when seeking to intervene on behalf of insurgents, the benefits outweigh these drawbacks. Therefore, as a policy decision, LARs should be banned from counterinsurgency operations in order to ensure a quick and successful completion of unconventional conflicts.

E. Summary

Allowing LAR deployment in high-intensity conflict while prohibiting LAR deployment in counterinsurgencies will benefit the international community. This benefit will derive from the four reasons given above: (1) the significant distinction problem in counterinsurgencies; (2) the use of LARs will decrease the cost of going to war, especially as the rate of unconventional war increases; (3) in order to win hearts and minds in a counterinsurgency, emotion is required beyond program algorithms; and (4) when LARs are used in a counterinsurgency, there will be a perception of military advantage which will not allow the winning of hearts and minds. As LAR technology develops, the standards may of course change. This is due to the unknown nature of developing technology. While the standards may change in the future as LARs become more sophisticated, this does not mean that initial standards should not be determined today. If LARs exceed expectations, then at that time the international community can reevaluate and lessen these standards. For now, LAR use in combat has significant implications for the military and society, and the international community must come together to address the holes left by the patchwork of the existing legal framework as applied to LARs today.[226] Creating regulations based on future technological developments is full of uncertainty; however, the international community cannot afford to wait. We must think ahead.[227] Prohibiting LAR use in counterinsurgencies should be part of the future framework.

CONCLUSION

Nations are developing LARs and soon these robots will be operationally capable. While some organizations and commentators call for their complete prohibition in warfare, such a complete prohibition is unlikely. Rather, nations will continue developing LARs, and once operationally capable, the technology will be deployed into armed conflict. The current LOAC creates a patchwork legal framework that will not completely apply to LARs. Rather than a complete prohibition on LAR use, the international community should come together to provide enhanced regulation for LAR use in combat. LARs at some point may be able to meet the distinction

226. Marchant et al., *supra* note 10, at 274, 289.
227. Rosenblatt, *supra* note 18, at 387–88.

principle in the LOAC by being as good as humans, but this is not sufficient to warrant LAR use in counterinsurgency conflicts. By prohibiting LAR use in counterinsurgencies, the significant distinction problem will be reduced. Additionally, nations will still have to internalize the political cost of waging war to lessen engagement in unconventional conflicts. Additionally, when conducting counterinsurgency operations, emotions are required to ensure understanding of the operational environment which robots will be incapable of. Finally, prohibiting LARs in counterinsurgent operations will not produce a perceived military advantage, which may galvanize support for the insurgents. Therefore, as the international community comes together to assess a legal framework for LARs, the international community should adopt a prohibition on LAR use in counterinsurgencies.