Drone Technology: Paving the Way to a More Humane War

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I. INTRODUCTION

The United States (U.S.) has been assailed for the development and use of drones[1] in its arsenal.[2] There have been accusations that drone attacks can be considered as war crimes;[3] that the use of drones fuels an arms race that encourages further violence in armed conflict;[4] that military personnel has abdicated crucial decision-making in combat situations to the drone's

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1. Also referred to as unmanned aerial vehicles. U.S. DEPARTMENT OF DEFENSE, DICTIONARY OF MILITARY AND ASSOCIATED TERMS 149 (2005).
2. *See* Craig Whitlock, *Drone strikes killing more civilians than U.S. admits, human rights groups say*, WASH. POST, Oct. 22, 2013, *available at* https://www.washingtonpost.com/world/national-security/drone-strikes-killing-more-civilians-than-us-admits-human-rights-groups-say/2013/10/21/a99cbe78-3a81-11e3-b7ba-503fb5822c3e_story.html (last accessed Nov. 24, 2015).
3. Rebecca Lowe, International law 'not equipped' to deal with drone attacks, *available at* http://www.ibanet.org/Article/Detail.aspx?ArticleUid=065968d4-0503-46e7-a0a0-d8daeac4d446 (last accessed Nov. 24, 2015).
4. *Id.*

computer system, endangering, in the process, the lives of civilians;[5] and that drone attacks cause more collateral damage, firing up sentiments towards extremism.[6] It has also been posited that most targeting operations are done in secret, thus inhibiting independent post-operation assessment of collateral damage;[7] and that drone attacks against suspected terrorists are conducted by intelligence agents — rather than military agents — with impunity, less oversight, and no regard to the law of armed conflict.[8] Innovations in drone artificial intelligence capacitating said machines to perceive, situation-assess, plan and decide targeting, operate in complex environments,[9] allocate tasks, and refine missions,[10] have also raised concerns over side-lining human participation in military operations in favor of swarm robots that are less intelligent and more prone to errors.[11]

This brouhaha has, however, drowned out discussion on the material benefits of drones to humankind.[12] This Article endeavors to resuscitate colloquy on the advantages of drones and the positive contributions that the use of drones in warfare will have on International Humanitarian Law. The Article is divided into five parts. The first part is this Introduction. The

5. Mary Ellen O'Connell, *Unlawful Killing with Combat Drones: A Case Study of Pakistan, 2004-2009*, *in* SHOOTING TO KILL, SOCIO-LEGAL PERSPECTIVES ON THE USE OF LETHAL FORCE 269 (2012).

6. *Rise of the Drones II: Examining the Legality of Unmanned Targeting Before the Subcomm. on Nat'l Sec. and Foreign Affairs of the Comm. on Oversight and Gov't Reform*, 111th Cong. 25 (2010) [hereinafter *Rise of the Drones II*].

7. *See* Peter Moszynski, Campaigners call for restrictions on remote controlled weapons (Research Paper by the British Medical Journal), *available at* http://www.bmj.com/content/341/bmj.c5259 (last accessed Nov. 24, 2015).

8. Peter W. Singer, *A World of Killer Apps*, 477 NATURE 399, 400 (2011).

9. Aníbal Ollero & Iván Maza, *Introduction*, *in* MULTIPLE HETEROGENOUS UNMANNED AERIAL VEHICLES 1 (Aníbal Ollero & Iván Maza eds., 2007).

10. Simon Lacroix, *Decision Making in Multi-UAVs Systems: Architecture and Algorithms*, *in* MULTIPLE HETEROGENOUS UNMANNED AERIAL VEHICLES 40-41 (Aníbal Ollero & Iván Maza eds., 2007).

11. PAUL J. SPRINGER, CONTEMPORARY WORLD ISSUES: MILITARY ROBOTS AND DRONES: A REFERENCE HANDBOOK 40-41 (2013).

12. *See generally* Moszynski, *supra* note 7; Whitlock, *supra* note 2; Greg Miller & Julia Tate, *U.S. government's refusal to discuss drone attacks comes under fire*, WASH. POST, Apr. 24, 2015, *available at* https://www.washingtonpost.com/world/national-security/us-silence-on-drone-strikes-comes-underpressure-after-hostage-deaths/2015/04/24/cb48e9d4-eaa7-11e4-aae1-d642717d8afa_story.html (last accessed Nov. 24, 2015); & Scott Shane, *Drone Strikes Reveal Uncomfortable Truth: U.S. Is Often Unsure Who Will Die*, Apr. 23, 2015, N.Y. TIMES, *available at* http://www.nytimes.com/2015/04/24/world/asia/drone-strikes-reveal-uncomfortable-truth-us-is-often-unsure-about-who-will-die.html (last accessed Nov. 24, 2015).

second part canvasses the advantages of drones; analyzes the soundness of the criticisms against these; provides a brief overview of the future of drone technology; and likewise serves as the supporting thesis to the main arguments propounded in the succeeding parts. The third part of the Article evaluates drone technology vis-à-vis the core International Humanitarian Law principles of *jus in bello*,[13] though the principles of *jus ad bellum*[14] are beyond this Article's coverage. The fourth part, drawing from Laurie R. Blank's analysis,[15] argues that drones have devised a higher threshold in the assessment of an attack's compliance with the International Humanitarian Law principles of distinction, military necessity, proportionality, and humanity. It further argues that drone technology has set in motion the process to change the war landscape, that drones will in the future temper the atrocities of war, and that these machines will be the answer to humanitarian law's desire to achieve a more humane war. The fifth and final part contains brief concluding statements.

II. THE FUTURE OF DRONE TECHNOLOGY

The use of drones in warfare proves beguiling to policymakers.[16] Being unmanned, these aerial vehicles preserve the life and limb of the pilot as well as the crew in the riskiest of situations, and allow for continuance of operations in conditions that restrict human mobility — such as inclement weather, or the presence of structures and other obstacles.[17] Remotely

13. *Jus in bello* is "the law that governs the way in which warfare is conducted. [It] is purely humanitarian, seeking to limit the suffering caused. It is independent from questions about the justification or reasons for war, or its prevention, covered by *jus ad bellum*." International Committee of the Red Cross, IHL and other legal regimes — jus ad bellum and jus in bello, *available at* https://www.icrc.org/eng/war-and-law/ihl-other-legal-regmies/jus-in-bello-jus-ad-bellum/overview-jus-ad-bellum-jus-in-bello.htm (last accessed Nov. 24, 2015).

14. *Jus ad bellum* refers to "the conditions under which States may resort to war or to the use of armed force in general." INTERNATIONAL COMMITTEE OF THE RED CROSS, INTERNATIONAL HUMANITARIAN LAW ANSWERS TO YOUR QUESTIONS 8 (2014).

15. *See generally* Laurie R. Blank, *After 'Top Gun': How Drone Strikes Impact the Law of War*, 33 U. PA. J. INT'L L. 675 (2012).

16. *See generally Rise of the Drones: Unmanned Systems and the Future of War Before the Subcomm. of Nat'l Sec. and Foreign Affairs of the Comm. on Oversight and Gov't Reform*, 111th Cong., (2010) [hereinafter *Rise of the Drones I*]. *See also Rise of the Drones II*, *supra* note 6, at 61.

17. Ollero & Maza, *supra* note 9, at 229.

operated from the safety and comfort of rooms equipped with state of the art technology, drones virtually eliminate the dangers of combat operations. As cleverly remarked, a drone pilot, after all the day's work, can now "go home to take his family bowling, or join them for a barbecue in the backyard."[18] Not only do drones reduce the number of military men killed in the field, but they also trim down the cost of war.[19] Being "30 times cheaper" than a fighter aircraft, and not necessitating extensive training of pilots for their operation,[20] drones prove to be a very enticing substitute to older and manually-operated fighting machines.[21]

Parenthetically, however, studies reveal interesting psychological effects of drone operations to remote pilots.[22] The long hours of monotonous work, interrupted only by intermittent remote combat operations, are causing higher stress levels and greater work-related exhaustion among drone operators.[23] Further, in relation to post-traumatic stress disorder (PTSD), there is research to support that the coping mechanisms of soldiers who kill in self-defense during combat operations are far better than those who merely kill the enemy in battle.[24] Hence, without exposure to actual battle, and without the immediate threat to their lives, military men who operate the said unmanned aircrafts and target the enemy from the remote confines of their control rooms lose the benefit of having a stronger coping mechanism towards PTSD.[25]

Further, there is the criticism that the use of drones has oversimplified war into a video game.[26] This argument, however, is not as convincing as it appears to be. Use of drones in warfare, as will be further expounded in this Article, is actually changing the landscape in which war is conducted. Thus, Derek Gregory surmises that the "new visibilities [of the battlespace and of military action] produce a special kind of intimacy that consistently privileges

18. AKBAR S. AHMED, THE THISTLE AND THE DRONE: HOW AMERICA'S WAR ON TERROR BECAME A GLOBAL WAR ON TRIBAL ISLAM 2 (2013).

19. Akbar N. Khan, *The US' Policy of Targeted Killings by Drones in Pakistan*, ISLAMABAD POL'Y RES. INST. J., Winter 2011, at 5.

20. *Id.* at 27-28 (citing O'Connell, *supra* note 5, at 269).

21. *See* Michael W. Lewis, *Drones and the Boundaries of the Battlefield*, 47 TEX. INT'L L.J. 293, 296 (2011-2012).

22. *See* Greg Miller, *Drone Wars*, 336 SCIENCE 842, 843 (2012).

23. *Id.*

24. *Id.*

25. *Id.*

26. Dubbed the "Playstation" mentality. Special Rapporteur on Extrajudicial, Summary, or Arbitrary Executions, *Study on Targetted Killings*, at ¶ 84, U.N. Human Rights Council, A/HRC/14/24/Add.6 (May 28, 2010) (by Philip Alston).

the view of the hunter-killer, and whose implications are far more deadly."[27] Far from the "virtuality" of video games, drone video feedback immerses the remote pilot with more exactitude, courtesy of high definition images, to the harsh realities and hostilities of the field.[28] Also, drone operators who observe drone video feedback for hours attain a sense of familiarization and identification, not only with targets, but also with comrades on the ground, providing them with a greater sense of responsibility for the outcome of the very fluid combat situation.[29] Gregory additionally explains that drone surveillance and video collection make possible the thorough assessment of the combat situation before an attack is launched.[30] Contrasted to the classic air force pilot, remote pilots are "not alone" in the mission, but are supported by a myriad of interlinked specialists from different fields providing expert opinions on the propriety of an attack.[31] Importantly, even with this so-called "Playstation mentality,"[32] what matters at the end of the day, as Michael N. Schmitt correctly asserts, is not the frame of mind of the drone operator, but the ability to recognize a lawful target and to minimize, if not eradicate, civilian losses.[33]

The ability of drones to collect stacks of data exceeding 700 hours of full motion video per day is a class of its own.[34] This capability, as will be discussed further in this Article, will prove instrumental in upholding the core International Humanitarian Law principles. Drones also have the capacity to stealthily and continuously monitor their subjects and, when armed, strike without warning.[35] Aaron M. Drake of the U.S. Air Force writes that drones of the near future will be operated with more secure communication links, avoiding the problems of radar jamming, cyber-attacks, and re-programming,[36] which are seen as among the critical

27. Derek Gregory, *From a View to a Kill: Drones and Late Modern War*, 28 THEORY, CULTURE, AND SOC'Y 188, 193 (2011).

28. *Id.* at 196–97.

29. *Id.* at 195.

30. *Id.* at 199.

31. *Id.* at 198.

32. Michael N. Schmitt, *Drone Attacks under the Jus ad Bellum and Jus in Bello: Clearing the 'Fog of Law'*, 13 Y.B. INT'L HUMANITARIAN L. 311, 320–21 (2010).

33. *Id.*

34. *Rise of the Drones I*, *supra* note 16, at 61.

35. AHMED, *supra* note 18, at 2.

36. *See* SPRINGER, *supra* note 11, at 48.

vulnerabilities of current models.[37] Drones will also have more advanced stealth technology and better capacity to evade enemy radar and fly for longer hours, better sensors, more autonomy, and better capacity to interoperate with other drones.[38]

A prototype drone, Drake cites, is able to reach an altitude of 65,000 feet, with the ability to instantaneously scan an area of 280,000 square miles.[39] An existing model launched in early 2011 is already able to circle the earth for 270 days.[40] Advances in nanotechnology are also a focus of concern in U.S. drone development, with the six-inch "Nano Hummingbird" as a template for aerial vehicles flying in tight spaces.[41] More autonomous drones in the coming years will dominate our airspace.[42] While current drone models have limited autonomy, Paul J. Springer reveals that the more advanced models now have the ability to independently take off and land, choose their own flight paths, deconflict airspace with fellow aircrafts, select their own vectors to attack a target, track and follow other vehicles, select appropriate on-board munitions, and target and attack an enemy.[43] With continued research and development in drone technology, Drake anticipates that by 2020, mid-size drones such as the Reaper[44] will "be able to employ air-to-air weapons."[45] By 2030, he expects that larger drones will have, among others, "autonomous take-off and landing, cargo transport, air refueling, humanitarian assistance airlift, strategic attack, global strike, and even ground operations such as pallet loading and ground refueling."[46] Military men by such time will have the reduced role of merely monitoring the operations of these autonomous drones.[47]

This seemingly unstoppable research and development in more autonomous drones is partly necessitated by the requirement of an

37. 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, 646-48 (2010-2011).

38. *Id.* at 649.

39. *Id.*

40. *Id.* at 649-50.

41. *Id.* at 649.

42. *See* Joseba Zulaika, *Drones, Witches and Other Flying Objects: The Force of Fantasy in U.S. Counterterrorism*, 5 CRITICAL STUD. ON TERRORISM 51, 53 (2012).

43. SPRINGER, *supra* note 11, at 2-3.

44. The Reaper is the variant "most commonly referred to as [a drone.]" Drake, *supra* note 37, at 630.

45. *Id.* at 650.

46. *Id.*

47. *Id.*

accelerated reaction speed in combat situations, and by the practicality of eliminating as much human error as possible.[48] Nevertheless, the focus on artificial intelligence and the rendering of autonomous functions to drones bring to the forefront issues on ethics.[49] Springer argues that crucial battleground decisions cannot be "reduced to a mathematical representation that lends itself to computer programming," nor be relegated to autonomous drones.[50] He continues that it is impossible to foresee all combat situations and pre-program drones to react to all these situations.[51] Comparing drones to humans, Springer asserts —

> To be fair, it is impossible to train human troops to react perfectly in every situation, and it is impossible to instill a perfect ethical behavior into military personnel. Humans, though, have the benefit of a lifetime of making instant judgments in relation to other humans, and an innate understanding of what it means to both live and to kill. Until machines can be built that can definitely understand the true value of life, it is inadvisable to grant them unfettered permission to kill, even in a perfectly designed and controlled system.[52]

Springer adds that, in instances such as malfunctions leading to the killing of illegitimate targets, issues of accountability will arise because drones cannot be prosecuted for war crimes.[53] Accordingly, while the responsibility may be attributed to the operator or to the one who deployed the machine, the introduction of more autonomous drones exacerbates the accountability problem.[54] Springer thus asks, "should the culpability over a breakdown be sheeted home to the deploying commander, to the manufacturer, or to the software engineer? Whose intent should be further considered? Would such intent be sufficient in the prosecution for war crimes?"[55]

At the other end of the spectrum, Ronald C. Arkin cites, among others, statistical data of ethical behavior among military men deployed in the battlefield.[56] He contends that drones, with the enhancement of their

48. SPRINGER, *supra* note 11, at 2.

49. *See* Blank, *supra* note 15, at 716.

50. SPRINGER, *supra* note 11, at 27.

51. *Id.*

52. *Id.*

53. *Id.* at 53.

54. *Id.* at 57.

55. *Id.*

56. *See* Ronald C. Arkin, *The Case for Ethical Autonomy in Unmanned Systems*, 9 J. MIL. ETHICS 332, 334-39 (2010).

programming software, will be able to "perform more ethically than human soldiers."[57] Arkin asserts that artificial intelligence does not conveniently lend itself to irrational behavior, human atrocity and aggressive tendencies, human failings and the propensity to wage war, or complicity. Neither is it susceptible to "unacceptable human rationalization or action," i.e., genocidal and dualistic thinking, power dominance, revenge, punishment and forced compliance, utility, asymmetrical necessity, the desire to profit, the impulse to eradicate potential warfighters, recklessness, reluctant killing, and collective and sacrificial thinking.[58] Arkin and his colleagues are therefore developing drone software that will abort an attack in violation of international law and the rules of engagement, and software that will ensure that someone will always be accountable for a drone's action.[59] It is anticipated that, in the time ahead, drones will gain more sophisticated tracking and targeting ability, and be equipped with better sensors, enabling them to distinguish individuals — including their sexes and ages, and whether armed or unarmed — and the different animal species.[60] With these improvements, drones will "[perform] the logic of targeting, enacting a better-than-human efficiency ethic."[61]

At present, issues with drone attacks are not brought about by the drones themselves, but largely by the manner parties use them in conflicts and the government policy covering such use.[62] Even the four signature strikes,[63] i.e., all military-aged males in strike zones, individuals consorting with known militants, groups of armed men travelling in trucks in areas under the control of Al Qaeda in the Arabian Peninsula, and suspicious compounds in areas controlled by militants,[64] said to be "never legally adequate under International Humanitarian Law," are not illegal per se because of the use of the drones, but because of the military combat policy adopted by the U.S.[65]

As regards accountability issues, drones do not render the principle of command responsibility ineffective. The rule operates in much the same way

57. *Id.*

58. *Id.* at 341-43.

59. *Id.* at 342-43.

60. Ian Shaw & Majed Akhter, *The Unbearable Humanness of Drone Warfare in FATA, Pakistan*, 44 ANTIPODE 1490, 1500 (2012).

61. *Id.*

62. *See* Schmitt, *supra* note 32, at 313.

63. Signature strikes are drone attacks that target "groups of men who bear certain signatures, or defining characteristics associated with terrorist activity, but whose identities [are not] known." Kevin Jon Heller, *'One Hell of a Killing Machine', Signature Strikes and International Law*, 11 J. INT'L CRIM. JUST. 89, 90 (2013).

64. *Id.* at 97-100.

65. *See* Schmitt, *supra* note 32, at 313.

as when an ordinary soldier commits transgressions. It is submitted, while not intending to be overly simplistic, that in the instances of drone malfunctions contemplated by Springer,[66] either the deploying commander, the officer authorizing the flight, or the drone control team should be held accountable. This includes instances, among others, of the deployment of defective drones despite the knowledge of such defect, or reason to know of the same, or if after deployment the defect becomes known and the operation is not aborted.[67] It must be emphasized that the aforesaid group of persons exercise control over the machines, and hence must ensure that they are in good working order.[68] Indeed, like any other weapon, a person has to use it and, classically, pull the trigger before it can do any damage. If it causes a war crime, the responsibility is on the person who used it and not on the weapon.[69]

Be that as it may, fully autonomous drones of the future must nevertheless be pre-programmed to be capable of being overridden by a military commanding officer.[70] Humans are thus not rendered totally out of the loop,[71] and will remain to have the last say on whether to continue with or restrain an attack.[72] As abovementioned, Arkin and his team are designing appropriate software to ensure command responsibility over more autonomous drones.[73]

III. DRONE TECHNOLOGY VIS-À-VIS *JUS IN BELLO*

The discussion now turns to evaluating the use of drones against the *jus in bello* fundamental principles of distinction between civilians or civilian objects and combatants or military objects;[74] military necessity;[75] proportionality;[76] and humanity.[77]

66. *See* SPRINGER, *supra* note 11, at 47-48.

67. *Id.* at 57. *See also* Drake, *supra* note 37, at 634-35.

68. *See* Drake, *supra* note 37, at 634-35.

69. Drake, *supra* note 37, at 658.

70. SPRINGER, *supra* note 11, at 48.

71. *See* Hyder Gulam & Simon W. Lee, *Uninhabited Combat Aerial Vehicles and the Law of Armed Conflict*, AUSTL. ARMY J. FOR PROF. ARMS, Winter 2006, at 131-32.

72. *See* Ryan J. Vogel, *Drone Warfare and the Law of Armed Conflict*, 39 DENV. J. INT'L L. & POL'Y 101, 137 (2010-2011).

73. Arkin, *supra* note 56, at 342-43.

74. Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, art. 48, *adopted on*

Article 51 (4) of Additional Protocol I (A.P. I) to the Geneva Conventions of 12 August 1949[78] prohibits indiscriminate attacks, which are those "not directed at a specific military objective, that employ a method or means of combat unable to be directed at a specific military objective, or the effects of which cannot be limited as required by the protocol."[79] It is from these prohibitions that the principle of distinction flows.[80] For these, drones provide an advantage — the machines are "very precise" in their targeting.[81] Thus, they reduce in the process the number of civilians accidentally killed or civilian objects inadvertently damaged in military operations.[82] The capacity of drones to closely observe prospective targets for extended periods further puts these machines in a better position to distinguish civilians or civilian objects from combatants or military objectives.[83]

Despite these advantages, drones are not exempt from criticisms. Their accuracy ultimately relies on the quality of the military information gathered on the ground, which in most situations, or at least those that have happened so far, are taken from unreliable assets and informants.[84] Moreover, condemnation is further thrown on the U.S. because of the rising number of civilian casualties, the disproportionate impact of drone attacks, and the involvement of the Central Intelligence Agency in the drone operations in Pakistan.[85] These criticisms, however, fail to consider the realities on the ground that make it more difficult for U.S. forces to gather reliable intelligence — Taliban forces disguising themselves as civilians[86] or using

June 8, 1977, 1125 U.N.T.S. 3 (entered into force Dec. 7, 1978) [hereinafter A.P. I].

75. *See* A.P. I, *supra* note 74, art. 51.

76. *Id.*

77. *Id.* art. 1.

78. *See generally* A.P. I, *supra* note 74.

79. *See* A.P. I, *supra* note 74, art. 51.

80. Chris Jenks, *Law from Above: Unmanned Aerial Systems, Use of Force, and the Law of Armed Conflict*, 85 N.D. L. REV. 650, 665 (2009).

81. Arabella Thorp, *Drone Attacks and the Killing of Anwar al-Awlaqi*, 2011, Standard Note 6165, at 12 (U.K.).

82. *Id.*

83. *See* Lewis, *supra* note 21, at 297-98.

84. JAMES CAVALLARO ET AL., LIVING UNDER DRONES: DEATH, INJURY, AND TRAUMA TO CIVILIANS FROM U.S. DRONE PRACTICES IN PAKISTAN 126 (2012).

85. *Rise of the Drones II*, *supra* note 6, at 24-25.

86. Amitani Etzioni, *Unmanned Aircraft Systems, The Moral and Legal Case*, JOINT FORCE Q., 2nd Quarter 2010, at 67.

civilians as human shields,[87] or civilians taking a direct or active part in the hostilities.[88] Further and more importantly, the inaccuracy of gathered information and the alleged U.S. failings are not, as abovementioned, on account of the very nature of the drones,[89] but rather on miscalculations and infractions by humans themselves.[90] As Schmitt aptly phrases —

> [i]f a strike relies on the sort of intelligence that a reasonable attacker would not depend upon in the same or similar circumstances, it is unlawful. But the fact that the attack was conducted using a drone has no bearing on the legality of the operation. It is the unreasonable reliance on suspect intelligence, not the platform used to exploit it, which renders the attack unlawful.[91]

Given the continuous development in imaging technology leading to inventions of higher resolution cameras to be used in drone operations,[92] those responsible for deciding who, what, and when to target will be in a better position to ascertain whether the intelligence gathered in the field is congruent with information taken from drone surveillance.

An attack, following Article 51 (5) of A.P. I, must not be "excessive in relation to the concrete and direct military advantage anticipated."[93] Military advantage is a "subjective determination," made by commanding officers, considering factors such as the effect of the attack to the entire war campaign, and the propriety of the attack given the attendant circumstances and the feasibly obtained[94] and available information at the time.[95] This advantage is weighed in relation to the ensuing collateral damage of the attack. The principle of proportionality requires that the "harm to innocent civilians [and damage to civilian objects] caused by collateral damage during combat operations must be proportionate [to the military gain from the

87. *See* Jenks, *supra* note 80, at 669.

88. Jordan J. Paust, *Self-Defense Targetings on Non-State Actors and Permissibility of U.S. Use of Drone in Pakistan*, J. TRANSNAT'L L. & POL'Y, Spring 2010, at 277.

89. *See* Schmitt, *supra* note 32, at 313.

90. *See* Daniel R. Brunstetter & Megan Braun, *The Implications of Drones on the Just War Tradition*, 25 ETHICS AND INT'L AFF. 337, 350–51 (2011).

91. Schmitt, *supra* note 32, at 320.

92. Ollero & Maza, *supra* note 9, at 11.

93. A.P. I, *supra* note 74, art. 51 (5) (b).

94. *See* Schmitt, *supra* note 32, at 322–23.

95. Jenks, *supra* note 80, at 667.

attack]."[96] Interlinked with the principle of military necessity, proportionality is likewise determined on a case-by-case basis[97] or adjudged on a specific scenario's own facts.[98]

Matters that are considered in this proportionality analysis are, among others, the number of civilians or civilian objects affected, the precautionary measures employed, the types of weapons to be used, the enemy's compliance with the law of armed conflict,[99] the value of the target,[100] the risk to the military personnel conducting the operation,[101] and the contribution of the attack to the war result.[102] Let it be noted that it is "irrelevant" to consider in this analysis the "weapon or weapon system used;" thus, the fact that a drone was used in the attack remains to be immaterial.[103] Given, however, the ability of drones to target with precision, conduct long periods of surveillance, and be operated remotely without a great degree of risk to the operators,[104] there is then the persuasive argument that drone use in warfare is a better weapons system, and even goes above and beyond the standard in meeting the requirements of military necessity and proportionality. As discussed earlier, better identification of the target denotes that the loss of civilian lives and the destruction of civilian objects are at a minimum. Longer surveillance also makes it possible for commanders to ascertain the civilian population's "pattern of life," and assess when is the best time to conduct an attack that will not cost as much civilian casualties.[105]

Moreover, a greater number of skilled military personnel, including lawyers and other experts in their respective fields, are able to evaluate the situation under a lesser degree of pressure and decide the proportionality of the attack, as opposed to when the decision-making is performed by a couple of fighter pilots juggling several tasks at the same time, stressed by the danger to their own lives.[106] Eyes on the drones and on the field are also

96. Public Committee Against Torture in Israel v. Government of Israel, 46 I.L.M. 375, 395 (1999) (Isr.).

97. Vogel, *supra* note 72, at 127.

98. *See* Andrew C. Orr, *Unmanned, Unprecedented, and Unresolved: The Status of American Drone Strikes in Pakistan Under International Law*, 44 CORNELL INT'L L.J. 729, 747 (2011).

99. *See* Jenks, *supra* note 80, at 669.

100. *See* Vogel, *supra* note 72, at 127.

101. *Id.*

102. *Id.*

103. Schmitt, *supra* note 32, at 322-23.

104. *See* Gregory, *supra* note 27, at 195.

105. Schmitt, *supra* note 32, at 320.

106. *See* Lewis, *supra* note 21, at 297-98.

ever present during the entire military operation, unlike in that of a quintessential air strike, in which fighter jets leave the scene to refuel, for example.[107] With continuous observation of a situation in drone operations, compliance with the principles of International Humanitarian Law is better achieved.[108]

Incidentally, the principle of proportionality is not disturbed by the fact that, in current drone operations, there is an imbalance in terms of resources among attackers using drones and the attacked — U.S. forces and the Taliban, for example. Indeed, it is not a violation of the laws of war to utilize weapons superior to those of the enemy.[109] There is further no requirement that both parties to the conflict are exposed to the same amount of risk.[110] While there is a school of thought positing that this asymmetry in weaponry, on the downside, provides encouragement for the weaker side to resort to indiscriminate retaliation[111] and to continue the fight and outlast the other,[112] this lack of equality may in the end contribute in the surrender of the weaker opponent.[113] To this, drones and robots may in fact serve as a deterrent to engagement in war.[114]

Going back, drones have the characteristics to target precisely and to conduct extensive surveillance that likewise make them adherent to the principle of humanity.[115] Superfluous injury, unnecessary suffering, and unwarranted loss of human lives that in no way contribute to the military advantage gained, is abated in view of the carefulness in which targeting is conducted, and the meticulousness in the recognition of military targets.[116]

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107. *See* Drake, *supra* note 37, at 639–40.

108. *Id.* at 640.

109. Vogel, *supra* note 72, at 127.

110. *Rise of the Drones II*, *supra* note 6, at 30.

111. SPRINGER, *supra* note 11, at 58.

112. *Id.* at 36–37.

113. *Id.* at 52.

114. *Id.*

115. The principle of humanity is embodied in The Hague Convention and A.P. I, which provide that "[t]he right of belligerents to adopt means injuring the enemy is not unlimited" and also prohibits parties from employing weapons calculated to inflict "unnecessary suffering." Vogel, *supra* note 72, at 127; A.P. I, *supra* note 74, art. 35; & The Hague Convention (IV) respecting the Laws and Customs of War arts. 22–23, *signed on* Oct. 18, 1907, 36 Stat. 2277 (entered into force Jan. 26, 1910).

116. Blank, *supra* note 15, at 685–86.

While there is argument that the lack of advance warnings given in current drone operations violates the principle of humanity,[117] there is convincing counter-argument that the giving of warnings is not an absolute rule,[118] and can be dispensed with when, among others, the covertness of the operation proves primordial in the positive outcome of the operation.[119] It may be added that, on account of the drone's precision-targeting and punctiliousness in its operation, the requirement to give precaution becomes superfluous. Indeed, if no civilian or civilian object will be affected by a drone attack, then there will really be no need to give an advance warning.

In sum, the protection of life and the respect of the human person, and the mitigation, if not complete prevention, of human suffering, and the upholding of human dignity, which are all at the very core of the principle of humanity,[120] are thus still maintained by the employment of drones in military operations.

IV. CHANGING THE WAR LANDSCAPE

Interestingly, Blank posits that the extraordinary capabilities and effectiveness of drones, as above discussed, have wittingly or unwittingly "chang[ed] the calculus for assessing a lawful attack."[121] Stated differently, drones have "raised the bar" and "created a higher standard" in the determination of an attack's compliance with the core International Humanitarian Law principles.[122] Drake agrees with this proposition, noting that with the enhanced features of the drones, military force has a much higher burden now than it did years ago in ensuring that it has done "everything feasible" to distinguish lawful targets from civilians.[123] Remote operation entailing minimal risk on the life and limb of the drone pilot, not to mention extensive surveillance, further provides adequate time for military officers and the drone control team to decide on whether to continue or abort the attack, having in mind the degree of the anticipated collateral damage and

117. *See* Vogel, *supra* note 72, at 129.

118. *See* Susan Breau, et al., Drone Attacks, International Law, and the Recording of Civilian Casualties of Armed Conflict (A Discussion Paper for the Oxford Research Group) 10, *available at* http://www.oxfordresearchgroup.org.uk/sites/default/files/ORG%20Drone%20Attacks%20and%20International%20Law%20Report.pdf (last accessed Nov. 24, 2015).

119. *See* Schmitt, *supra* note 32, at 324.

120. *See* Armita Kapur, *The Rise of International Criminal Law: Intended and Unintended Consequences: A Reply to Ken Anderson*, 20 EUR. J. INT'L L. 1031, 1032 (2009).

121. Blank, *supra* note 15, at 713.

122. *Id.*

123. Drake, *supra* note 37, at 645.

the likelihood of mistaken assumptions.[124] Indeed, given the drones' enhanced capabilities in distinguishing lawful targets from unlawful ones, more is expected in terms of compliance to International Humanitarian Law principles from them.

This higher standard in the evaluation of a drone attack vis-à-vis the core International Humanitarian Law principles, while seemingly beneficial to civilians is, however, a cause for concern for Blank. According to her, "[i]f using drones means that a party faces different legal standards and obligations than it would in the absence of drones, that party may opt for a less precise weapon in order to avoid such heightened standards."[125] Blank further asserts that the use of drones in warfare may have altered the interpretation and implementation of the principle of proportionality, paving the way to a "recalibration of the relationship between military advantage and civilian casualties — away from 'excessive' and towards 'none.'"[126] With the amount of information gathered from surveillance, which Blank anticipates to become "perfect information," together with precision targeting, a point will be reached where "zero casualties" will be the standard.[127] Should this happen, Blank foresees an unsettling scenario that will prove prejudicial to civilians — parties to conflicts will disregard the law altogether for posing a very high and unreasonable standard, or discontinue military operations so as not to violate the law.[128]

While not categorically dismissing Blank's positions, it is submitted that her expectations of the ensuing behavior of parties to conflicts are more in the sphere of theoretical rather than practical analysis. As discussed above, the minimization if not the absence of risk to its armed force, the economy of resources, the stealth and surveillance capabilities, and the element of surprise in its use, are among the key factors that entice policymakers to invest in drone technology. Opting for less precise weapons will mean a reversion to old weaponry that necessarily entails, to name a few, added risks to the armed force, higher costs, and less effective and cruder capabilities. A government, for example, that is plagued by the critical issues of a plummeting economy and a rising unemployment rate will rather settle on using less costly but more efficient drones and complying with higher legal standards, than using more expensive, less precise, and less capable weaponry just to escape strict compliance with the law of armed conflict. It should be

124. *See* Brunstetter & Braun, *supra* note 90.

125. Blank, *supra* note 15, at 713.

126. *Id.* at 714–15.

127. *Id.*

128. *Id.*

emphasized that, with both options, parties to conflicts still need to adhere to core International Humanitarian Law principles. Since one has to follow the law anyway, why not employ a better-equipped and more effective weapon that does not literally and figuratively cost an arm and a leg? In other words, it will be more practical for parties to conflicts to employ drones than to opt for less precise weapons.

Moreover, at the heart of International Humanitarian Law is the protection of civilians and minimization of civilian casualties.[129] Parties that adhere to International Humanitarian Law principles recognize this mantra. In this era of advanced weaponry, when an entire populace can be wiped out by the mere expedience of dropping a nuclear bomb, there is a primordial need to spare as many civilians as possible and, to quote Frits Kalshoven and Liesbeth Zegveld, "the need is as great as ever to save the world from the absurd savagery of total war."[130] Indeed, as has been repeatedly said, if entire populations are eradicated, what should be ruled over by the war victor? Further, as Kalshoven and Liesbeth posit, it is far more difficult, if not impossible, to restore peace and reconcile parties that have fought an utterly ruthless war.[131] It can be deduced then that signatories to International Humanitarian Law conventions are in fact aspiring for the attainment of "zero casualties" in wars. Contrary thus to Blank's assertion, it is respectfully submitted that parties will rather adhere to such high standard than leave civilians unprotected.

Another actuality that seems to run counter to Blank's projection of the future of International Humanitarian Law is the worldwide proliferation of drones. While everyone is looking at the U.S. and Israel in terms of drone use in warfare, only a few are aware that there are at least 44 countries that already have drones in their military arsenal.[132] Certainly this number will rise with the unending arms trade and arms race. To follow therefore Blank's assertion that parties to conflicts will use less precise weapons rather than drones is to say that these countries are wasting their resources in investing in drone technology. To further accept her proposition that parties will eventually discontinue military operations is to postulate that states that have drones, which eventually will be all states, will altogether refrain from engaging in military operations. While in the long run this is an ideal scenario, it is in all respects unrealistic.

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129. FRITS KALSHOVEN & LIESBETH ZEGVELD, CONSTRAINTS ON THE WAGING OF WAR, AN INTRODUCTION TO INTERNATIONAL HUMANITARIAN LAW 14 (2001).

130. *Id.*

131. *Id.* at 14-15.

132. Jenks, *supra* note 80, at 654.

Nevertheless, Blank is on the right track in her assertion that, over time, drone technology will alter, as it is already on the verge of changing, the landscape of war. As shown above, with the incorporation of drones in the primary inventory of war arsenal, the threshold level upon which distinction, military necessity, proportionality, and humanity are evaluated is climbing up a step, if not several steps, further. But this is beneficial, rather than bleak, to humankind. With the higher bar, more civilians, as Blank acknowledges, are spared from the devastating effects of armed conflict.[133]

The alteration of the war landscape by the introduction of drones in the battlefield does not stop at this "rais[ing] the bar" of International Humanitarian Law compliance. As shown above, given the interminable study and advancement of technology, the time will come, which Drake anticipates to be in the next two or three decades,[134] when the conduct of warfare is dominated by robotic science. In such time, a different war picture will be seen. Humans will be reduced to scientists and venture capitalists racing towards better inventions, developing more sophisticated robotic systems, and deploying superior, better-equipped, and completely autonomous machines.

Incidentally, Drake considers this eventuality as the marginalization of "commander involvement," and finds this "disconcerting."[135] Quoting the warnings of the drafters of A.P. I, Drake emphasizes that, despite the automation of warfare and the lesser involvement of soldiers in the battlefield, military commanders have to "retain command and control,"[136] for at the end of the day someone has to be responsible and accountable for war crimes.[137]

While Drake makes a valid point, he fails to foresee that, with technological advancement and with the drone arms race, soon war will no longer be between robots and humans but robots and other robots. With less and less humans dying in the battlefield, the war landscape totally changes. The future should not therefore be seen as "disconcerting" but rather as reassuring to International Humanitarian Law proponents.

Further, while drones or even robots will compose the military frontline, the fact remains that humans will still be responsible for the development and deployment of these machines. As aforesaid, software design and

133. Blank, *supra* note 15, at 713–15.

134. Drake, *supra* note 37, at 650.

135. *Id.*

136. *Id.* at 653.

137. *Id.* at 658.

development in this area is in progress.[138] In this likely eventuality, therefore, war will be nothing but a mere showmanship of financial and technical strength among conflicting parties, which, at the end of the day, will prove beneficial to humanity. When armed conflict is transformed into a mere competition between more technologically advanced and moneyed players, sans the loss of life and limb of civilians and members of the armed force — a "war without bodies"[139] — then, as aptly phrased by Springer, "war could become a bloodless struggle between machines, with the losing side surrendering after its robots have been destroyed or neutralized."[140]

V. CONCLUSION

Is it not that humanitarian law's inherent desire is the attainment of a more humane war?[141] As shown above, with the development of drone technology and with the use of cutting edge drones in warfare, human suffering due to war will not only be mitigated, but will also eventually be eradicated. As drawn from Blank's analysis,[142] the sophisticated features of drones have raised the bar in the evaluation of an attack's compliance to core International Humanitarian Law principles. This high threshold places the protection of the welfare of civilians at the forefront, paving the way to a more humane war.

Continued advancement in drone technology will further lead, as illustrated above, to drone or robotic war. This eventuality will in turn lead to the avoidance, if not the effacement, of loss and destruction of human lives. Indeed, with the above-discussed advantages of using drones in warfare, these avant-garde machines are the preferred alternative to earlier weapons.[143] Despite the benefits of drones, however, the question of whether humanity should recourse to war still hangs.[144] A war, bloodless or not, always leaves stains of hatred and despair.

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138. Arkin, *supra* note 56, at 342-43.

139. Shaw & Akhter, *supra* note 60, at 1502.

140. SPRINGER, *supra* note 11, at 52.

141. KALSHOVEN & ZEGVELD, *supra* note 129, at 12. *See also* Kapur, *supra* note 121, at 1041.

142. *See* Blank, *supra* note 15, at 713.

143. *See Rise of the Drones II*, *supra* note 6, at 26.

144. *See* Etzioni, *supra* note 86, at 71.