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The New Way of War: Is There A Duty to Use Drones?

Oren Gross

THE NEW WAY OF WAR: IS THERE A DUTY TO USE DRONES?

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INTRODUCTION

Drones, also referred to as unmanned aerial vehicles (UAVs),[1] have become the poster child for America's continuing fight against terrorism under President Barack Obama, filling the role that torture had occupied during the George W. Bush Administration: as a morally, legally, and politically controversial issue that drives a wedge between the United

* Irving Younger Professor of Law and Director, Institute for International Legal & Security Studies, University of Minnesota Law School. Earlier drafts of this Article were presented as the Irving Younger Professorship in law renewal lecture at the University of Minnesota Law School, February 11, 2014, as well as at the World Summit on Counter-Terrorism at the International Institute for Counter-Terrorism, the Interdisciplinary Center Herzliya, in Israel; the New America Foundation; Arizona State University Sandra Day O'Connor College of Law; and to the Faculty of Law at the Hebrew University of Jerusalem, in Israel. I wish to thank Stephanna Szotkowski for her excellent research assistance.

1. The U.S. military prefers to refer to drones as remotely piloted vehicles (RPVs) or unmanned aerial vehicles (UAVs), emphasizing the fact that they are controlled by human operators. Ulrike Franke, Commentary, *On "Drones and US Strategy: Costs and Benefits*," 43 PARAMETERS 119, 119 (2013). In fact, by some accounts, the military needs about thirty people to operate a Predator or Reaper drone, and another eighty people to analyze the incoming information. Kate Brannen, *U.S. Options Limited by Lack of Drones Over Syria*, FOREIGN POL'Y (Oct. 7, 2014), http://www.foreignpolicy.com/articles/2014/10/08/us_options_limited_by_lack_of_drones_over_syria. That article notes that this personnel burden has constrained the U.S. military's use of drones in Syria. *Id.*

States and much of the rest of the world. While the United States has relied increasingly on drones to carry out an ever-greater portion of its military operations overseas, including targeted killing of individuals suspected of terrorist activities,[2] many of America's allies regard drone attacks as a manifestation of the United States' unilateralism, arrogance, and disregard for international law.[3] The use of drones is not only fraught with difficulties in the international sphere,[4] but is also saddled with severe constitutional and legal challenges under U.S. law.[5]

The United States has been conducting drone programs with increasing frequency since the mid-2000s.[6] One program, run by the military, operates armed drones in Afghanistan and has similarly deployed drones in Iraq and Libya, targeting those fighting against U.S.

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2. *See* Joseph Pugliese, *Prosthetics of Law and the Anomic Violence of Drones*, 20 GRIFFITH L. REV. 931, 932 (2011); Nathalie Van Raemdonck, *Vested Interest or Moral Indecisiveness? Explaining the EU's Silence on the US Targeted Killing Policy in Pakistan* 3–4 (Instituto Affari Internazionali, Working Papers No. 1205, 2012), *available at* http://www.iai.it/pdf/DocIAI/iaiwp1205.pdf.

3. *See* PEW RESEARCH CTR., GLOBAL OPINION OF OBAMA SLIPS, INTERNATIONAL POLICIES FAULTED 11 (2012), *available at* http://www.pewglobal.org/files/2012/06/Pew-Global-Attitudes-U.S.-Image-Report-FINAL-June-13-2012.pdf (providing that "U.S. drone strikes—a key element of the Obama administration's anti-terrorism policy—are widely unpopular nearly everywhere, although the U.S. itself is a clear exception").

4. *See* Rosa Brooks, *Drones and the International Rule of Law*, 28 ETHICS & INT'L AFF. 1, 1–2 (2014) (explaining that the United States' use of drones challenges the international rule of law because it defies straightforward legal categorization); Rosa Ehrenreich Brooks, *War Everywhere: Rights, National Security Law, and the Law of Armed Conflict in the Age of Terror*, 153 U. PA. L. REV. 675, 751 (2004) (questioning the salience of international human rights law in elucidating a satisfactory principle with respect to U.S. predator drone attacks on suspected terrorists); *cf.* Patrick A. McDade, A Legal Analysis of the Obama Administration's Position on Targeted Killings 3 (May 5, 2012) (unpublished manuscript), *available at* http://ssrn.com/abstract=2175677 (providing that, in the context of targeted killings by means of drone attack, "no universal definition of targeted killings has been established in international law").

5. *See* David W. Opderbeck, *Drone Courts*, 44 RUTGERS L.J. 413, 418–19, 456–57 (2014) (noting the "thorny" legal and constitutional issues associated with the use of drones); Michael McAuliff & Ryan Grim, *Obama Rebuffs Democrats on Drone Kill Memos, Asserts Executive Secrecy Prerogative*, HUFFINGTON POST (Mar. 13, 2013, 5:38 PM), http://www.huffingtonpost.com/2013/03/13/drones-obama-rebuffs-demo_n_2869156.html; Geert-Jan Alexander Knoops, *Legal, Political and Ethical Dimensions of Drone Warfare Under International Law: A Preliminary Survey*, 12 INT'L CRIM. L. REV. 697, 701 (2012) (presenting the argument that the War Powers Resolution may not limit the President's power to conduct drone attacks as these are "limited operations" and if the "war on terror" does not necessarily trigger the laws of war then this leaves Congress powerless to control the use of drones by the President).

6. Jane Mayer, *The Predator War*, NEW YORKER (Oct. 26, 2009), http://www.newyorker.com/reporting/2009/10/26/091026fa_fact_mayer; *see also* Ryan J. Vogel, *Drone Warfare and the Law of Armed Conflict*, 39 DENV. J. INT'L L. & POL'Y 101, 104–05 (2010) ("In 2001, the Predator UAV fleet numbered only ten and was typically relegated to reconnaissance missions, when used at all. By 2007, Predators numbered more than 180, with plans to nearly double that number over the next few years." (footnote omitted)).

and NATO troops in those countries.[7] Recently, the United States deployed drones in airstrikes against forces of the Islamic State in Iraq and Syria.[8] The second, much more controversial program is a covert operation run by the Central Intelligence Agency (CIA),[9] which is aimed at targeting and killing al-Qaeda and Taliban commanders who are mostly based in Pakistan's northwestern region and who use their Pakistani bases to stage attacks against NATO forces in Afghanistan,[10] as well as to plan attacks against "soft" targets in Europe and the United States.[11] This covert CIA program has targeted top al-Qaeda leaders, al-Qaeda's external operations network, and Taliban leaders and fighters.[12]

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7. *See* Shashank Bengali & David S. Cloud, *U.S. Drone Strikes up Sharply in Afghanistan*, L.A. TIMES (Feb. 21, 2013), http://articles.latimes.com/2013/feb/21/world/la-fg-afghanistan-drones-20130222 (discussing the drone program in Afghanistan); Christopher Drew, *Drones Are Playing a Growing Role in Afghanistan*, N.Y. TIMES (Feb. 20, 2010), http://www.nytimes.com/2010/02/20/world/asia/20drones.html (same); Mayer, *supra* note 6 (providing that the military's drone program "operates in the recognized war zones of Afghanistan and Iraq, and targets enemies of U.S. troops stationed there"); Dylan Matthews, *Everything You Need to Know About the Drone Debate, in One FAQ*, WASH. POST (Mar. 8, 2013), http://www.washingtonpost.com/blogs/wonkblog/wp/2013/03/08/everything-you-need-to-know-about-the-drone-debate-in-one-faq/ ("[D]rones have seen service in Libya, Afghanistan and Iraq as part of the United States's more traditional military campaigns in those countries."); Mark Thompson, *The New U.S. "Smalls" Air Force Over Afghanistan*, TIME (June 26, 2011), http://nation.time.com/2011/06/26/the-new-u-s-smalls-air-force-over-afghanistan/ (discussing the proliferation of drone use by the U.S. military in Afghanistan, Libya, Pakistan, and Yemen); Ryan Grim & Michael McAuliff, *Afghanistan Drone Strike Data No Longer Reported by U.S. Air Force*, HUFFINGTON POST (Mar. 10, 2013, 5:57 AM), http://www.huffingtonpost.com/2013/03/10/afghanistan-drone-strike-data-no-longer-reported-us-air-force_n_2847296.html (same).

8. Brannen, *supra* note 1; Chelsea J. Carter et al., *U.S. Jet Fighters, Drones Strike ISIS Fighters, Convoys in Iraq*, CNN.COM (Aug. 9, 2014, 12:43 PM), http://www.cnn.com/2014/08/08/world/iraq-options/; Paul D. Shinkman, *U.S., Arab Coalition Attack ISIS in Syria*, U.S. NEWS (Sept. 23, 2014, 8:40 AM), http://www.usnews.com/news/articles/2014/09/23/us-arab-coalition-attack-isis-in-syria.

9. Hillel Ofek, *The Tortured Logic of Obama's Drone War*, NEW ATLANTIS, Spring 2010, at 35, 36–37.

10. *See id.* at 36; Adam Entous et al., *CIA Escalates in Pakistan*, WALL ST. J. (Oct. 2, 2010, 12:01 AM), http://online.wsj.com/articles/SB10001424052748704029304575526270751096984 ("The secret deal to beef up the CIA's campaign inside Pakistan shows the extent to which military officials see the havens there, used by militants to plan and launch attacks on U.S. and NATO troops in Afghanistan, as the primary obstacle to the Afghan war effort."); *see also* Melina Sterio, *The United States' Use of Drones in the War on Terror: The (Il)legality of Targeted Killings Under International Law*, 45 CASE W. RES. J. INT'L L. 197, 199 (2012) (noting that the "United States has used drones in other areas of the world, such as Yemen, where al-Qaeda forces have been targeted and killed").

11. *See* Paul Cruickshank et al., *Evidence Suggests that Al-Shabaab is Shifting Focus to 'Soft' Targets*, CNN (Sept. 26, 2013, 8:38 PM), http://www.cnn.com/2013/09/26/world/london-bombing-plot-qaeda/; Entous et al., *supra* note 10.

12. *See* Mayer, *supra* note 6 (noting the drone program's proclivity for extinguishing senior al-Qaeda leaders and their allies, including Taliban targets); Ofek, *supra* note 9, at 36–37 (providing that the drone program "targets al[-]Qaeda and Taliban commanders outside of

The Obama "[A]dministration has enthusiastically embraced the CIA's drone program, an ambitious and historically unusual war campaign by American spies,"[13] and Leon Panetta, the former director of the CIA, famously proclaimed that drones were "the only game in town in terms of confronting and trying to disrupt the al-Qa[e]da leadership." [14] However, the Obama Administration has continued to refuse to discuss key aspects of its drone program and much of the information about the number of drone strikes or casualties from these strikes remains unknown.[15] While the United States launched a total of ten attacks in the territory of Pakistan from 2004 to 2007,[16] in 2008—the last year of the Bush Administration—the number of such attacks rose to thirty-six.[17] In 2009, the first year of the Obama Administration, the number of drone attacks in Pakistan jumped up to fifty-four.[18] From 2010 to 2013, the Obama Administration launched 122, 73, 48, and 27 drone attacks per year, respectively.[19] By the time the Norwegian Nobel

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combat zones" and that there is "no denying that the CIA program is achieving its central goal" of killing al-Qaeda and Taliban targets).

13. Mark Mazzetti & Eric Schmitt, *C.I.A. Steps up Drone Attacks on Taliban in Pakistan*, N.Y. TIMES (Sept. 27, 2010), http://www.nytimes.com/2010/09/28/world/asia/28drones.html.

14. 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 12 (Simon Bronitt et al. eds., 2012); *accord* Vogel, *supra* note 6, at 115 (quoting a statement from former CIA Director Leon Panetta). Similarly, General David Petraeus, former head of U.S. Central Command, announced in January 2010, that the army "can't get enough drones." *Will Foreign Drones One Day Attack the U.S.?*, NEWSWEEK (Mar. 13, 2010, 6:21 PM), http://www.newsweek.com/will-foreign-drones-one-day-attack-us-75331 (internal quotation marks omitted).

15. Ofek, *supra* note 9, at 36 (explaining that while the Obama Administration "has refused to talk about the program's key aspects," what we do know is taken from press reports, mainly the "*National Journal* reports and a widely cited article by Jane Mayer in *The New Yorker*"); *see also* Julian E. Barnes, *U.S. Rethinks Secrecy on Drone Program*, WALL ST. J. (May 17, 2012, 7:25 PM), http://online.wsj.com/news/articles/SB10001424052702303879604577410481496895786 (reporting that the Obama Administration is considering "policy changes that would *lift a tattered veil of secrecy* from its controversial campaign of drone strikes" (emphasis added)); Van Raemdonck, *supra* note 2, at 3; *cf.* Greg Miller et al., *Documents Reveal NSA's Extensive Involvement in Targeted Killing Program*, WASH. POST (Oct. 16, 2013), http://www.washingtonpost.com/world/national-security/documents-reveal-nsas-extensive-involvement-in-targeted-killingprogram/2013/10/16/29775278-3674-11e3-8a0e-4e2cf80831fc_story.html ("[D]ocuments provided to The Washington Post by former NSA contractor Edward Snowden confirm [Hassan Ghul's] demise in October 2012 and reveal the agency's extensive involvement in the targeted killing program that has served as a centerpiece of President Obama's counterterrorism strategy.").

16. *Drone Wars Pakistan: Analysis*, NEW AM. FOUND., http://natsec.newamerica.net/drones/pakistan/analysis (last visited Dec. 28, 2014).

17. *Id.*

18. *Id.* (noting fifty-two drone strikes by President Obama and two drone strikes by President Bush).

19. *Id.*

Committee decided to award President Obama the Nobel Peace Prize in October 2009,[20] after merely ten months in office, he had already authorized more drone attacks in Pakistan than President Bush authorized "during the entirety" of his presidency.[21] The increase in drone attacks has also led to a dramatic rise in the number of casualties stemming from those attacks: approximately 51 casualties among militants were reported in 2006 and 2007.[22] The number of militant casualties went up to 223 in 2008.[23] In the years from 2009 to 2013, the numbers of militant casualties were 387, 788, 420, 268, and 145 per year, respectively.[24]

In addition, a third drone program has come to light with reports that

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20. *The Nobel Peace Prize for 2009*, NOBELPRIZE.ORG (Oct. 9, 2009), http://www.nobelprize.org/nobel_prizes/peace/laureates/2009/press.html; *see supra* notes 13–15 and accompanying text.

21. Ofek, *supra* note 9, at 36 ("The first strike under the new administration occurred just three days after President Obama's inauguration. Fifty-three drone attacks have been reported just in Pakistan in 2009—more than during the entirety of the Bush presidency.").

22. NEW AM. FOUND., *supra* note 16 (finding that approximately 106 civilians were killed between 2006 and 2007); Peter Bergen & Katherine Tiedemann, *The Year of the Drone: An Analysis of U.S. Drone Strikes in Pakistan, 2004–2010*, NEW AM. FOUND. 3 (Feb. 24, 2010) [hereinafter Bergen & Tiedemann, *The Year of the Drone*], http://www.newamerica.net/sites/newamerica.net/files/policydocs/bergentiedemann2.pdf (showing that there were nine civilian deaths from 2004 to 2007).

23. NEW AM. FOUND., *supra* note 16.

24. *Id*. In addition, each of these years saw significant civilian deaths. *See id.* In 2008–2013, there were twenty-eight, seventy, sixteen, sixty-two, five, and around four or five civilian deaths respectively. *Id.* However, analysts Peter Bergen and Katherine Tiedemann reported much higher numbers for 2008–2009 of 175 and 120 civilian deaths, respectively. Bergen & Tiedemann, *The Year of the Drone*, *supra* note 22, at 3. Some scholars, comparing the numbers of civilian to militant deaths, have noted the precision in the targeting capabilities of drones. *The Constitutional and Counterterrorism Implications of Targeted Killing: Hearing Before the S. Judiciary Subcomm. on the Constitution*, *Civil Rights, and Human Rights*, 113th Cong. 2–4 (2013) (statement of Rosa Brooks, Professor, Georgetown University Law Center) (explaining that the use of drones permits greater precision in targeting than using traditional manned aircrafts, though conceding that precise data does not exist on civilian deaths and that disagreement exists about what constitutes the baseline for "a lot" or "relatively few" civilian deaths (internal quotation marks omitted)). Former CIA Director Leon Panetta claimed that drone attacks were "precise," and that they cause only "limited collateral damage." Mary Ellen O'Connell, *Seductive Drones: Learning from a Decade of Lethal Operations*, 21 J.L. INFO. & SCI. 116, 136 (2012) (internal quotation marks omitted). However, few drone strikes are successful in killing high-level militant leaders. For example, in Pakistan, only one in seven drone strikes killed a militant leader; the majority killed low-level fighters and civilians. Peter Bergen & Katherine Tiedemann, *Washington's Phantom War: The Effects of the U.S. Drone Program in Pakistan*, 90 FOREIGN AFF. 12, 12 (2011) [hereinafter Bergen & Tiedemann, *Washington's Phantom War*]. Drone video quality might also be insufficient for "remote operators to recognize a particular face with reasonable certainty." Thomas Michael McDonnell, *Sow What You Reap? Using Predator and Reaper Drones to Carry Out Assassinations or Targeted Killings of Suspected Islamic Terrorists*, 44 GEO. WASH. INT'L L. REV. 243, 259 (2012) [hereinafter McDonnell, *Sow What You Reap?*].

even after the departure of American troops from Iraq in December 2011, the State Department has been operating a "small fleet of [unarmed] surveillance drones" to help protect the U.S. Embassy and Consulates, as well as American personnel in that country.[25] According to reports, the State Department may be considering plans to expand the program to additional "high-threat" countries.[26] There are also growing concerns about the use of drones domestically, either by law enforcement agencies[27] or by private commercial entities.[28]

Drones are here to stay.[29] In fact, both the CIA and the U.S. military increasingly rely on drones, making these flying platforms America's "weapon of choice" for combatting terrorism.[30] When the United States invaded Iraq in 2003, the U.S. Department of Defense (DOD) had fewer

25. Eric Schmitt & Michael S. Schmidt, *U.S. Drones Patrolling Its Skies Provoke Outrage in Iraq*, N.Y. TIMES (Jan. 29, 2012), http://www.nytimes.com/2012/01/30/world/middleeast/iraq-is-angered-by-us-drones-patrolling-its-skies.html (internal quotation marks omitted). The Schmitt and Schmidt article was characterized by President Obama as "a little overwritten." Mark Landler, *Civilian Deaths Due to Drones Are Not Many, Obama Says*, N.Y. TIMES (Jan. 30, 2012), http://www.nytimes.com/2012/01/31/world/middleeast/civilian-deaths-due-to-drones-are-few-obama-says.html (internal quotation marks omitted).

26. Schmitt & Schmidt, *supra* note 25.

27. *See* Matthew L. Wald, *Domestic Drones Stir Imaginations, and Concerns*, N.Y. TIMES (Mar. 17, 2013), http://www.nytimes.com/2013/03/18/business/domestic-drones-on-patrol.html (noting the "rapidly expanding" market for private domestic drone use and the controversy stemming from that expanding market); *see, e.g.*, Glenn Greenwald, *The Growing Menace of Domestic Drones*, SALON (Dec. 12, 2011, 11:58 AM), http://www.salon.com/2011/12/12/the_growing_menace_of_domestic_drones/ (detailing use of a Predator B drone by local police in North Dakota to apprehend suspects); Adam Klasfeld, *FBI Drones Flew Since 2006, Audit Says*, COURTHOUSE NEWS SERVICE (Sept. 26, 2013, 10:38 AM), http://www.courthousenews.com/2013/09/26/61530.htm (discussing the FBI's use of drones for domestic surveillance).

28. *See, e.g.*, Don Reisinger, *Amazon Urges US to Let Its Drones Take Flight*, CNET (Dec. 9, 2014, 6:40 AM), http://www.cnet.com/news/amazon-warns-us-to-let-its-drones-take-flight-or-else/.

29. *See* News Release, Office of the High Comm'r, Statement by Ben Emmerson, UN Special Rapporteur on Counter-Terrorism and Human Rights Concerning the Launch of an Inquiry into the Civilian Impact, and Human Rights Implications of the Use [sic] Drones and Other Forms of Targeted Killings for the Purpose of Counter-Terrorism and Counter-Insurgency 2 (2013) [hereinafter Statement by Ben Emmerson], http://www.ohchr.org/Documents/Issues/Terrorism/SRCTBenEmmersonQC.24January12.pdf (last visited Dec. 28, 2014).

30. *See* Alan W. Dowd, *Drone Wars: Risks and Warnings*, 42 PARAMETERS 7, 7–8 (2013) ("In the past decade, the US drone fleet has swelled from 50 planes to 7,500 . . . ."); Spencer Ackerman & Noah Shachtman, *Almost 1 in 3 U.S. Warplanes Is a Robot*, WIRED (Jan. 9, 2012, 1:31 PM), http://www.wired.com/dangerroom/2012/01/drone-report/ ("According to a new congressional report acquired by Danger Room, drones now account for 31 percent of all military aircraft."); *Unmanned Aerial Warfare: Flight of the Drones*, ECONOMIST (Oct. 8, 2011), http://www.economist.com/node/21531433 (noting the precipitous growth in drone use by the United States).

than fifty UAVs on hand.[31] By early 2010, it had more than 7000.[32] Indeed, so many drones fly at any given time over parts of Pakistan that "command-and-control issues" have emerged.[33] Since 2009, the U.S. Air Force has trained more drone "pilots" than fighter or bomber pilots.[34] And since 2011, the Air Force has "trained more drone pilots

31. *See* Dowd, *supra* note 30, at 7; Peter W. Singer, *How the U.S. Military Can Win the Robotic Revolution*, BROOKINGS (May 17, 2010) [hereinafter Singer, *How the U.S. Military Can Win*], http://www.brookings.edu/research/articles/2010/05/17-robots-singer ("When the U.S. military went into Iraq in 2003, it used only a handful of unmanned systems in the air, none of them armed.").

32. Lora G. Weiss, *Autonomous Robots in the Fog of War*, IEEE SPECTRUM (July 27, 2011, 5:43 PM) (citing Singer, *How the U.S. Military Can Win*, *supra* note 31), http://spectrum.ieee.org/robotics/military-robots/autonomous-robots-in-the-fog-of-war ("Back in 2000, the U.S. Department of Defense (DOD) had fewer than 50 UAVs in its inventory; by early 2010, it had more than 7000.").

33. Mayer, *supra* note 6 ("At any given moment, a former White House counterterrorism official says, the C.I.A. has multiple drones flying over Pakistan, scouting for targets. According to the official, 'there are so many drones' in the air that arguments have erupted over which remote operators can claim which targets, provoking 'command-and-control issues.'").

34. Chris Jenks, *Law from Above: Unmanned Aerial Systems, Use of Force, and the Law of Armed Conflict*, 85 N.D. L. REV. 649, 650 (2009); *see also* James Dao, *Drone Pilots Are Found to Get Stress Disorders Much as Those in Combat Do*, N.Y. TIMES (Feb. 22, 2013), http://www.nytimes.com/2013/02/23/us/drone-pilots-found-to-get-stress-disorders-much-as-those-in-combat-do.html ("Since 2008, the number of pilots of remotely piloted aircraft . . . has grown fourfold, to nearly 1,300. The Air Force is now training more pilots for its drones than for its fighter jets and bombers combined. And by 2015, it expects to have more drone pilots than bomber pilots, although fighter pilots will remain a larger group. Those figures do not include drones operated by the C.I.A. in counterterrorism operations over Pakistan, Yemen and other countries."). The Air Force has integrated and accepted drone operators into its legions of pilots. Jim Michaels, *Drones Change 'Top Gun' Culture of Air Force*, USA TODAY (Dec. 1, 2012, 9:00 AM), http://www.usatoday.com/story/news/world/2012/11/30/drone-wars/1737991/ (noting that drone pilots are "100% accepted and integrated," and that they receive nicknames or call signs, wear flight suits in the Air Force Weapons school like other pilots, and that the Air Force "pins more wings on new drone pilots than fighter and bomber pilots" (internal quotation marks omitted)). However, the creation of a controversial new medal that would honor drone pilots and cyber warriors has been canceled. Amanda Terkel, *Distinguished Warfare Medal Honoring Drone Pilots Canceled by Chuck Hagel*, HUFFINGTON POST (Apr. 15, 2013, 3:23 PM), http://www.huffingtonpost.com/2013/04/15/distinguished-warfare-medal_n_3086660.html (explaining that the Defense Secretary canceled the new medal after it was approved by former Defense Secretary Leon Panetta as a result of congressional outrage that "it would outrank some battlefield medals like the Purple Heart"). It is also contested in the blogosphere whether drone operators can really be called "pilots." Brent Owens, *Drone Pilots or Drone Operators?*, IFLYBLOG (Nov. 20, 2013), http://iflyblog.com/2013/11/20/drone-pilots-drone-operators/. Further nomenclature issues exist about calling drones "drones"—or instead, remotely piloted aircrafts (RPAs). Elijah Solomon Hurwitz, *Drone Pilots: "Overpaid, Underworked, and Bored,"* MOTHER JONES (June 18, 2013, 6:30 AM), http://www.motherjones.com/politics/2013/06/drone-pilots-reaper-photo-essay ("'Drone' conjures images of brainless bots on autopilot, an implication not appreciated by the three-person crew (pilot, sensor operator, intelligence analyst) typically tasked with operating the military's high-tech workhorses.").

than fighter *and* bomber pilots *combined*."[35] But even that may not be sufficient. Recent reports indicate that the Air Force is not keeping pace with the increased demand for drone pilots and is facing a "crisis" in the Force's ability to fulfill its critical missions.[36]

Covert drone attacks orchestrated by the CIA around the world, including in areas that lie outside recognized war zones,[37] raise a range of difficult questions that have been, and continue to be, heavily discussed by scholars, policy makers, and the general media.[38] They raise *jus ad bellum* issues such as the legal authority, if any, for the United States to exercise force inside the territory of another state, e.g., Pakistan, which is an ally of the United States that lies outside the zone of military operations.[39] Did Pakistan give its consent to such attacks?[40] Is such consent even necessary if the United States is exercising its inherent right of self-defense?[41] Does the law of armed conflict apply to drone attacks in Pakistan, and if so, what is the nature of the relevant

35. Alan W. Dowd, *Unmanned Combat*, CLAREMONT INST. (Mar. 20, 2013), http://www.claremont.org/article/unmanned-combat/ (emphasis added).

36. Kate Brannen, *Air Force's Lack of Drone Pilots Reaching 'Crisis' Levels*, FOREIGN POL'Y (Jan. 15, 2015), http://foreignpolicy.com/2015/01/15/air-forces-lack-of-drone-pilots-reaching-crisis-levels/?utm_source=Sailthru&utm_medium=email&utm_term=%2Asituation%20Report&utm_campaign=Sit%20Rep%20January%2016%202015.

37. *See* Peter W. Singer, *Do Drones Undermine Democracy?*, N.Y. TIMES (Jan. 21, 2012) [hereinafter Singer, *Do Drones Undermine Democracy?*], http://www.nytimes.com/2012/01/22/opinion/sunday/do-drones-undermine-democracy.html (arguing that CIA drone strikes "outside of declared war zones are setting a troubling precedent").

38. *See, e.g.*, Afsheen John Radsan & Richard Murphy, *The Evolution of Law and Policy for CIA Targeted Killing*, 5 J. NAT'L SECURITY L. & POL'Y 439, 442–43 (2012) (discussing the positions of critics who decry the CIA drone program as "illegal" and noting the legal and policy implications of the CIA's drone program); Singer, *Do Drones Undermine Democracy?*, *supra* note 37 (setting forth a critique of CIA drone strikes that blur "the civilian and military roles in war and circumvent[] the Constitution's mandate for authorizing it").

39. *See* O'Connell, *supra* note 14, at 276–85 (discussing *jus ad bellum* issues vis-à-vis drone attacks in Pakistan and concluding that "[t]he strongest conclusion to draw under the *jus ad bellum* is that there is no legal right to resort to drone attacks in Pakistan").

40. *See id.* at 282 ("The US has put itself in a vulnerable position. Without express, public consent of the kind the US received from Afghanistan and Iraq, Pakistan is in a position *to claim the US is acting unlawfully* . . . ." (emphasis added)); Office of the High Comm'r for Human Rights, Statement of the Special Rapporteur Following Meetings in Pakistan (Mar. 14, 2013), http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=13146 (noting the statement of the Special Rapporteur that "[a]s a matter of international law the US drone campaign in Pakistan is . . . being conducted without the consent of the elected representatives of the people, or the legitimate Government of the State. It involves the use of force on the territory of another State without its consent and is therefore a violation of Pakistan's sovereignty").

41. *See* Brooks, *supra* note 4, at 91–93; Harold H. Koh, Legal Adviser, U.S. Dep't of State, The Obama Administration and International Law (Mar. 25, 2010), *available at* http://www.state.gov/s/l/releases/remarks/139119.htm.

"armed conflict?"[42] Drone attacks also raise significant *jus in bello* questions,[43] such as the legality of targeted killing in general,[44] and of "signature strikes" in particular.[45] Does the United States have a duty to try to capture the targets of its drone strikes prior to using lethal force against them?[46] What is the status of CIA personnel who operate drones?[47] Last, but not least, drone attacks raise complex legal questions under the Constitution and laws of the United States: May the President

42. *See* Michael W. Lewis, *Drones and Transnational Armed Conflicts*, 3 ST. JOHN'S J. INT'L & COMP. L. 1, 6–14 (2012). *See generally* Noam Lubell & Nathan Derejko, *A Global Battlefield? Drones and the Geographical Scope of Armed Conflict*, 11 J. INT'L CRIM. JUST. 65 (2013) (discussing the difficulty of applying traditional laws of armed conflict to drone use designed to combat the war on terror); McDade, *supra* note 4, at 4–11 (developing each of the laws of armed conflict principles—necessity, humanity, dignity, and proportionality—as applied to the Obama Administration's use of drone strikes to kill targeted individuals).

43. *See* O'Connell, *supra* note 14, at 276 ("The drones used in Pakistan can be lawfully employed only on the battlefield. The right to resort to them must be found in the *jus ad bellum*; the way they are used must be based on the *jus in bello* and human rights.").

44. *See* Laurie R. Blank, *Targeted Strikes: The Consequences of Blurring the Armed Conflict and Self-Defense Justifications*, 38 WM. MITCHELL L. REV. 1655, 1657–58, 1662–69 (2012) [hereinafter Blank, *Targeted Strikes*] (discussing the legal justifications for targeted strikes "outside of the zone of active combat in Afghanistan"); Sterio, *supra* note 10, at 209–11 (discussing the question of whether drone attacks, and the targeting of particular individuals, can satisfy the requirements of *jus in bello*); *see also* Daniel Brunstetter & Megan Braun, *The Implications of Drones on the Just War Tradition*, 25 ETHICS & INT'L AFF. 337, 347–52 (2011); Pugliese, *supra* note 2, at 933.

45. *See* Arianna Huffington, *'Signature Strikes' and the President's Empty Rhetoric on Drones*, HUFFINGTON POST (July 10, 2013, 5:56 PM), http://www.huffingtonpost.com/arianna-huffington/signature-strikes-and-the_b_3575351.html (criticizing the indiscriminant nature of the "signature strike," i.e., when "the CIA or the military makes the decision to fire based not on who the targets are but on whether they are exhibiting suspicious patterns of behavior thought to be 'signatures' of terrorists"). *See generally* Kristina Benson, *"Kill 'Em and Sort It out Later": Signature Drone Strikes and International Humanitarian Law*, 27 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 17 (2014).

46. *See, e.g.*, Ryan Goodman, *The Power to Kill or Capture Enemy Combatants*, 24 EUR. J. INT'L L. 819, 819–26 (2013), *available at* http://www.ejil.org/pdfs/24/3/2427.pdf.

47. NIKLAS SCHÖRNIG, PEACE RESEARCH INST. FRANKFURT, ROBOT WARRIORS: WHY THE WESTERN INVESTMENT INTO MILITARY ROBOTS MIGHT BACKFIRE, PRIF-REPORT No. 100 18–19 (2010), *available at* http://www.hsfk.de/fileadmin/downloads/prif100.pdf; Van Raemdonck, *supra* note 2, at 12 (noting the controversial issue of the CIA's role in targeted killing by drones because CIA agents who operate drones are civilians, even if they are employed by the U.S. government or in its service); Rebecca Perlman, *Targeted Killings: Does Drone Warfare Violate International Law?*, 22 J. PUB. & INT'L AFF. 68, 71–72 (2011) ("CIA officials are not trained in the laws of war and do not bear the uniforms that serve to adequately distinguish them from civilians. In the eyes of many, this makes them unlawful combatants, subject to attack 'whenever and wherever they may be found, including Langley [VA].'" (alteration in original) (footnote omitted) (quoting Gary Solis, *CIA Drone Attacks Produce America's Own Unlawful Combatants*, WASH. POST (Mar. 12, 2010), http://www.washingtonpost.com/wp-dyn/content/article/2010/03/11/AR2010031103653.html).

order the killing of an American citizen abroad?[48] May he do so when the target is on U.S. soil?[49] Do drone strikes constitute impermissible "assassinations"?[50] What sort of supervisory mechanisms are, and ought to be, in place before a drone attack is authorized?[51] What systems ought to exist in order to ensure effective and impartial investigations into drone attacks ex post?[52] What criteria are used in order to

48. U.S. DEP'T OF JUSTICE, LAWFULNESS OF A LETHAL OPERATION DIRECTED AGAINST A U.S. CITIZEN WHO IS A SENIOR OPERATIONAL LEADER OF AL-QA'IDA OR AN ASSOCIATED FORCE 1, *available at* http://msnbcmedia.msn.com/i/msnbc/sections/news/020413_DOJ_White_Paper.pdf (setting forth legal justification for the use of lethal force by the U.S. government "in a foreign country outside the area of active hostilities against a U.S. citizen who is a senior operational leader of al-Qa'ida"); *cf.* Emily Swanson, *Drone Poll Finds Opposition to Use Against American Citizens in U.S., Even to Stop a Terrorist Attack*, HUFFINGTON POST (Mar. 8, 2013, 4:08 PM), http://www.huffingtonpost.com/2013/03/08/drone-poll-drones-us-citizens_n_2838819.html (showing 42% approval, in a poll, of the use of drones by the U.S. government to kill American citizens "suspected of terrorism," while 30% of the respondents disapproved of such measures).

49. Letter from Eric Holder, U.S. Attorney Gen., Office of the Attorney Gen., to Rand Paul, Senator, U.S. Senate (Mar. 4, 2013), *available at* http://big.assets.huffingtonpost.com/BrennanHolderResponse.pdf. U.S. Attorney General Eric Holder noted that: "It is possible, I suppose, to imagine an extraordinary circumstance in which it would be necessary and appropriate under the Constitution and applicable laws of the United States for the President to authorize the military to use lethal force within the territory of the United States." *Id.* However, he described the question as "entirely hypothetical" and that the U.S. government "has not carried out drone strikes in the United States and has no intention of doing so." *Id.*; *see also* Swanson, *supra* note 48 (finding that while 33% of those polled indicated that it would be legal—in extraordinary circumstances—for the President to target a U.S. citizen inside the United States using a drone strike, 47% answered that such an attack could never be legal).

50. *See* McDonnell, *Sow What You Reap?*, *supra* note 24, at 261–63 (characterizing targeted killings as assassinations); Van Raemdonck, *supra* note 2, at 3 (providing that "targeted assassinations of suspect terrorists in Afghanistan and Pakistan" through UAVs are among "controversial" U.S. counterterrorism practices).

51. Many have noted the lack of congressional oversight over drones. *See, e.g.*, Eric Black, *Investigative Reporter Seymour Hersh Describes "Executive Assassination Ring,"* MINNPOST (Mar. 11, 2009), http://www.minnpost.com/ericblackblog/2009/03/11/7310/ (reporting journalist Seymour Hersh's comments calling the Joint Special Operations Command (JSOC) an "executive assassination ring," over which "Congress has no oversight" (internal quotation marks omitted)). Some have suggested re-coordination of the executive branch authorities. Micah Zenko, Policy Innovation Memorandum No. 31, *Transferring CIA Drone Strikes to the Pentagon*, COUNCIL ON FOREIGN REL. (Apr. 2013), http://www.cfr.org/drones/transferring-cia-drone-strikes-pentagon/p30434 ("To take a meaningful first step toward greater transparency, President Barack Obama should sign a directive that consolidates lead executive authority for planning and conducting nonbattlefield targeted killings under DOD."). Others have pointed to a new role for "drone courts." *See, e.g.*, Garrett Epps, *Why a Secret Court Won't Solve the Drone-Strike Problem*, ATLANTIC (Feb. 16, 2013, 9:54 AM), http://www.theatlantic.com/politics/archive/2013/02/why-a-secret-court-wont-solve-the-drone-strike-problem/273246/.

52. *See* HCJ 769/02 Pub. Comm. Against Torture in Isr. v. Gov't of Isr. 62(1) PD 507, ¶ 54 [2006] (Isr.) (advocating for "*ex post* examination" subject to judicial review when targeted killings cause civilian deaths), *available at* http://www.haguejusticeportal.net/Docs/NLP/Israel/Targetted_Killings_Supreme_Court_13-12-2006.pdf; Statement by Ben Emmerson, *supra* note

determine who may be put on the "kill list"?[53] How do we ensure accountability in the absence of transparency?[54] Is Congressional approval required under the Declaration of War Clause when military operations are going to be conducted mainly by drones with no "boots on the ground"? In other words, does such a military engagement constitute a "war" in the constitutional sense?[55]

29, at 1 (noting the possibility of UN investigations into individual drone strokes if certain interested states did not establish impartial investigations); Written Statement of Naureen Shah, Acting Director, Columbia Law Sch. Human Rights Clinic, For an Ad Hoc Hearing on Drones, Civilian Harm from Drone Strikes: Assessing Limitations & Responding to Harm 3–7 (May 8, 2013), *available at* http://cpc.grijalva.house.gov/uploads/Naureen%20Shah%20DronesHearing WrittenTestimony1.pdf.

53. *See* Blank, *Targeted Strikes*, *supra* note 44, at 1660, 1669–76; Jo Becker & Scott Shane, *Secret 'Kill List' Proves a Test of Obama's Principles and Will*, N.Y. TIMES (May 29, 2012), http://www.nytimes.com/2012/05/29/world/obamas-leadership-in-war-on-al-qaeda.html; *Inside the CIA's "Kill List*," PBS FRONTLINE (Sept. 6, 2011, 10:34 AM), http://www.pbs.org/wgbh/pages/frontline/iraq-war-on-terror/topsecretamerica/inside-the-cias-kill-list/.

54. No clear answer exists. *See* Philip Alston, *The CIA and Targeted Killings Beyond Borders*, 2 HARV. NAT'L SEC. J. 283, 308–23, 352–406 (2011) (providing a detailed account of both transparency and accountability issues); RODERIC ALLEY, CTR. FOR STRATEGIC STUDIES, THE DRONE DEBATE: SUDDEN BULLET OR SLOW BOOMERANG, DISCUSSION PAPER NO. 14/13, at 24–28 (2013); Bergen & Tiedemann, *Washington's Phantom War*, *supra* note 24, at 17; Radsan & Murphy, *supra* note 38, at 457–58, 461–62.

55. A memorandum prepared by the Office of the Legal Counsel of the Department of Justice (OLC) setting out the President's authority to use military force in Libya, in 2011, argued that not every military engagement, however limited, that the President initiates falls within the Declaration of War Clause of the Constitution. Authority to Use Military Force in Libya, 35 Op. O.L.C. 1, 8 (2011), *available at* http://www.justice.gov/sites/default/files/olc/opinions/2011/04/31/authority-military-use-in-libya.pdf; *see also* Harold Hongju Koh, Legal Adviser, U.S. Dep't of State, Statement Regarding Use of Force in Libya (Mar. 26, 2011), *available at* http://go.usa.gov/QUdF. Rather, the "nature, scope, and duration" of the engagement ought to be evaluated. Authority to Use Military Force in Libya, 35 Op. O.L.C. 1, 8 (2011) (internal quotation marks omitted). In the context of the intervention in Libya, the OLC concluded that the use of military force would not amount to "war" in the constitutional sense and thus would not require prior congressional approval pursuant to the Declaration of War Clause. *Id.* at 12–13. In particular, the opinion emphasized the limited nature of the mission, as well as the fact that the use of force would be limited to air strikes and that no ground troops were going to be deployed. *Id.* at 13. The anticipated military operation would be "time-limited, well-defined, discrete and aimed at preventing an imminent humanitarian catastrophe," and the air strikes "limited in their nature, duration, and scope." Koh, *supra*. Pointing to "historical gloss" placed on the Constitution by two hundred years of practice, the OLC opined that "war" in the constitutional sense mostly refers to "prolonged and substantial military engagements, typically involving exposure of U.S. military personnel to significant risk over a substantial period." Authority to Use Military Force in Libya, 35 Op. O.L.C. 1, 7–8 (2011) (internal quotation marks omitted); *cf.* Curtis A. Bradley & Trevor W. Morrison, *Presidential Power, Historical Practice, and Legal Constraint*, 113 COLUM. L. REV. 1097, 1099–1100, 1147–48 (2013) ("[D]espite a low likelihood of judicial involvement in the issue, the Obama Administration offered public legal justifications, *based heavily on arguments from historical practice*, for the Libya operation." (emphasis added)). *See generally* Curtis A. Bradley & Trevor

These vexing questions have been the subject of much heated debate. However, relatively little attention has been given to the use of drones by the army to carry out attacks in battlefield zones such as Afghanistan, Iraq, and Libya. Professor David Cole, himself a vocal opponent of the current policy of using drones, readily concedes that "drone strikes against enemy fighters in Afghanistan . . . are not inherently illegal . . . . Nor is it wrong or unlawful to deploy a drone where there is no other way to halt an imminent attack."[56] Similarly, Professor Philip Alston, who served as the U.N. Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, acknowledged in his *Study on Targeted Killings* that "a missile fired from a drone is no different from any other commonly used weapon, including a gun fired by a soldier or a helicopter or gunship that fires missiles. The critical legal question is the same for each weapon: whether its specific use complies with [International Humanitarian Law]."[57] Drones *may* therefore be deployed in the "battlespace"[58] as long as their actual use comports with the law of armed conflict (LOAC). As such, the

W. Morrison, *Historical Gloss and the Separation of Powers*, 126 HARV. L. REV. 411, 417–32 (2012) (discussing the arguments supporting historical "gloss" on executive power).

56. David Cole, *What's Wrong with Obama's Drone Policy*, NATION (Mar. 4, 2013), http://www.thenation.com/article/172898/whats-wrong-obamas-drone-policy.

57. Philip Alston, Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions: Study on Targeted Killings, May 28, 2010, U.N. Doc. A/HRC/14/24/Add.6, ¶ 79 (May 28, 2010), *available at* http://www2.ohchr.org/english/bodies/hrcouncil/docs/14session/A.HRC.14.24.Add6.pdf.

58. Michael N. Schmitt, *War, Technology and the Law of Armed Conflict*, 82 INT'L L. STUD. 137, 149 (2006) ("Range, the ability to locate and fix distant enemies, and penetrable enemy defenses, have made battlefields four dimensional (land, sea, air/space, and cyberspace) and spatially unlimited. War is no longer necessarily linear, i.e., fought along fixed lines of troops . . . . Battlefields have been replaced by 'battlespaces.'" (footnote omitted)). Some have differentiated the idea of a territorially-contained battlefield and a "global battlefield." Laurie R. Blank, *After "Top Gun": How Drone Strikes Impact the Law of War*, 33 U. PA. J. INT'L L. 675, 711–12 (2012) [hereinafter Blank, *After "Top Gun"*] ("[A]fter the September 11th attacks, President George W. Bush laid the foundation for the notion of the whole world as a battlefield when he pronounced that 'our war on terror will be much broader than the battlefields and beachheads of the past. This war will be fought wherever terrorists hide, or run, or plan.'" (quoting *Radio Address of the President to the Nation*, WHITE HOUSE, http://georgewbush-whitehouse.archives.gov/news/releases/2001/09/20010929.html (last visited Dec. 28, 2014)); Michael N. Schmitt & Jeffrey S. Thurnher, *"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict*, 4 HARV. NAT'L SEC. J. 231, 246 (2013) ("Not all battlespaces contain civilians or civilian objects. When they do not, a system devoid of an ability to distinguish protected persons and objects from lawful military targets can be used without endangering the former."); Vogel, *supra* note 6, at 109. There has been a linguistic shift from the term "battleground" to "battlespace," which "recognizes the current reality of forces operating in a multidimensional battleground against complex opponents." John P. Sullivan & Adam Elkus, *Police Operational Art for a Five-Dimensional Operational Space*, SMALL WARS J. 1 (July 23, 2009, 6:06 PM), http://smallwarsjournal.com/blog/journal/docs-temp/274-sullivan.pdf.

discussion has, to date, focused on whether states have the legal *right* to deploy drones and to use them in order to carry out military operations in combat areas.

But *must* they be so used? In his 2013 State of the Union address, President Obama declared that he had imposed "prudent limits on the use of drones," because "we will not be safer if people abroad believe we strike within their countries without regard for the consequence."[59] But what if *not* using drones amounts to conducting military strikes without regard for the consequence? Consider a scenario in which a military commander engages in the planning of an operation against the enemy in a densely populated urban area. Unfortunately, such an operation may result in collateral damage—loss of civilian life, injury to civilians, or damage to civilian objects.[60] Yet, despite such harms, the attack may still be carried out lawfully under the law of armed conflict since LOAC merely aims at minimizing civilian casualties, not eliminating them altogether. But, if the commander is to attempt to minimize such casualties, must not she employ the most precise of weapons in her arsenal? Should not she deploy the most discriminating means of warfare at her disposal, allowing her to distinguish combatants from civilians, attacking the former while sparing the latter? And if, in fact, drones offer the twin promises of greater precision and reduced lethality, ought not the commander to deploy them rather than call for alternative methods of air support or bombardment or introduce "boots on the ground"? Does international law impose a legal *duty* on states that possess the relevant advanced technology to use that technology in battlespace?[61] If so, what are the contours of such legal duty, and what

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59. *President Barack Obama's State of the Union Address*, WHITE HOUSE (Jan. 28, 2014), http://www.whitehouse.gov/the-press-office/2014/01/28/president-barack-obamas-state-union-address.

60. Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Conflicts (Protocol I), art. 51, § 5(b), June 8, 1977, 1125 U.N.T.S. 3 [hereinafter AP I], *available at* https://treaties.un.org/doc/Publication/UNTS/Volume%201125/volume-1125-I-17512-English.pdf (describing indiscriminate acts as anything that "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"); *id.* art. 57, § 2(a)(iii) (stating that militaries should "[r]efrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated"); Rome Statute of the International Criminal Court art. 8, § 2(b)(iv), July 17, 1998, 2187 U.N.T.S. 90 [hereinafter Rome Statute] (prohibiting "[i]ntentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated").

61. As of 2012, seventy-six countries have acquired UAV systems. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-536, NONPROLIFERATION: AGENCIES COULD IMPROVE

is its temporal and substantive scope? And if not, should such a duty exist? These are the questions with which this Article grapples.

Part I of this Article briefly describes the newest battlespace occupants. Robotic systems have been taking active part in combat. They now inhabit the air, the land, and the sea. They carry out missions ranging from surveillance and bomb disposal to "destroy and disable." Part II examines the relevant principles of LOAC. It argues that drones are not, per se, unlawful under LOAC. Rather, the critical question is the same for drones as for other types of weapons, i.e., whether the specific use of the weapon complies with LOAC. In this context, the weapon must be deployed in accordance with LOAC's fundamental principles of humanity, proportionality, distinction, taking precautions, and military necessity. Even if a specific type of weapon is not unlawful per se (or has not been specifically prohibited by particular treaties), it may not be used improperly, e.g., in a manner that would run afoul of these principles. Part III applies the principles of LOAC to drones. First, it analyzes the general trajectories of the development of new weapons throughout human history, which has involved trading off between three main considerations, namely distance, accuracy, and lethality. Second, it examines the rise of precision-guided munitions as an attempt to balance these three considerations, increasing military efficiency while minimizing harm to civilians and civilian objects. Part IV discusses the ability of drones to combine both remote exercise of force and high accuracy to reduce lethality. Part IV also closely examines both the promised benefits that the use of drones may bring to battlespace and the challenges to their deployment. Part V returns to the question of whether states and their military commanders have an obligation to use drones in the context of an armed conflict. It argues that although there are no treaties that deal specifically with the use of drones in armed conflict and no customary norms obligating the use of drones, such a duty may be derived from the cardinal principles of the law of armed conflict. It suggests that such an interpretation is merited if we accept that drones offer the possibility of a more humane war by combining remote and accurate use of force to reduce lethality among both friendly forces and innocent civilians. Part V concludes by setting out further challenges that ought to receive careful attention in developing and elaborating on the obligation to use drones in the battlefield.

One clarification is necessary before proceeding. Most of the (heated) debate regarding the use of drones to date has revolved around

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INFORMATION SHARING AND END-USE MONITORING ON UNMANNED AERIAL VEHICLE EXPORTS 9–10 (2012), *available at* http://dronewarsuk.files.wordpress.com/2012/09/us-gao-_-noproliferation-of-uavs.pdf. Over fifty countries have been developing UAV systems, with the United States and Israel being the global leaders in both manufacturing and exporting such systems on both the tactical and strategic level. *Id.* at 13.

the covert operations of the CIA in countries such as Pakistan, Yemen, and Somalia although numerically more drone attacks have been carried out by the military in active combat zones such as Afghanistan, Libya, and Iraq.[62] However, this Article focuses exclusively on the current and future deployment of drones by the armed forces that operate under the law of armed conflict in active combat zones.

I. BATTLESPACE'S NEW INHABITANTS

Robotic systems are ubiquitous. They are used on manufacturing floors, in warehouses, and throughout the various stages of industrial processes.[63] They clean our homes and our clothes.[64] They are in classrooms,[65] hospitals,[66] and nursing homes.[67] They fulfill a myriad of

62. *See* Jack Serle & Chris Woods, *September 2012 Update: US Covert Actions in Pakistan, Yemen and Somalia* (Oct. 1, 2012), http://www.thebureauinvestigates.com/2012/10/01/september-2012-update-us-covert-actions-in-pakistan-yemen-and-somalia/ (reporting that Somalia suffered three to nine U.S. drone strikes from 2007–2012, Pakistan was subjected to 346 drone strikes from 2004–2012, and Yemen experienced forty to fifty drone strikes from 2002–2012); Chris Woods & Alice K. Ross, *Revealed: US and Britain Launched 1,200 Drone Strikes in Recent Wars*, BUREAU OF INVESTIGATIVE JOURNALISM (Dec. 4, 2012), http://www.thebureauinvestigates.com/2012/12/04/revealed-us-and-britain-launched-1200-drone-strikes-in-recent-wars/ (discussing U.S. drone use in Afghanistan and Iraq); U.N. Secretary General, *Promotion and Protection of Human Rights and Fundamental Freedoms While Countering Terrorism*, ¶¶ 29, 32, 34, 36–38, U.N. Doc. A/68/389 (Sept. 18, 2013), *available at* http://justsecurity.org/wp-content/uploads/2013/10/2013EmmersonSpecialRapporteurReportDrones.pdf (reporting U.S. drone usage in Afghanistan, Pakistan, Yemen, Libya, Iraq, and Somalia); AMNESTY INT'L, LIBYA: THE FORGOTTEN VICTIMS OF NATO STRIKES 6 (2012), *available at* http://www.amnesty.org/en/library/info/MDE19/003/2012/en (reporting fifty-five named civilian casualties in Libya due to airstrikes); *Get the Data: Drone Wars*, BUREAU OF INVESTIGATIVE JOURNALISM, http://www.thebureauinvestigates.com/category/projects/drones/drones-graphs/ (last visited Dec. 28, 2014) (discussing U.S. drone usage in Pakistan, Yemen, and Somalia); NEW AM. FOUND., *supra* note 16; *Drone Wars Yemen: Analysis*, NEW AM. FOUND., http://natsec.newamerica.net/drones/yemen/analysis (discussing U.S. drone usage in Yemen) (last visited Dec. 28, 2014).

63. *See, e.g.*, Greg Bensinger, *Amid Drone Talk, Amazon Has Real Robots*, WALL ST. J. (Dec. 6, 2013), http://blogs.wsj.com/digits/2013/12/06/amid-drone-talk-amazon-has-real-robots/ (discussing Amazon's use of robots to pare the cost of satisfying a typical order); David J. Hill, *1 Million Robots to Replace 1 Million Human Jobs at Foxconn? First Robots Have Arrived*, SINGULARITY HUB (Nov. 12, 2012, 8:57 AM), http://singularityhub.com/2012/11/12/1-million-robots-to-replace-1-million-human-jobs-at-foxconn-first-robots-have-arrived/ (noting one company's push to incorporate robots into the company's manufacturing processes).

64. *See, e.g.*, Vince Lattanzio, *Dry Cleaner Drone Delivers Clothes to Customers*, NBC10 (July 10, 2013, 11:20 AM), http://www.nbcphiladelphia.com/entertainment/the-scene/Dry-Cleaning-Drone-Delivering-Clothes-to-Customers-214736141.html; Charlie Payne, *See Robots Clean and Patrol Your House*, CNN MONEY (Dec. 17, 2013), http://money.cnn.com/video/technology/2013/12/17/robots-drone-parrot-roomba-vacuum-winbot-window-cleaner-google-technology.cnnmoney/.

65. *See* Damien Kee, *Educational Robotics—Primary and Secondary Education*, IEEE ROBOTICS & AUTOMATION MAG., Dec. 2011, at 16, *available at* http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=06096018 ("The use of robotics in education . . . has seen a rapid growth

socially assistive and entertainment functions.[68] They drive on roads and fields and on the surface of Mars.[69] Bill Gates has estimated that the robotics industry "is developing in much the same way that the computer business did 30 years ago."[70]

Robotic systems also play many roles in the modern battlespace. They are used in reconnaissance, surveillance, and communication

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over the last few years.").

66. *See, e.g.*, Jason Falconer, *Walkbot Exoskeleton Rehabilitates Stroke Survivors*, GIZMAG (Jan. 3, 2013), http://www.gizmag.com/walkbot-exoskeleton-gait-rehab-stroke/25627; Frank Tobe, *Accurary Launches New TomoHDA and Gets FDA Okay for CyberKnife M6*, ROBOHUB (Nov. 1, 2012), http://robohub.org/accuray-launches-new-tomohda-and-gets-fda-okay-for-cyberknife-m6/; *Teleoperated Robots*, CONSORTIUM ON COGNITIVE SCI. INSTRUCTION, http://www.mind.ilstu.edu/curriculum/medical_robotics/teleo.php (last visited Dec. 28, 2014) (noting use of teleoperated robots in medicine); *Implement Watson*, IBM, http://www-03.ibm.com/innovation/us/watson/putting_watson_to_work.shtml (last visited Dec. 28, 2014) (follow URL and click "Healthcare"); *Brain Gate: Researching Neural-Interface System Embedded in the Brain*, PLANET INFOWARS (Nov. 11, 2012), http://planet.infowars.com/technology/brain-gate-researching-neural-interface-system-embedded-in-the-brain; *RoboCourier Autonomous Mobile Robot*, SWISSLOG, http://www.swisslog.com/en/Products/HCS/Automated-Material-Transport/RoboCourier-Autonomous-Mobile-Robot (last visited Dec. 28, 2014).

67. Heather Kelly, *Robots: The Future of Elder Care?*, CNN (July 19, 2013), http://whatsnext.blogs.cnn.com/2013/07/19/robots-the-future-of-elder-care/.

68. *See, e.g.*, Tim Carmody, *How Facial Recognition Works in Xbox Kinect*, WIRED (Nov. 5, 2010, 11:06 AM), http://www.wired.com/gadgetlab/2010/11/how-facial-recognition-works-in-xbox-kinect/ (describing face recognition technology); Matthew White et al., *Assistive/Socially Assistive Robotic Platform for Therapy and Recovery: Patient Perspectives*, 2013 INT'L J. OF TELEMEDICINE & APPLICATIONS 1, 1 (2013), http://www.hindawi.com/journals/ijta/2013/948087/ (noting cost reduction benefits); *Wii U Patents Reveal Options for Facial Recognition, 3D/HD Controller Display and More*, GO NINTENDO (Feb. 16, 2012), http://gonintendo.com/?mode=viewstory&id=172074 (describing Wii U's possibilities for face and voice recognition).

69. Chris Anderson, *Farm Robots Only Pick the Ripe Strawberries*, DIY DRONES (Aug. 10, 2012, 6:00 PM), http://diydrones.com/profiles/blogs/farm-drones-only-pick-the-ripe-strawberries (reporting on the waste reduction of vision-based classification for fruit ripeness); Jerry Hirsch, *Self-Driving Cars? They're Already Here*, CHI. TRIB. (Oct. 17, 2013, 5:30 PM), http://www.chicagotribune.com/classified/automotive/chi-self-driving-cars-20130923,0,7780530.story (referencing self-driving, range sensing, avoidance, and geotracking); Jesse Hirsch, *This Tractor Drives Itself*, MODERN FARMER (Apr. 11, 2013), http://modernfarmer.com/2013/04/this-tractor-drives-itself/ (describing a newly invented automated tractor); Ben Schonberger & Steve Gutmann, *A Self-Driving Future*, SIGHTLINE DAILY (June 4, 2013, 11:29 AM), http://daily.sightline.org/2013/06/04/a-self-driving-future/ (considering possibilities that come with increased automation in cars); *In-situ Exploration and Sample Return: Autonomous Planetary Mobility*, NASA JET PROPULSION LAB. CAL. INST. OF TECH., http://mars.jpl.nasa.gov/mer/technology/is_autonomous_mobility.html (last visited Dec. 28, 2014).

70. Bill Gates, *A Robot in Every Home*, SCI. AM. (Jan. 2007), http://www.scientificamerican.com/article/a-robot-in-every-home/; *see also* F. Patrick Hubbard, *"Sophisticated Robots": Balancing Liability, Regulation, and Innovation*, 66 FLA. L. REV. 1803, 1860–61 (2014) (further elaborating on the wide variety of robots available and the numerous functions they may fulfill).

missions,[71] and in explosive hazard identification and explosive ordnance disposal operations.[72] They also carry out hazardous-materials and chemical, biological, radiological, nuclear, and explosive materials detection assignments.[73] They are used in checkpoints and for "route clearance."[74] They assist in search and rescue operations.[75] They function as sentries.[76] They can also take active part in combat.[77]

The advent of unmanned aircraft began with vehicles such as the Kettering Bug during World War I and "evolved through the first-generation cruise missiles during World War II and the decade following."[78] Over the past few decades, the U.S. use of UAV platforms and operations has grown significantly.[79] The U.S. UAV fleet has grown from less than fifty to 6800 units as of 2009.[80] The current aerial drone landscape includes a variety of UAVs used for military and civilian purposes.[81] The DOD currently has "five [types of] UAVs in large numbers: the Air Force's Predator, Reaper, and Global Hawk, and

71. *See* Blank, *Targeted Strikes*, *supra* note 44, at 676 (providing that the surveillance and reconnaissance capabilities of drones make them the "workhorse of modern intelligence gathering and targeting determinations").

72. *See, e.g.*, Gary E. Marchant et al., *International Governance of Autonomous Military Robots*, 12 COLUM. SCI. & TECH. L. REV. 272, 288 (2011) ("[M]any explosive devices in Iraq and Afghanistan that might otherwise have killed and maimed soldiers have been identified, and eliminated, by *robots*." (emphasis added)).

73. David F. Salisbury, *Robot Evolution: Partnship Intensifies Between Vanderbilt Engineers, Physicians*, VAND. SCH. OF ENG'G (Dec. 6, 2013), http://engineering.vanderbilt.edu/news/2013/robot-evolution-partnership-intensifies-between-vanderbilt-engineers-physicians/.

74. Ian Graham Ronald Shaw, The Spatial Politics of Drone Warfare 114 (2011) (unpublished Ph.D. dissertation, University of Arizona) (internal quotation marks omitted).

75. *See, e.g.*, Alistair Barr & Elizabeth Weise, *Underground Drone Economy Takes Flight*, USA TODAY (Dec. 2, 2013, 9:37 PM), http://www.usatoday.com/story/tech/2013/12/02/underground-drone-economy/3805387/.

76. *See, e.g.*, *Description of iRobot Product Line for Defense and Security*, IROBOT, http://www.irobot.com/us/learn/defense (last visited Dec. 28, 2014) ("These robots allow those on scene to quickly acquire valuable information and determine the safest response.").

77. *Id.* (noting "battle-tested" iRobot product); *see infra* text accompanying note 101.

78. *See* BILL YENNE, ATTACK OF THE DRONES: A HISTORY OF UNMANNED AERIAL COMBAT 15 (2004). The earliest UAVs were "small, flimsy, piston-engine, pilotless airplanes." *Id.*

79. Dowd, *supra* note 30, at 7 ("In the past decade, the US drone fleet has swelled from 50 planes to 7,500 . . . ."); *Unmanned Aerial Warfare: Flight of the Drones*, *supra* note 30 ("Since 2005 there has been a 1,200% increase in combat air patrols by UAVs. . . . There are now more hours flown by America's [unmanned aerial systems] that by its manned strike aircraft . . . .").

80. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-10-331, UNMANNED AIRCRAFT SYSTEMS 1, 1 (2010), *available at* http://www.gao.gov/assets/310/302236.pdf.

81. Ian Bott et al., *Great and Small: The Many Types of Drone*, FIN. TIMES (Oct. 8, 2013, 6:53 PM), http://www.ft.com/cms/s/0/2eeba9b0-21d5-11e3-bb64-00144feab7de.html; Barry Neild, *Not Just for Military Use, Drones Turn Civilian*, CNN (June 12, 2013, 6:57 AM), http://www.cnn.com/2012/07/12/world/europe/civilian-drones-farnborough.

the Army's Hunter and Shadow."[82] Aerial drones have a broad size-spectrum: from hummingbird-sized helicopter-like devices to large solar-powered fixed-wing aircraft.[83] Two recent developments on both ends of the size spectrum are of note. The first is the Black Hornet, a four-inch-by-one-inch, half-ounce, camera-equipped drone that the British Army has used in Afghanistan.[84] At the other end, in September 2013, Boeing flew the first unmanned F-16 Fighting Falcon,[85] suggesting that a fighter pilot in the cockpit may soon become truly optional. Drones also have varying purposes, depending on their type.[86] For example, the military uses the MQ-1B Predator for "medium-altitude, long endurance missions" because of its dual intelligence-gathering and munitions capabilities.[87] The MQ-9 Reaper takes on a "hunter/killer role" with a secondary intelligence purpose.[88] Drones rely

82. JEREMIAH GERTLER, CONG. RESEARCH SERV., R42136, U.S. UNMANNED AERIAL SYSTEMS, at *S* (2012). This list is not exhaustive, nor does it attempt to classify different types of UAVs, "e.g. operational v. developmental, single mission v. multi mission, long range v. short range." *Id.* at 31. A sixth type of UAV was revealed in California in October 2014 with the landing in of the X-37B, a military space plane that spent 675 days in orbit. The U.S. Air Force's precise purpose for the X-37B is classified. *See* Olivia Solon, *Top-Secret Military Space Drone Lands After Two Years in Orbit*, MIRROR (Oct. 20, 2014), http://www.mirror.co.uk/news/technology-science/technology/top-secret-military-space-drone-lands-4467730.

83. John Pring, *An Interactive Look at the Different Types of Drones*, VISUAL BROADCAST (Oct. 13, 2013), http://visualbroadcast.com/an-interactive-look-at-the-different-types-of-drones. An example of the larger type of drone is the Global Hawk, a 32,000 pound, $104 million system. Kelsey D. Atherton, *Flying Robots 101: Everything You Need to Know about Drones*, POPULAR SCI. (Mar. 7, 2013, 3:30 PM), http://www.popsci.com/technology/article/2013-03/drone-any-other-name.

84. Erik Schechter, *Palm-Size Drones Buzz Over Battlefield*, LIVE SCI. (Nov. 3, 2013, 9:24 PM), http://www.livescience.com/40908-palm-size-drones-buzz-over-battlefield.html; *Black Hornet Spycam Is a 'Lifesaver' for British Troops*, BBC NEWS (Feb. 13, 2013, 11:36 AM), http://www.bbc.co.uk/news/uk-21450456. *See also* Allison Barrie, *Insects Inspire Military Mini Drones*, FOX NEWS (Sept. 18, 2014), http://www.foxnews.com/tech/2014/09/18/insects-inspire-military-mini-drones/ (describing developments in miniature drone technology in the Army's Micro Autonomous Systems and Technology program, including a BAE prototype that looks like a fly, weighs less than an ounce, and beats its wings 110 times per second, a University of Pennsylvania robot that weighs less than three quarters of an ounce and travels at fifty-three body lengths per second, and other robots inspired by spiders and lizards).

85. Colin Dunjohn, *Boeing Converts F-16 Fighter Jet into an Unmanned Drone*, GIZMAG (Sept. 27, 2013), http://www.gizmag.com/boeing-f16-jet-unmanned-drone/29203/; Robert Sterling, *On Target: F-16 Flies with an Empty Cockpit*, BOEING, http://www.boeing.com/boeing/Features/2013/09/bds_qf16_09_23_13.page (last visited Dec. 28, 2014).

86. Josh Levs, *CNN Explains: U.S. Drones*, CNN (Feb. 8, 2013), http://www.cnn.com/2013/02/07/politics/drones-cnn-explains/.

87. *Id.* (internal quotation marks omitted).

88. *Id.* (internal quotation marks omitted) (referencing its role in carrying out the "kill chain (find, fix, track, target, execute, and assess) against high value, fleeting, and time sensitive targets" (internal quotation marks omitted)). "The MQ-9 can [also] employ four laser-guided Hellfire missiles." *Id.*

on global positioning system (GPS), long-range data links, lightweight materials, and visual sensors for navigation, stabilization, and focusing on targets—all features that their remotely controlled pilots can utilize in attacks.[89] Aerial drone capabilities have also recently been combined with the capability to land at sea on aircraft carriers. In July 2013, Northrop Grumman's X-47B Unmanned Combat Air System (UCAS)—a strike-fighter-sized machine—made the first unmanned autonomous aircraft landing on the U.S.S. George H.W. Bush.[90] In addition to performing autonomous carrier-based launches and recoveries, it is also designed to carry out autonomous air refueling.[91] Using GPS data to anticipate the carrier's movement, the X-47B is able to refine its own flight path twenty times per second—forty times faster than the best human pilot.[92] Furthermore, it does so without any real-time human control.[93] The X-47B may well be the swallow that foretells an era of permanent, carrier-based fleets of unmanned aircraft.[94] The use of aerial drones is also not limited to international battlespaces or armed conflicts; the Federal Aviation Administration (FAA) has recently approved their limited use in U.S. airspace.[95]

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89. Lauren S. Aguirre, *How Dumb are Drones?*, NOVA (Jan. 17, 2013), http://www.pbs.org/wgbh/nova/tech/how-dumb-are-drones.html.

90. Shane McGlaun, *U.S. Navy Moves Ahead with Carrier Drone Project*, DAILY TECH (Aug. 19, 2013, 9:55 AM), http://www.dailytech.com/US+Navy+Moves+Ahead+with+Carrier+Drone+Project/article33196.htm.

91. *Navy Autonomous Aerial Refueling Tests Underway*, NAVAIR NEWS (Sept. 11, 2013), http://www.navair.navy.mil/index.cfm?fuseaction=home.NAVAIRNewsStory&id=5451 (reporting on the testing of autonomous aerial refueling capability in a Calspan Learjet "outfitted with the X-47 B's navigation, command and control, and vision processor hardware and software to assess autonomous air refueling functionality").

92. Michael Milstein, **Pilot Not Included: Military Aviation Prepares for the Inevitable*, AIR & SPACE MAG. (July 2011), http://www.airspacemag.com/military-aviation/pilot-not-included-161589548.

93. Spencer Ackerman, *Navy's Historic Drone Launch from an Aircraft Carrier Has an Asterisk*, WIRED (May 14, 2013, 3:54 PM), http://www.wired.com/2013/05/drone-carrier/ (providing that the X-47B's flight plan is pre-programmed, "a matter of an algorithm").

94. *Capabilities: X-47B UCAS*, NORTHROP GRUMMAN, http://www.northropgrumman.com/Capabilities/X47BUCAS/Pages/default.aspx (last visited Dec. 28, 2014) ("The successful flight test program [for the X-47B] is setting the stage for the development of a more permanent, carrier-based fleet of unmanned aircraft.").

95. *See* Lily Hay Newman, *Amazon Says It Will Take Its Drone Research Overseas If FAA Regulations Are Too Strict*, SLATE (Dec. 9, 2014, 5:45 PM), http://www.slate.com/blogs/future_tense/2014/12/09/amazon_drone_research_could_move_abroad_if_faa_regulations_aren_t_permissive.html?wpsrc=slatest_newsletter&sid=5388d502dd52b85a7a00bb72; Alwyn Scott, *U.S. Cracks Open Skies to Testing, Use of Aerial Drones*, REUTERS (Dec. 30, 2013, 7:33 PM), http://www.reuters.com/article/2013/12/31/us-usa-aircraft-unmanned-idUSBRE9BT0GT20131231 ("The Association for Unmanned Vehicle Systems International (AUVSI), estimates the industry could contribute more than $80 billion to the U.S. economy over a decade and create more than 100,000 jobs."); Micahel Berry & Nabiha Syed, *The FAA's Slow Move to Regulate Domestic Drones*, WASH. POST (Sept. 24, 2014), http://www.washingtonpost.com/news/volokh-

Aerial robots are not alone on the frontlines. A myriad of military robotic systems populate the land and the sea. At the time of writing, the company iRobot had delivered more than 4500 PackBots to defense forces worldwide.[96] Its manufacturer describes the twenty-four pound PackBot[97] as a "tactical mobile robot that performs multiple missions while keeping warfighters and first responders out of harm's way."[98] The tele-operated PackBot is a platform that has eight separate payload bays and hookups allowing the operators to plug-in extendable arms, mine detectors, power packs, and cameras, as well as weapons systems.[99] Its manufacturer, iRobot, boasts a 95% out-of-the-box reliability rate.[100] The U.S. military has extensively used the PackBot in Iraq and Afghanistan.[101] The PackBot's "modular digital architecture accommodates a wide variety of interchangeable payloads that enable a wide variety of missions."[102] Similar to iRobot, robot developer QinetiQ also emphasizes the role of its unmanned robotic system in, first and foremost, helping warfighters and first responders "stay out of harm's way."[103] Like iRobot, QinetiQ offers an extensive line of unmanned systems such as the TALON, the Modular Advanced Armed Robotic System (MAARS), and the Dragon Runner.[104] The payloads of the various systems that companies manufacture also include weapons.[105] For instance, the Special Weapons Observation Reconnaissance Detection System (SWORDS) TALON—the "first armed robot

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conspiracy/wp/2014/09/24/the-faas-slow-move-to-regulate-domestic-drones/ (tracing the history of FAA regulation of domestic drones); Donna Tam, *Amazon Asks FAA to Let It Ramp up Drone Development*, CNET (July 10, 2014), http://www.cnet.com/news/amazon-asks-faa-to-let-it-ramp-up-drone-developments/ (highlighting the FAA's current restrictions on domestic drones with Amazon asking the government if it can test drones on its own property rather than on one of the six testing sites designated by the FAA).

96. *iRobot 510 PackBot*, IROBOT, http://www.irobot.com/~/media/Files/Robots/Defense/PackBot/iRobot-510-PackBot-Specs.pdf (last visited Dec. 28, 2014).

97. *Id.*

98. *iRobot STEM*, EXPO21XX, http://www.expo21xx.com/industrial-robots/18917_st3_junior-robotics/default.htm (last visited Dec. 28, 2014).

99. P. W. SINGER, WIRED FOR WAR: THE ROBOTICS REVOLUTION AND CONFLICT IN THE TWENTY-FIRST CENTURY 22 (2009) [hereinafter SINGER, WIRED FOR WAR].

100. *Id.* at 29.

101. *PackBot Tactical Robot*, DEF. UPDATE, http://defense-update.com/products/p/pacbot.htm (last visited Dec. 28, 2014).

102. *iRobot 510 Packbot – Unmanned Ground Vehicle (UGV) Specifications*, UNMANNED (July 4, 2011), http://www.unmanned.co.uk/autonomous-unmanned-vehicles/ugv-data-specifications-fact-sheets/irobot-510-packbot-unmanned-ground-vehicle-ugv-specifications/.

103. *Unmanned Systems*, QINETIQ, http://www.qinetiq-na.com/products/unmanned-systems/ (last visited Dec. 28, 2014).

104. *Id.*

105. *See, e.g.*, *MAARS*, QINETIQ, https://www.qinetiq-na.com/products/unmanned-systems/maars/ (last visited Dec. 28, 2014) (showing the MAARS sporting a machine gun and noting that MAARS "can also carry either *a direct or indirect fire weapon system*" (emphasis added)).

designed to roam the battlefield"—can carry assault rifles, machines guns, and grenade and rocket launchers and it has "nasty" accuracy.[106] The Multi-Function Agile Remote-Controlled Robot (MARCbot), which resembles a toy truck mounted with a camera, is used to scout out where the enemy might be and "drive under cars and search for hidden explosives."[107] Whereas the MARCbot goes under things, the Sand Flea—a ten-pound robot fitted with a camera that resembles a laptop on wheels—is designed to go over them.[108] The Sand Flea can jump twenty-four to thirty feet in the air and land on its wheels.[109] Remotely operated, it can be launched to jump over walls into compounds or suspected enclosed areas (or, indeed, into windows and openings on the second floor of buildings) and send back pictures of whatever is going on inside before hopping off again to its next destination.[110] This robot answers a perennial problem facing soldiers on patrol: "saddled with 100-pound loads [soldiers] either must scale the walls or kick down the doors to search the compounds, putting soldiers at risk from booby traps or utter exhaustion. Without access to an overhead unmanned air system, the units are also left vulnerable to an ambush."[111] The Sand Flea joins a range of other robotic systems designed to enable soldiers to extend their range of vision beyond the direct line of sight and beyond obstacles, including systems such as the Recon Scout XT—a 1.2-pound robot colloquially known as the "throwbot"—that can be thrown manually as far as its human thrower can manage and upon landing, (on wheels) can be driven off remotely.[112]

The proliferation of drones is not limited to above-land environments; it now includes drones that skim above and that glide beneath the surface of water. Water-surface drones fit within a class of

106. SINGER, WIRED FOR WAR, *supra* note 99 at 29–31 (internal quotation marks omitted).

107. P.W. Singer, *Military Robots and the Laws of War*, NEW ATLANTIS, Winter 2009, at 25, 36. Famously, the MARCbot was also "the first ground robot to draw blood" in Iraq. *Id.* at 36. One unit jury-rigged a Claymore antipersonnel mine on their units. SINGER, WIRED FOR WAR, *supra* note 99, at 32. If they suspected an ambush, they would send the robot ahead. *Id.* If an insurgent was seen, the Claymore would be detonated. *Id.*

108. Michael Hoffman, *Leaping Sand Flea Robot Heading to Afghanistan*, MARINE CORPS TIMES (Nov. 12, 2011, 9:03 AM), http://www.marinecorpstimes.com/article/20111112/NEWS/111120315/Leaping-Sand-Flea-robot-heading-to-Afghanistan.

109. *Id.*; *see also* Jesse Emspak, *Robotic Sand Flea Jumps 30 Feet*, DISCOVERY NEWS (Mar. 29, 2012, 4:45 PM), http://news.discovery.com/tech/robotics/robotic-sand-flea-jumps-30-feet-120329.htm.

110. *See* Michael Hoffman, *Jumping Robot to Get Tested in Afghanistan*, ARMY TIMES (Nov. 7, 2011, 7:35 AM), http://www.armytimes.com/news/2011/11/army-jumping-robot-sand-flea-110711w/.

111. *Id.*

112. *See Recon Scout XT: The Throwable Micro-Robot for Dismounted Troops*, RECON ROBOTICS, http://www.reconrobotics.com/pdfs/Recon-Scout_XT_Spec_Sheet_Military.pdf (last visited Dec. 28, 2014). A similar robot is iRobot's 110 Firstlook. *See* IROBOT, *supra* note 76.

unmanned surface vehicles (USVs) or autonomous surface vehicles (ASVs).[113] The United States began focusing increasingly on USVs in the 1990s and developed the "SAIC/Navtec Owl and Owl II programmes," which "investigate[] the role of small (3m) USVs in surveillance and harbor protection operations."[114] The United States has also developed the "Spartan USV programme," which focuses on the adaptation of larger, rigid inflatable boats (RIBs) to produce semi-autonomous, multi-role USVs.[115] In 2013, the U.S. Navy awarded four development contracts "to develop designs to compete for the Unmanned Carrier Launch Airborne Surveillance and Strike (UCLASS) Air Vehicle."[116] The Coast Guard has petitioned for rapidly deployable Unmanned Port Security Vessels (UPSVs) that map environments and infrastructure where it would be unsafe for humans.[117] The United States Navy has tested "launch[ing] six Spike missiles from an unmanned surface vessel precision engagement module (USV PEM)" in an effort to respond to possible swarms of small attack crafts.[118]

A new cadre of remotely operated underwater vehicles (ROVs) or unmanned underwater vehicles (UUVs) is being designed that are capable of doing, underwater, "what the Air Force has been doing in the sky: prowl stealthily for long periods of time, and gather the kind of data that could turn the tide in war."[119] ROVs and UUVs are not new,

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113. *See* John Joyce, *Navy Integrates Weapon Systems with Unmanned Vehicles for New Surface Warfare Capability*, AMERICA'S NAVY (Oct. 2, 2014, 5:26 PM), http://www.navy.mil/submit/display.asp?story_id=83664 (describing the Navy's demonstration in late September 2014 of a new integrated surface warfare capability in a maritime environment on the Potomac River Test Range. The demonstration featured unmanned surface and air vehicles integrated with naval guns and defense missile systems that relayed data to operators facing fictional threats); *see also* Thomas Claburn, *Navy Tests Swarming Autonomous Boats*, INFORMATIONWEEK (Oct. 7, 2014, 9:06 AM), http://www.informationweek.com/government/mobile-and-wireless/navy-tests-swarming-autonomous-boats/d/d-id/1316410.

114. INST. OF ENG'G & TECH., ADVANCES IN UNMANNED MARINE VEHICLES 313 (G.N. Roberts & R. Rutton eds., 2006).

115. *Id.*

116. Christopher P. Cavas, *US Navy Moves Ahead to Develop Unmanned Carrier Aircraft*, DEF. NEWS (Aug. 14, 2013, 3:45 AM), http://www.defensenews.com/article/20130814/DEFREG02/308140022/Us-Navy-Moves-Ahead-Develop-Unmanned-Carrier-Aircraft.

117. *Harbor Drones Will Help Coast Guard Collect Data in Marine Disasters*, HUFF POST TECH, (Oct. 16, 2013, 11:22 PM), http://www.huffingtonpost.com/2013/10/16/harbor-drones_n_4112153.html (explaining that water drones are "a cross between the sleek, aerial drones . . . and the remote control boats that young boys race in park ponds").

118. *No Hands on Deck—Arming Unmanned Surface Vessels*, NAVAL-TECH. (Nov. 23, 2012), http://www.naval-technology.com/features/featurehands-on-deck-armed-unmanned-surface-vessels/.

119. Mark Thompson, *The Navy's Amazing Ocean-Powered Underwater Drone*, TIME (Dec. 22, 2013), http://swampland.time.com/2013/12/22/navy-underwater-drone/. *See generally* A. Alvarez, *Redesigning the SLOCUM Glider for Torpedo Tube Launching*, 35 IEEE J. OF OCEANIC ENGINEERING 984 (2010) (discussing advancements—and the need for further

but the wave of varieties and cheaper, smaller alternatives has ballooned.[120] The U.S. Navy calls its underwater drone—with the potential to ride "a roller-coaster-like path for up to five years"—the "glider."[121] A fleet of gliders could "swarm an enemy coastline" en masse.[122] These winged and propellerless drones look like miniature Tomahawk missiles.[123] In 2009, the Navy contracted for up to one hundred and fifty "Littoral Battlespace-Sensing gliders"—part of the Tactically Exploited Reconnaissance Node (TERN) to be delivered by 2014—and has more recently contracted for "continued research efforts" on Slocum Gliders.[124] The U.S. Navy has also demonstrated an "all-electric, fuel cell-powered," UAV called "eXperimental Fuel Cell Unmanned Aerial System" (XFC UAS), which can be fired from a "submarine's torpedo tube using a Sea Robin launch vehicle system" and "is designed to fit within an empty Tomahawk launch canister."[125] Once at the surface, the XFC launches vertically from the Sea Robin into the air, while streaming live video.[126] The U.S. Defense Advanced Research Projects Agency (DARPA)—"tasked with expanding technology and science for use in defense projects"—has also announced "plans to develop an unmanned, submersible 'mothership' to transport and deploy aerial and underwater drones."[127] This project integrates new and existing UUV technologies into the Hydra UUV, which will be used as a platform to deploy UAVs and UUVs from underwater.[128] Robots such as RHex by Boston Dynamics combine this

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advancement—in underwater gliders and autonomous underwater vehicles, which are "designed to observe vast areas of the interior ocean").

120. Will Connors, *Underwater Drones Are Multiplying Fast*, WALL ST. J. (June 24, 2013, 7:35 PM), http://online.wsj.com/news/articles/SB10001424127887324183204578565460623922952.

121. Thompson, *supra* note 119 (describing how the glider gathers "energy from the ocean's thermocline, a pair of layers of warm water near the surface and chillier water below" and explaining how the glider changes its density through a process of hydraulic buoyancy). The information that the glider gathers about water temperature, salinity, clarity, currents, etc. could be readily converted into useful military data and may be critical for calibrating sonar. *Id.* In a recent exercise, Navy Captain Walt Luthiger noted that gliders have "helped everyone in that very difficult job of finding submarines that don't want to be found." *Id.* (internal quotation marks omitted).

122. *Id.*

123. William Herkewitz, *Ocean Drones Plumb New Depths*, N.Y. TIMES (Nov. 11, 2013), http://www.nytimes.com/2013/11/12/science/earth/ocean-drones-plumb-new-depths.html.

124. Thompson, *supra* note 119 (internal quotations marks omitted).

125. Tiffany Kaiser, *U.S. Navy Fires "XFC" Drone from Underwater Submarine*, DAILY TECH (Dec. 6, 2013 2:35 PM), http://www.dailytech.com/US+Navy+Fires+XFC+Drone+from+Underwater+Submarine+/article33882.htm.

126. *Id*.

127. *DARPA Looking to Build Underwater Drone 'Mothership,'* RT (July 24, 2013, 5:16 AM), http://rt.com/usa/darpa-underwater-drone-mothership-502/.

128. *Id.*

UUV technology with on-land capabilities and are capable of swimming and driving, as well as pulling themselves up onto ledges several times their own height.[129] However, the underwater environment is not without difficulties that do not exist on land or in the air.[130]

Whether in the air, on land, or under the sea, drones are now at the forefront of the new American way of war. The strategy underlying the old way of war was one of destruction and annihilation rather than of attrition and exhaustion; the goal was to eliminate the enemy's forces on the battlefield.[131] This meant, among other things, amassing forces on the battlefield to crush the enemy.[132] This strategy also led, all too frequently, to great harm to civilians.[133] By contrast, in the "new" American way of war, U.S. forces are "expected to bring military power to bear against an enemy quickly, decisively, and with minimal risk of heavy casualties" to both American combatants and to enemy civilians.[134] This new way of war gives primacy to agility and precision over massive force and to effects-based operations leading to the destruction of specific targets—with the intention of forcing the enemy

129. Evan Ackerman, *IROS 2013: Aqua Hexapod Gets New Amphibious 'Ninja Legs*,*'* IEEE SPECTRUM (Dec. 9, 2013, 4:39 PM), http://spectrum.ieee.org/automaton/robotics/robotics-hardware/iros-2013-rhex-ninja-legs (explaining RHex's unique ability to travel in land or water using the same appendages); Rob Bricken, *Meet RHex, the Robot that Can Get to You No Matter Where You Run*, ROBOTS (July 25, 2013, 4:30 PM), http://io9.com/meet-rhex-the-robot-that-can-get-to-you-no-matter-wher-915110961 ("RHex can . . . traverse most terrains, hurl himself over gaps around a couple of feet, and pull himself up onto ledges several times his own height, which has been enough to get him nicknamed 'the parkour robot.'").

130. *See, e.g.*, Connors, *supra* note 120 (describing the perils of barracudas who want a "quick bite" (internal quotation marks omitted)).

131. RUSSELL F. WEIGLEY, THE AMERICAN WAY OF WAR, at xxii (1973) ("In the history of American strategy, the direction taken by the American conception of war made most American strategists, through most of the time span of American history, strategists of annihilation. . . . [T]he strategy of annihilation became characteristically the American way in war.").

132. This also meant heavy casualties to American forces: approximately 405,000 dead American soldiers in World War II, 36,500 in the Korean War, and 58,200 in the Vietnam War. ANNE LELAND & MARI-JANA "M-J" OBOROCEANU, CONG. RESEARCH SERV., RL32492, AMERICAN WAR AND MILITARY OPERATIONS CASUALTIES 2–3 (2010).

133. *See* PAUL G. GILLESPIE, WEAPONS OF CHOICE: THE DEVELOPMENT OF PRECISION GUIDED MUNITIONS 156 (2006) (noting that "under the old American way of war, generals regularly made war on civilians," and giving the examples of "William T. Sherman in Georgia and Curtis LeMay in Japan").

134. GILLESPIE, *supra* note 133, at 148; Michael Ignatieff, *The New American Way of War*, N.Y. REV. BOOKS (July 20, 2000), http://www.nybooks.com/articles/archives/2000/jul/20/the-new-american-way-of-war/ (explaining that the reduction of risk to American personnel and the concomitant reduction of collateral damage to the nation's enemies were consequences of the political development of American military affairs).

to abandon key interests—over total destruction of the enemy.[135] This new way of war revolves around technology. Its components include precision-guided weapons, computers, and information networks. Operation Desert Storm and Operation Allied Force (NATO's aerial intervention in Kosovo in 1999) led many to adopt a vision for the future of warfare—known as Revolution in Military Affairs (RMA)—which was inexorably linked to technological advancements, the first and foremost being the computerization of battlespace.[136] Imagining continuing wars against clearly identifiable, professional armies, RMA was supposed to capitalize on America's technological advantages such as fighter planes and aerial dominance, reconnaissance and surveillance satellites, communications networks, computerized systems, and precision weapons and munitions.[137] But where the realities of asymmetric warfare have, to a large extent, undermined the usefulness of technology and RMA thinking,[138] drones have emerged as an answer to those very challenges.

II. THE FUNDAMENTAL PRINCIPLES OF THE LAW OF ARMED CONFLICT

LOAC regulates, among other things, the means and methods of warfare—the weapons used and the tactics employed. The overarching

135. *See* DAVID A. DEPTULA, AEROSPACE EDUC. FOUND., EFFECTS-BASED OPERATIONS: CHANGE IN THE NATURE OF WAR, at iii (2001); Michael N. Schmitt, *Effects-Based Operations and the Law of Aerial Warfare*, 5 WASH. U. GLOB. STUD. L. REV. 265, 271–72 (2006).

136. *See* MICHAEL E. O'HANLON, THE SCIENCE OF WAR 172–74 (2009); *cf.* U.S. JOINT CHIEFS OF STAFF, U.S. DEP'T OF DEF., JOINT VISION 2010, at 7–8, 11–14 (2010) [hereinafter JOINT VISION 2010], *available at* http://www.dtic.mil/jv2010/jv2010.pdf (noting importance of "[t]echnologically superior equipment" in contributing to the success of combat forces); U.S. JOINT CHIEFS OF STAFF, U.S. DEP'T OF DEF., JOINT VISION 2020 1–3 (2000) [hereinafter JOINT VISION 2020], *available at* http://www.pipr.co.uk/wp-content/uploads/2014/07/jv2020-2.pdf (providing that attaining the goal of "full spectrum dominance" requires the "steady infusion of new technology and modernization and replacement of equipment"); U.S. DEP'T OF DEF., TRANSFORMATION PLANNING GUIDANCE 3–6, 11 (2003), http://www.defense.gov/brac/docs/transformationplanningapr03.pdf.

137. *See* THOMAS X. HAMMES, THE SLING AND THE STONE: ON WAR IN THE 21ST CENTURY 6–7 (2006) (noting the DOD's preference for technology over people); Ignatieff, *supra* note 134 (providing that RMA represented the "use of computers and knowledge management systems to improve battlefield command and control; the development of precision-guided conventional weapons; and the deployment of stealth systems, new types of armor, and unmanned platforms, which reduced risk for American combatants"); MICHAEL J. MAZARR ET AL., THE MILITARY TECHNICAL REVOLUTION 26 (1993) ("The trend in warfare over at least the last 200 years has been dominated by the increasing destructiveness of warfare and weapons. Greater lethality was achieved through the application of overwhelming firepower. . . . The advent of precision weapons represents a break in this trend as it allows greater degrees of lethality to be achieved without corresponding increases in destructiveness . . . .").

138. DAVID A. KOPLOW, DEATH BY MODERATION: THE U.S. MILITARY'S QUEST FOR USEABLE WEAPONS 229 (2010).

principle that pertains to weapons systems is the prohibition of superfluous injury or unnecessary suffering.[139] Weapons that cannot be directed at specific military objectives and that by their very nature violate the principle of distinction[140] are also unlawful per se.[141] Furthermore, even if a specific type of weapon is not unlawful per se or is not specifically prohibited by particular treaties,[142] governments may not use it improperly—in a manner that would result in unnecessary suffering or in the targeting of civilian population.[143] Such use is also unlawful under the relevant rules of LOAC. It is in light of these principles that the Protocol Additional to the Geneva Conventions of 12 August 1949 (AP I) imposes a positive obligation on each "High Contracting Party" to determine whether the employment of a new weapon will be prohibited under international law.[144] That obligation is imposed as part of any "study, development, acquisition or adoption of a new weapon."[145]

Judged in light of the above-mentioned tests, drones are obviously not unlawful per se. Indeed, as noted below, drones have the potential to be a more discriminating weapon than the alternatives. Nor is there

139. *See* AP I, *supra* note 60, art. 35, § 2; Convention (IV) Respecting the Laws and Customs of War on Land and its Annex: Regulations Concerning the Laws and Customs of War on Land, art. 23(e), Oct. 18, 1907, 36 Stat. 2277 [hereinafter Hague Regulations IV], *available at* http://www.icrc.org/applic/ihl/ihl.nsf/Article.xsp?action=openDocument&documentId=61CDD9E446504870C12563CD00516768.

140. *See infra* note 157–63 and accompanying text.

141. *See* AP I, *supra* note 60, art. 51, § 4(b).

142. Examples of weapons that have been specifically prohibited include expanding bullets, blinding lasers, anti-personnel landmines, chemical weapons, and biological weapons. Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, art. 1, Sept. 18, 1997, 36 I.L.M. 1507 (prohibiting the use of anti-personnel mines); Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects: Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices (Protocol II) As Amended, and Protocol on Blinding Laser Weapons (Protocol IV), Protocol II, art. 5, Protocol IV art. 1, Oct. 13, 1995, 35 I.L.M. 1206 (prohibiting anti-personnel landmines in Protocol II and laser weapons in Protocol IV); Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, art. 1, Jan. 13, 1993, 32 I.L.M. 800 (prohibiting use of chemical weapons); Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, art. 1, Apr. 10, 1972, 26 U.S.T. 583, 1015 U.N.T.S. 163 (prohibiting use of biological weapons, *inter alia*); Declaration Respecting the Prohibition of the Use of Expanding Bullets, July 29, 1899, 187 Consol. T.S. 459, 26 Martens Nouveau Recueil (ser. 2) 1002.

143. AP I, *supra* note 60, art. 35, § 2.

144. *Id.* art. 36.

145. *Id.*; *see, e.g.*, U.S. DEP'T OF DEF., DIRECTIVE 5000.01, THE DEFENSE ACQUISITION SYSTEM 7 (2003), *available at* http://www.dtic.mil/whs/directives/corres/pdf/500001p.pdf (requiring a LOAC compliance review to be conducted for every new weapon and weapon system acquired by the U.S. Department of Defense).

anything unique about the armaments and munitions carried and used by drones and their pilots. Thus, Alston, who served as the U.N. Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, acknowledged in his *Study on Targeted Killings* that, "a missile fired from a drone is no different from any other commonly used weapon, including a gun fired by a soldier or a helicopter or gunship that fires missiles."[146] Thus, the critical question is the same for drones as for other types of weapons—whether the specific use of the weapon complies with LOAC's fundamental principles of humanity, proportionality, distinction, taking precautions, and military necessity.[147]

Notwithstanding the popular adage that all is fair in love and war, article 35(1) of AP I sets out the contrary basic premise of LOAC: "In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited."[148] LOAC reflects a compromise between the demands of military necessity and humanitarian considerations that are aimed at "alleviating as much as possible the calamities of war."[149] LOAC allows the economic and efficient use of force while also minimizing the suffering caused by armed conflict.[150] The equilibrium that LOAC reaches between the competing principles of military necessity and humanity is reflected in several "cardinal principles"[151] that are "intransgressible"[152] and which form "red threads weaving through the whole tissue" of LOAC.[153]

The principle of military necessity is a principle of controlled

146. Alston, *supra* note 57, ¶ 79.

147. *Id.*

148. AP I, *supra* note 60, art. 35, § 1; *see also* Hague Regulations IV, *supra* note 139, art. 23.

149. YORAM DINSTEIN, THE CONDUCT OF HOSTILITIES UNDER THE LAW OF INTERNATIONAL ARMED CONFLICT ¶¶ 9, 11 (2d ed. 2010) (internal quotation marks omitted) (providing that LOAC "must be predicated on a subtle equilibrium between the two diametrically opposed stimulants of military necessity and humanitarian considerations" and that LOAC "amounts to a checks-and-balances system, intended to minimize human suffering without undermining the effectiveness of military operations"); *see also* Declaration Renouncing the Use in Time of War of Explosive Projectiles Under 400 Grammes Weight, Dec. 11, 1868, THE CONSOLIDATED TREATY SERIES 297 (Clive Parry ed., 1976). An English translation of the treaty is available at *Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight. Saint. Petersburg, 29 November/11 December 1868*, ICRC, http://www.icrc.org/applic/ihl/ihl.nsf/52d68d14de6160e0c12563da005fdb1b/dbe0afb2065e0d7ec125641e0031f38c?OpenDocument (last visited Dec. 28, 2014).

150. CHIEFS OF STAFF, MINISTRY OF DEF., THE JOINT SERVICE MANUAL OF THE LAW OF ARMED CONFLICT, 2004, JSP 383, ¶ 2.1 (U.K.), *available at* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/27874/JSP3832004Edition.pdf.

151. Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, ¶ 78 (July 8).

152. *Id.* ¶ 79.

153. DINSTEIN, *supra* note 149, ¶ 19.

violence.[154] While not defined in treaty law, military necessity is generally accepted as authorizing the use of force so long as it is not forbidden by international law and is necessary and indeed indispensable for securing the submission of the enemy as soon as possible.[155] Violence may be lawful, but not all violence is permissible. Only force necessary to attain definite military objectives and advantages is lawful under LOAC.[156]

The principle of distinction is a rule of customary international law[157] and is codified in article 48 of AP I, which provides that, "[i]n order to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives."[158] Violations of the principle of distinction are considered a grave breach of AP I[159] and a war crime.[160] Aimed at protecting the civilian population, the principle of distinction does not only prohibit combatants from directly targeting civilians,[161] it also requires combatants to distinguish themselves from civilians, "so that, unlike civilians, they may be seen to be combatants and the lawful targets of opposing combatants."[162] Thus, for example, in

154. *See, e.g.*, *id.* ¶ 8 (providing that military necessity must be divorced from "wanton acts" and caprice of soldiers, and instead must "be leveraged to the attainment of some discernible military advantage as a direct result").

155. CHIEFS OF STAFF, *supra* note 150, ¶ 2.1; DEP'T OF THE ARMY, FIELD MANUAL 27-10, at 3; THE LAW OF LAND WARFARE ¶ 3 (1956), *available at* http://armypubs.army.mil/doctrine/DR_pubs/dr_a/pdf/fm27_10.pdf; *see also* Hostages Trial (*In re* List), 15 I.L.R. 632 (1948); FRANCIS LIEBER, INSTRUCTIONS FOR THE GOVERNMENT OF ARMIES OF THE UNITED STATES IN THE FIELD, art. 16 (Gov't Printing Office 1898) (1863); JOHN FABIAN WITT, LINCOLN'S CODE: THE LAWS OF WAR IN AMERICAN HISTORY 234–37 (2012).

156. AP I, *supra* note 60, art. 52, § 2.

157. CLAUDE PILLOUD ET AL., INT'L COMM. OF THE RED CROSS, COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 12 AUGUST 1949, at 598 (Yves Sandoz, et al. eds., 1987).

158. AP I, *supra* note 60, art. 48; *see also* Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of Non-International Armed Conflict (Protocol II) art. 13, §§ 1–2, June 8, 1977, 1125 U.N.T.S. 609; 1 INT'L COMM. OF THE RED CROSS, CUSTOMARY INTERNATIONAL HUMANITARIAN LAW, 11–13, 79–81, 84–85 (2005).

159. AP I, *supra* note 60, art. 85, § 3 (providing that making the civilian population the object of attack and launching "an indiscriminate attack affecting the civilian population . . . in the knowledge that such attack will cause excessive loss of life, injury to civilians or damage to civilian objects" constitute grave breaches of the Protocol).

160. Rome Statute, *supra* note 60, art. 8, § 2(b)(i)–(ii).

161. AP I, *supra* note 60, art. 85, § 3(a).

162. GARY D. SOLIS, THE LAW OF ARMED CONFLICT 251 (2010); *see* DINSTEIN, *supra* note 149, ¶ 218 ("The basic rule [of distinction] has two parts. One is its protective aspect, granting an exemption from attack to civilians and civilian objects. But no less important is the corresponding exposure to attack of combatants and military objectives.").

order to enjoy the status of lawful combatant, one must, among other things, wear a fixed, distinctive emblem that is recognizable at a distance (such as a uniform) and carry arms openly.[163]

The principle of unnecessary suffering prohibits parties to an armed conflict from causing unnecessary suffering to combatants.[164] In this context, "unnecessary suffering" is considered to be "a harm greater than that unavoidable to achieve legitimate military objectives."[165] The magnitude of the harm caused by a particular weapon is not, in and of itself, determinative of the legality or illegality of that weapon.[166] Thus, for example, incendiary weapons, such as napalm or white phosphorous, are considered lawful weapons.[167] Rather, the question is one of proportionality between the suffering caused and the military advantage gained.

Proportionality, in the context of *jus in bello*, means that military attacks that are anticipated to result in "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," must be cancelled or suspended.[168] Proportionality does not constitute a total prohibition on civilian deaths.[169] Rather, it clearly recognizes that some civilian casualties are unavoidable and applies to them the doctrine of double effect: when we seek a goal that is morally justified in and of itself, then it is also morally justified to achieve the goal even if this may lead to undesirable consequences, on the condition that the undesirable consequences are unavoidable and unintentional, and that an effort was made to minimize their negative effects.[170]

Finally, article 57 of AP I mandates that those who plan or decide upon an attack "[t]ake all feasible precautions in the choice of means and methods of attack with a view to avoiding, and in any event to

163. DINSTEIN, *supra* note 149, ¶¶ 102–05.

164. AP I, *supra* note 60, art. 35, § 2; Hague Regulations IV, *supra* note 139, art. 23(e); Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, 257 (July 8).

165. *Legality of the Threat or Use of Nuclear Weapons*, 1996 I.C.J. ¶ 78.

166. *See* DINSTEIN, *supra* note 149, at 9 ("General revulsion in the face of a particular conduct during hostilities (even if it transcends fluctuations of public opinion) *does not create* an independent criterion regulating weaponry . . . ." (emphasis added) (internal quotation marks omitted)).

167. INT'L COMM. OF THE RED CROSS, *supra* note 158, at 287.

168. AP I, *supra* note 60, art. 51, § 5(b); *see also id.* art. 57, § 2(a)(iii).

169. SOLIS, *supra* note 162, at 274.

170. *See* Laurie R. Blank, *A New Twist on an Old Story: Lawfare and the Mixing of Proportionalities*, 43 CASE W. RES. J. INT'L L. 707, 715 (2011); R. George Wright, *Noncombatant Immunity: A Case Study in the Relation Between International Law and Morality*, 67 NOTRE DAME L. REV. 335, 341–42 (1991) (discussing the doctrine of double effect).

minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects."[171] This principle of avoidance (also known as "taking precautions") means that it is not enough not to intend to kill civilians while attacking legitimate targets. Indeed, a deliberate, affirmative effort has to be made not to harm them. This may mean, for example, that certain targets ought to be attacked only during certain hours (e.g., at night, when no civilians may be around),[172] that some attacks may need to be conducted from a certain angle,[173] and that advance warnings to the civilian population must be issued by the attacker prior to the strike.[174]

III. DISTANCE, ACCURACY, AND LETHALITY

In order to apply the fundamental principles of LOAC to drones, we need to evaluate and understand the use of drones and drone technology in the more general context of weapons development, which, throughout human history, has involved compromises between three main considerations—distance, accuracy, and lethality. Drones, this Article suggests, offer the possibility of recalibrating the equilibrium among these three considerations by increasing military efficiency while minimizing harm to civilians and civilian objects. As such, they are arguably in line with the principles of LOAC and, indeed, offer the promise of more "humane" wars.[175]

The story of advancements in weapons technology has been about enabling the exercise of ever-greater lethal force from increasing distances.[176] It is a human instinct to fight from a distance:[177] Increased physical and mechanical separation from the enemy reduces a soldier's fear of being killed and, perhaps even more significantly, his reluctance to kill others.[178] It is easier to kill another human being using a spear

171. AP I, *supra* note 60, art. 57, § 2(a)(ii).

172. *See, e.g.*, Jean-François Quéguiner, *Precautions Under the Law Governing the Conduct of Hostilities*, 88 INT'L REV. RED CROSS 793, 800 (2006), *available at* https://www.icrc.org/eng/assets/files/other/irrc_864_queguiner.pdf.

173. *Id.* at 801.

174. AP I, *supra* note 60, art. 57, § 2(c).

175. *See infra* Section V.A.

176. Samuel Issacharoff & Richard H. Pildes, *Targeted Warfare: Individuating Enemy Responsibility*, 88 N.Y.U. L. REV. 1521, 1570–71 (2013).

177. *See, e.g.*, ARDANT DU PICQ, BATTLE STUDIES: ANCIENT AND MODERN BATTLE (John N. Greely & Robert C. Cotton trans., 1946), *reprinted in* 2 ROOTS OF STRATEGY 9, 115 (1987) (noting that "close formation of men armed with pikes was irresistible" because "pikes fifteen to eighteen feet long kept you at a distance").

178. *See* Rosa Brooks, *Drones and Cognitive Dissonance*, *in* DRONES, REMOTE TARGETING AND THE PROMISE OF LAW (Peter Bergen & Daniel Rothenberg eds., forthcoming), *available at* http://scholarship.law.georgetown.edu/facpub/1256 ("If drone strikes enable us to kill enemies without exposing our own personnel, this should presumably be considered a good thing, not a bad thing."). The physical distance, though safe for the drone pilot, means that they are not

than a knife. It is easier still to use a bow rather than a spear. It is easier yet to shoot indirectly at the enemy from a great distance than to target her with direct fire. And it may be easiest of all to kill by dropping bombs from high altitude. However, an inverse relationship exists between distance and accuracy.[179] Projectiles have not proven the most efficient way to kill the enemy. No matter how trained their operator, once released, projectiles—arrows, canon balls, bullets, missiles, and bombs—are subject to factors that are beyond the operator's control.[180] Weather conditions and the laws of physics participate in shaping the trajectory of the projectile.[181] Moreover, the time that is needed for the projectile to traverse the distance between its origin and its target may allow the target to parry the attack by changing his position or taking cover.

In order to compensate for the inherent inefficiency of projectile-based weapons, their lethality has been continuously increased. Both the quantity and the quality of projectile weapons had to be augmented. If a single weapon could not guarantee a sufficient probability of hitting the target, deploying a large number of weapons (and a large number of soldiers operating them) against the same target would improve the odds. Making each projectile more lethal would similarly improve the chances that, even if the target were not hit with precision, it would be destroyed.

Increased lethality, both with regard to the number of bombs dropped on a target and the size of those bombs, was a hallmark of the old American way of war.[182] The air campaign during the Vietnam War still saw the use of the euphemistic "strategic bombing" and of massive bombs like the 15,000-pound BLU-82 "Daisy Cutter," both of which compensated for a lack of pinpoint accuracy with greater, broader

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physically present and able to make split-second, life-or-death decisions. Grigoriy Mishkov & Thomas Stimmel, *The Predator of the Sky; the Avenger Drone* 6 (Univ. of Pittsburgh Swanson Sch. of Eng'g, Working Paper No. 2260, 2012), *available at* http://136.142.82.187/eng12/Author/data/2260.docx. This dissociation raises questions about who is qualified to make decisions about who lives and who dies. *See* Sterio, *supra* note 10, at 213.

179. Brooks, *supra* note 178 (noting that the distance between the drone and operator makes imprecision unavoidable).

180. *See* Christopher B. Puckett, *In This Era of "Smart Weapons," Is a State Under an International Legal Obligation to Use Precision-Guided Technology in Armed Conflict?*, 18 EMORY INT'L L. REV. 645, 649 (2004) (providing that projectile accuracy improves when the user makes adjustments "in response to altitude, range, and poor weather conditions").

181. *See id.*

182. *See* GILLESPIE, *supra* note 133, at 37 ("[T]he prosecution of World War II epitomized the previously established *American way of war*, depending upon a strategy of attrition and the efficient employment of technology to defeat the enemy. In a war more total than any before or since, wartime exigencies and the vast resources of the United States combined to produce innovative technologies in unprecedented *quantity* and *scope*." (emphasis added)).

force.[183] The Vietnam War also saw the emergence of a new way of fighting, which recognized the value of precision and accuracy over raw, indiscriminate force.[184] It witnessed the first large-scale deployment of precision-guided munitions (PGMs) and the beginning of a shift from gravity-directed "dumb" bombs to "smart" weapons.[185] That shift captured worldwide attention during Desert Storm[186] (despite relatively little actual use of smart bombs during the operation)[187] and was crystalized during Operation Allied Force in 1999.[188] PGMs' promise of a more accurate and potentially less lethal war, at least for "our" combatants and "their" civilians, has been wedded to and used in tandem with drone technology since the mid-2000s.[189]

A. *Distance*

The distancing of warriors from their enemies has been a consistent and critical pattern in the development of weapons throughout human history. Weapons such as spears, javelins, and bows allowed forces to engage the enemy from greater horizontal distances than did stones, sticks, clubs, knives, and swords.[190] The harnessing of animals such as horses, camels, and elephants for warfare lifted their riders vertically above the battlefield and allowed them to attack the enemy from above.[191] Their use also increased significantly the speed of both attack

183. *Id.* at 99.

184. JAMES E. HICKEY, PRECISION-GUIDED MUNITIONS AND HUMAN SUFFERING IN WAR 76 (2012) (providing that "operationally effective precision-guided munitions" replaced unguided "dumb" bombs during the Vietnam era); *see also id.* (noting that the Vietnam war, despite its horrors and failures, "serves as a bridging case study between two eras of warfare, and also serves as the progenitor of the style of warfare so prominently displayed in modern American combat operations").

185. *Id.*

186. *Id.* at 111.

187. *Id.* at 154 (noting that just 8% of munitions used in Operation Desert Storm were precision-guided).

188. *See id.* at 173 (describing the performance of precision-guided munitions in Kosovo as "near-perfect").

189. Another trend worth noting with regard to the emergence of weapons systems is the increasing development of non-lethal (also known as "less lethal") weapons systems. Such weapons strike a different balance between lethality and accuracy—i.e., they compensate for their lower (or in some cases, absence of) lethality, with less precision. In other words, because such weapons are less lethal it seems less critical for them to be quite as discriminatory as more lethal weapons. U.S. DEP'T OF DEF., DIRECTIVE 3000.03E, DOD EXECUTIVE AGENT FOR NON-LETHAL WEAPONS (NLW), AND NLW POLICY 2–3 (2013), *available at* http://www.dtic.mil/whs/directives/corres/pdf/300003p.pdf.

190. *See* VIC HURLEY, ARROWS AGAINST STEEL: THE HISTORY OF THE BOW AND HOW IT FOREVER CHANGED WARFARE 13 (2011).

191. *See* JARED DIAMOND, THE RISE AND FALL OF THE THIRD CHIMPANZEE 217 (1991) (describing how the domestication of horses revolutionized warfare in a way that no other animal ever rivaled by pulling battle chariots and carrying saddles and stirrups, allowing

and defense while offering greater protection to their riders against conventional attacks mounted by the opposing infantry.[192] For its part, the infantry revolution of the fourteenth century presented two main tactical responses to the mounted cavalry, both of which have similarly depended on engagement from a distance: first, deploying archers using bows, crossbows, longbows, and composite bows (and, later on, firearms) in order to stop the cavalry at a distance,[193] and, second, meeting those cavalrymen who had managed to survive the onslaught of arrows with long pikes defending tightly-packed infantry units.[194]

The story of advancements in weapons technology is, to a large extent, the story of enabling the exercise of lethal force from increasing distances and the stretching of the battlespace.[195] Distancing addresses both the soldier's fear of being killed and her reluctance to kill others.[196] The fear for one's own life affects one's judgment and may impair the ability to act effectively in battle.[197] The ways in which distancing affects such fear are complex. Distancing may exacerbate fear of the unseen enemy and instill a sense of helplessness against an incoming

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conquistadors to defeat the Inca and Aztec nations); *id*. at 243 ("Throughout the world the horse revolutionized warfare and enabled horse-owning peoples to terrorize their neighbors.").

192. *See id*. at 217 (discussing how horses revolutionized warfare).

193. MAX BOOT, WAR MADE NEW 74 (2006) (noting that by the fourteenth century, "Swiss pikemen and English longbowmen eclipsed mounted knights as the dominant force on the battlefield").

194. *See* DAVE GROSSMAN, ON KILLING: THE PSYCHOLOGICAL COST OF LEARNING TO KILL IN WAR AND SOCIETY 120 (2009) ("The physical range provided by the spears of the Greek and Macedonian phalanx provided much of the psychological leverage that permitted Alexander the Great to conquer the known world. The psychological leverage provided by the hedge of the pikes was so powerful that the phalanx was resurrected in the Middle Ages and used successfully in the era of mounted knights." (footnote omitted)).

195. SINGER, WIRED FOR WAR, *supra* note 99, at 100 ("In antiquity, when you divided the number of people fighting by the area they would typically cover, on average it would take a Greek hoplite and five hundred of his buddies to cover an area the size of a football field. . . . By the time of the American Civil War, weapons had gained such power, distance, and lethality that roughly twenty soldiers would fight in that same space of a football field. By World War I, it was just two soldiers in that football field. By World War II, a single soldier occupied roughly five football fields to himself. In Iraq in 2008, the ratio of personnel to territory was roughly 780 football fields per one U.S. soldier."); *see* DU PICQ, *supra* note 177, at 138 ("To fight from a distance is instinctive in man. From the first day he has worked to this end, and he continues to do so.").

196. GROSSMAN, *supra* note 194, at 97–98, 127–28. The ability to destroy the enemy from a long range also confers political advantages such as being "freed from the constraint of securing alliance consent for use of their bases, and from the risk of exposing American assets to attack." MICHAEL IGNATIEFF, VIRTUAL WAR: KOSOVO AND BEYOND 169 (2000).

197. *See generally* Gregory A. Daddis, *Understanding Fear's Effect on Unit Effectiveness*, MIL. REV., July–Aug. 2004, at 22 (2004) (describing sources of fear and the ways fear psychologically inhibits effective war strategy, and offering strategies to counteract fear).

long-range attack.[198] At the same time, distancing offers a sense of impunity and decreased personal risk and some semblance of force protection. Perhaps most significantly, distancing minimizes the trauma that results from what retired Army Lieutenant Colonel Dave Grossman calls the "Wind of Hate."[199] According to Grossman's study of killing in war, a critical factor in the incidence of psychiatric casualties among soldiers is not the mere existence of fear of death and injury, but rather the fact that such danger is brought about by and through "close-up, inescapable, interpersonal hatred and aggression."[200] Soldiers and civilians can withstand ongoing aerial and artillery bombardments, because being psychologically protected by distance allows denial that anyone is personally trying to kill them; the mere threat of close-up aggression by attacking infantry, however, may cause them to flee.[201]

Even more importantly, studies about the actual conduct of soldiers in war have persuasively demonstrated that fear for one's life is one of the least significant contributing factors to psychiatric trauma among soldiers.[202] Far more critical to understanding soldiers' conduct on the battlefield is the often-underappreciated fact that a significant number of soldiers choose either not to fire their weapons at all or, when they do discharge their firearms, not to fire directly at an enemy soldier when

198. *See, e.g.*, JOANNA BOURKE, AN INTIMATE HISTORY OF KILLING: FACE-TO-FACE KILLING IN TWENTIETH-CENTURY WARFARE 65, 81 (1999); Daddis, *supra* note 197, at 23.

199. GROSSMAN, *supra* note 194, at 75–81.

200. *Id.* at 80.

201. *Id.* at 77–80. Grossman explains that "[i]t is not fear of death and injury from disease or accident but rather acts of personal depredation and domination by our fellow human beings that strike terror and loathing in our hearts." *Id*. at 76.

202. *See id.* at 64. In modern wars the number of psychiatric casualties has consistently exceeded the number of combat fatalities. RICHARD A. GABRIEL, NO MORE HEROES: MADNESS AND PSYCHIATRY IN WAR 77 (1987). Gabriel notes that, "[i]n every war in which American soldiers have fought in this century, the chances of becoming a psychiatric casualty . . . were greater than the chances of being killed by enemy fire." *Id.* While Gabriel provides that the Vietnam War was an exception, with the chances of being killed in battle and suffering some psychological injury being almost equal, he also finds that if one includes those who suffered Post-Traumatic Stress Disorder, "then once again more soldiers suffered psychiatric collapse than death from enemy fire." *Id*. Similar findings apply to the Israeli Defense Forces (IDF): 30% of IDF casualties during the 1973 Yom Kippur War were psychiatric whereas in the (first) Lebanon War of 1982, the number of Israeli psychiatric casualties exceeded the number of dead by more than 150%. *Id*.

A recent study found that approximately twenty-two U.S. veterans were estimated to have committed suicide per day in 2010. *See* JANET KEMP & ROBERT BOSSARTE, DEP'T OF VETERANS AFFAIRS, SUICIDE DATA REPORT, 2012, at 15 (2012), *available at* http://www.va.gov/opa/docs/Suicide-Data-Report-2012-final.pdf; *see also* Greg Jaffe, *VA Study Finds More Veterans Committing Suicide*, WASH. POST (Feb. 1, 2013), http://www.washingtonpost.com/national/va-study-finds-more-veterans-committing-suicide/2013/01/31/1092b330-5a68-11e2-9fa9-5fbdc9530eb9_story.html ("Every day about 22 veterans in the United States kill themselves . . . .").

the latter is in their sights.[203] Where some regard such conduct as a sign of panic or cowardice that ought to be overcome by focused training, others suggest that such behavior results from the compulsion not to kill that is internalized in most human beings and which retains a hold even in battle.[204] As military historian S.L.A. Marshall famously argues, based on interviews with World War II veterans,

> the average and normally healthy individual . . . has such an inner and usually unrealized resistance toward killing a fellow man that he will not of his own volition take life if it is possible to turn away from that responsibility. . . . At the vital point, he becomes a conscientious objector, unknowing.[205]

On the battlefield, soldiers often choose to fire over the enemy's head, or not to fire at the enemy at all, thus exercising their "right to miss."[206] Even if war is a mass act of justified (or excused) killing, for individual soldiers the tension between their inherent strong reluctance to kill another human being and the demands of front-line battle may be overwhelming.[207] A soldier in combat is caught in a tragic Catch-22:

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203. *See* GABRIEL, *supra* note 202, at 75 (noting that during WWII less than 1% of American fighter pilots accounted for over 40% of all enemy aircraft destroyed in the air, while most fighter pilots never shot anyone down or even tried to); S.L.A. MARSHALL, MEN AGAINST FIRE 50 (2000) (arguing that 75% of soldiers, including "well-trained and campaign-seasoned troops. . . . will not fire or will not persist in firing against the enemy . . . . These men may face the danger but they will not fight."). *See generally* RICHARD HOLMES, ACTS OF WAR: THE BEHAVIOR OF MEN IN BATTLE (1985) (describing the individual behavior of soldiers during wartime, including preconceptions, sensations at first contact with the enemy, changing attitudes towards combat experience, and feelings toward adversaries).

204. *See* GROSSMAN, *supra* note 194, at 16. Grossman argues that there exists a powerful, innate human resistance toward killing one's own species and that "[t]his singular lack of enthusiasm for killing one's fellow man has existed throughout military history." *Id.*; *see also* BOURKE, *supra* note 198 at 203–29 (discussing the "burden of guilt" from killing that manifests both on and off the battlefield); BEN SHALIT, THE PSYCHOLOGY OF CONFLICT AND COMBAT 51 (1988); Peter Marin, *Living in Moral Pain*, *in* THE VIETNAM READER 40, 44 (Walter Capps ed., 1991) (arguing that psychiatric literature tended to treat "[r]epugnance toward killing and the refusal to kill" as "acute combat reaction" (internal quotation marks omitted)); *The Soldier's Heart: The Impact of Killing & How to Prepare the Soldier*, FRONTLINE (Mar. 1, 2005), http://www.pbs.org/wgbh/pages/frontline/shows/heart/themes/prep.html.

205. MARSHALL, *supra* note 203, at 79.

206. GROSSMAN, *supra* note 194, at 14–15, 21–29.

207. *See id.* at 30 (describing the soldier's reluctance to kill as an internalized aversion to killing a fellow man—even if such reluctance endangered the soldier's own life); J. GLENN GRAY, THE WARRIORS: REFLECTIONS ON MEN IN BATTLE 207 (1959) ("Consciousness of failure to act in response to conscience can lead to the greatest revulsion, not only for oneself, but for the human species."). *See generally* JONATHAN SHAY, ACHILLES IN VIETNAM: COMBAT TRAUMA AND THE UNDOING OF CHARACTER, at xx–xxiii (1994) (analogizing the psychological trauma suffered by the soldiers who fought in Vietnam to the "profound grief" suffered by Achilles

> If he overcomes his resistance to killing and kills an enemy soldier in close combat, he will be forever burdened with blood guilt, and if he elects not to kill, then the blood guilt of his fallen comrades and the shame of his profession, nation, and cause lie upon him. He is damned if he does, and damned if he doesn't.[208]

Not all killing on the battlefield is equal. "[A] direct relationship [exists] between the empathic and physical proximity of the victim" and the "difficulty and trauma" of killing.[209] Modern warfare has seen little hand-to-hand combat,[210] or even the "intimate brutality" of killing with a non-projectile weapon such as a spear, bayonet, or knife.[211] "Personal kills"—in which a soldier knows with certainty that he is responsible for the killing of a specific individual—take immense psychological toll on the killer and are extremely difficult to perpetrate.[212] Instead, most killing is done at greater distances.[213] Most soldiers on the battlefields since the early nineteenth century have died as a result of long-range artillery fire, rather than through opposing infantry fire.[214] Killing at a distance is an impersonal, indirect, and uncertain affair. Historian Joanna Bourke provides the following account by an American soldier in Vietnam: the "grenade launcher was good because . . . even though people are getting killed by what you're firing it's not a direct thing. . . . You didn't have to put your eye on a particular person and shoot him and kill him."[215] Moreover, engaging the enemy from at least a mid-range offers deniability. Killing from a distance is similar to the

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after the death of his close friend Patroklos, which ultimately led Achilles to commit atrocities against the living and the dead alike).

208. GROSSMAN, *supra* note 194, at 86.

209. *Id.* at 97.

210. HOLMES, *supra* note 203, at 377–78; *cf.* GROSSMAN, *supra* note 194, at 132 ("Man has a tremendous resistance to killing effectively with his bare hands.").

211. GROSSMAN, *supra* note 194, at 120–30. Grossman notes that among these means, "it is psychologically easier to kill with an edged weapon that permits a long stand-off range," such as a spear, rather than with a weapon that allows for a shorter stand-off range, such as a knife. *Id.* at 120. Bayonet combat is "extremely rare in military history," with "one side or the other invariably flee[ing] before the actual crossing of bayonets occurs." *Id.* at 122; *see also* HOLMES, *supra* note 203, at 378.

212. GROSSMAN, *supra* note 194, at 114–15, 119 ("Looking in a man's face, seeing his eyes and his fear, eliminate denial. At this range the interpersonal nature of the killing has shifted. Instead of shooting at a uniform and killing a generalized enemy, now the killer must shoot at a person and kill a specific individual. Most simply cannot or will not do it.").

213. BOURKE, *supra* note 198, at 39 ("The bayonet charge, for instance, was not representative of most combatants' experiences of battle. Even during the First World War, long-distance shelling by artillery killed two-thirds of all soldiers, while less than half a per cent [sic] of wounds were inflicted by the bayonet.").

214. GROSSMAN, *supra* note 194, at 28; *see, e.g.*, BOURKE, *supra* note 198, at 39.

215. BOURKE, *supra* note 198, at 205.

"conscience round" utilized by firing squads to alleviate the trauma that may be involved in taking another human being's life.[216] Soldiers often do not know with certainty—indeed do not want to know—whether they killed an enemy. If that is true for front-line infantry,[217] it is all the more so for those who fire missiles, bombs, or artillery shells.[218] Even in those increasing distances, there is a discernible difference between mid-range, long-range, and maximum-range killings.[219] Killing done at maximum or long range further depersonalizes and dehumanizes the victims of the attack and makes their individual deaths, in some sense, unintended and easier to deal with.[220] Artillery and missile crews, bomber pilots, and naval gunners are similarly insulated by mechanical and physical separation from their targets.[221] The targets are depersonalized: a ship (rather than its sailors), a plane (rather than its pilot).[222] Fighter pilots are much more likely to shoot down an enemy plane today when the engagement is done at extremely high speeds and often is visualized through radar and electronic systems, than were pilots in the significantly slower planes of World War I and World War II, who had the opportunity to look "into the cockpit at another man, a pilot, a flier, one of the 'brotherhood of the air,' a man frighteningly like themselves."[223] Depersonalization of the enemy may also explain why killing from behind—whether by an individual commando or by units of soldiers targeting a fleeing enemy—is easier to carry out.[224]

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216. *See, e.g.*, GEOFFREY ABBOTT, WHAT A WAY TO GO 112 (2007) (explaining that firing squads' "inclusion of a blank round [is] in order to salve the consciences of the squad members"); ROBERT JAY LIFTON & GREG MITCHELL, WHO OWNS DEATH?: CAPITAL PUNISHMENT, THE AMERICAN CONSCIENCE, AND THE END OF EXECUTIONS 89 (2002) ("One member of a firing squad is always given a blank. This is for the conscience of the executioners, so no one knows for sure who fired the live round, . . . noting the need to give the firing squad members a chance to get over any emotional barrier to pulling the trigger. . . . Efficiency in killing diminishes pain, while human emotions that interfere with efficiency can increase the prisoner's suffering." (internal quotation marks omitted)).

217. *See, e.g.*, HOLMES, *supra* note 203, at 376 ("Most of the veterans I interviewed were infantrymen with front-line service, yet fewer than half of them believed that they had actually killed an enemy, and often this belief was based on the thinnest of evidence.").

218. *See* Jimmy Carter, Nobel Lecture (Dec. 10, 2002), *available at* http://www.nobelprize.org/nobel_prizes/peace/laureates/2002/carter-lecture.html ("From a great distance, we launch bombs or missiles with almost total impunity, and never want to know the number or identity of the victims.").

219. For distinctions between the various ranges of killing, see GROSSMAN, *supra* note 194, at 107–13.

220. *See* GRAY, *supra* note 207, at 178 ("With every foot of distance there is a corresponding decrease in reality. Imagination flags and fails altogether when distances become too great.").

221. GROSSMAN, *supra* note 194, at 108.

222. *See* GWYNNE DYER, WAR 57 (rev. ed. 2004).

223. GROSSMAN, *supra* note 194, at 31, 58.

224. *Id.* at 128.

"Looking another human being in the eye, making an independent decision to kill him, and watching as he dies due to your action combine to form one of the most basic, important, primal, and potentially traumatic occurrences of war."[225] When you cannot see the enemy's face, killing becomes less difficult.[226] Even snipers, who are able to see and select their individual targets but are removed therefrom by means of the riflescope, are mostly immune to psychiatric trauma.[227] Distancing makes easier both the act of killing and the ability to justify and rationalize it, to others and to oneself.[228] It makes war seem less hellish and more antiseptic.[229] It offers the possibility of killing with impunity, which has become a defining feature of modern warfare and of the anonymous soldiers who do the fighting.[230]

However, the trend towards increasing the distance between opposing enemy forces has faced two different challenges. First is the long-standing challenge of accuracy of the weapons used. A second, much more recent challenge derives from the realities of counterinsurgency operations and asymmetric warfare. For the most part, guerillas and insurgents shun open confrontation with their far stronger opponents. Instead, they channel fighting to heavily populated urban areas in order to minimize their own casualties while, at the same time, deliberately exposing civilians to harm. This type of action may well deter the stronger force from attacking otherwise legitimate military targets due to concerns over the proportionality of the response and excessive collateral damage among civilians and civilian targets.[231]

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225. *Id.* at 31. Soldiers on patrols behind enemy lines generally do not suffer psychiatric stress because the most common factor "causing combat stress is not present: they are not obligated to engage in face-to-face aggressive activities against the enemy. Even though these missions are highly dangerous, danger and the fear of death and injury are quite obviously *not* the predominant cause of psychiatric casualties in battle." *Id.* at 60–61.

226. *Id.* at 128 ("Not having to look at the face of the victim provides a form of psychological distance that . . . assists in . . . subsequent denial and the rationalization and acceptance of having killed a fellow human being."). This factor also explains why executions are traditionally conducted from behind the victim or when they are blindfolded or hooded. *Id*.

227. *Id.* at 108–10.

228. Grossman states that, "[t]he burden of killing is so great that most men try not to admit that they have killed. They deny it to others, and they try to deny it to themselves." *Id.* at 91.

229. *See* IGNATIEFF, *supra* note 196, at 215 ("We see war as a surgical scalpel and not a bloodstained sword. In doing so we mis-describe ourselves as we mis-describe the instruments of death."). The statement "war is hell" is attributed originally to William Tecumseh Sherman. *See* JOHN BARTLETT, FAMILIAR QUOTATIONS 705 (14th ed. 1968).

230. *See* CHRISTOPHER COKER, THE WARRIOR ETHOS 106 (2007) ("For good or ill, weapons have long determined the view we in the West have had of warriors—their skill at using weapons that kill anonymously, from a distance, and their ability to withstand for hours on end high attritional rates of firepower from a largely unseen enemy.").

231. The use of the euphemism "collateral damage" to refer to unintended civilian casualties is now commonplace. It ought to be noted that the AP I refers to such injury or death

For a military response to be effective, the more powerful military must engage with the enemy on the latter's own turf, in low-tech battles at close quarters. While distancing through advanced weapons minimizes the twin risks of being killed and of killing, the realities of modern asymmetric warfare have re-raised and strengthened those risks: the overwhelming technological advantage of the strong side is negated. Soldiers often have to resort to house-to-house fighting, which exacerbates the feeling of being alone since "[t]he nature of urban terrain with its walls, compartmentalization, and limited visibility enforces isolation."[232] From the perspective of the insurgents, such warfare has yet another benefit—it increases the death toll among, and is demoralizing to, their opponents.[233]

B. *Lethality: Responding to Lack of Accuracy*

Distance and accuracy are inversely related.[234] Once discharged, projectiles—arrows, cannon balls, artillery shells, bullets, missiles, and bombs—are all subject to factors that are beyond the operator's control. Weather conditions and the laws of physics participate in shaping the trajectory of the projectile. Moreover, the time the projectile takes to cross the distance between the point of origin and its target may allow the target to parry the attack by changing its position or taking cover.[235]

To address this conundrum, fighting forces have augmented both the quality and the quantity of projectile weapons. Making each projectile more lethal improved the chances that even if the target were not hit directly it would be destroyed.[236] Similarly, if a single weapon could not guarantee a sufficient probability of hitting the target, deploying a larger number of weapons against the same target would improve the odds.

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of civilians as "incidental" rather than "collateral." AP I, *supra* note 60, art. 51, § 5(b). For clarity's sake, this Article retains the widely used term "collateral damage."

232. Daddis, *supra* note 197, at 24. On the contribution of distancing to isolation on the battlefield see BOURKE, *supra* note 198, at 65 ("[L]ong-distance weapons separated soldiers from each other, making the battlefield one of the loneliest places on earth . . . .").

233. MARTIN VAN CREVELD, THE CHANGING FACE OF WAR 227 (2008) ("[F]or the strong, every soldier, policeman, or civilian killed becomes one more reason to end the struggle. For the weak, it is one more reason to continue until victory is won.").

234. As Professor Michael Schmitt notes, there is a distinction between accuracy and precision: "Accuracy is the ability of a weapon to strike a specified location, known as the aimpoint. Precision, by contrast, involves identifying targets in a timely fashion and striking them accurately." Schmitt, *supra* note 58, at 146 *(*footnote omitted).

235. *See* KOPLOW, *supra* note 138, at 81 ("Accuracy may be the single most important and most elusive factor in armed conflict. No matter how big, destructive, and deadly a bomb you build, if you cannot deposit it reasonably close to the intended target, it will not do the enemy much harm or you much good.").

236. Obviously, this bigger-is-better view had to be balanced against other concerns such as mobility and flexibility. *See, e.g.*, BOOT, *supra* note 193, at 1–6 (discussing King Charles VIII of France's "blitzkrieg" throughout Italy in 1494 using light, mobile artillery).

World War II led the United States to all but abandon precision aerial bombing for two main reasons. First, the adoption of strategic (or area) bombing and "fire bombing," required little precision.[237] Instead of striving for an elusive greater precision, the Army Air Forces opted to use larger bomber formations and to drop an increased number of bombs in order to increase the probability of hitting the target.[238] Second—and more significant—was the development of the atomic bomb and its deployment against Japan in 1945.[239] In the aftermath of the war, and with the advent of the Cold War, the United States turned its attention almost exclusively to nuclear weapons.[240] Military doctrine developed around the possible use of these ultimate weapons, which did not require much precision or accuracy.[241] Some have argued that in its most narrow version the lesson of World War II was that wars could be won just by using air forces as, after all, two aircraft managed to bring a country to its knees while avoiding the inevitable further American casualties that would have resulted had U.S. troops continued to battle their way to Tokyo.[242] Less myopic versions indicate a continued role for ground troops and naval forces but relegate them to roles supporting the air force. Indeed, military restructuring and downsizing after the war saw the emergence of an independent coequal fourth armed force (the U.S. Air Force) and the redirection of resources to it and to nuclear weapons and platforms.[243]

Similarly, the American use of air power in Vietnam followed this well-established pattern. Massive bombs, such as the 15,000-pound BLU-82 "Daisy Cutter" bomb, compensated for a lack of pinpoint accuracy with their large high-explosive payload.[244] Cluster bombs

237. *See* GILLESPIE, *supra* note 133, at 37–38.

238. *See* CONRAD C. CRANE, BOMBS, CITIES, AND CIVILIANS: AMERICAN AIRPOWER STRATEGY IN WORLD WAR II 139–40, 146 (1993).

239. *See id.* at 146.

240. JOHN LEWIS GADDIS, STRATEGIES OF CONTAINMENT 146–47 (rev. ed. 2005).

241. *Id.* at 169–71.

242. Similar arguments have been made in the aftermath of many other armed conflicts such as Operation Desert Storm and Operation Allied Force. *See, e.g.*, HICKEY, *supra* note 184, at 173–74 (noting the "near-perfect" performance of PGMs in Operation Desert Storm, which performance removed the necessity for ground fighting altogether).

243. GILLESPIE, *supra* note 133, at 40 (noting the fundamental changes in the American approach to airpower after World War II). This trend still continues today. Technology makes force reductions and downsizing possible. Schmitt, *supra* note 58, at 149. *See also* Lauren Carroll, *Lindsay Graham: Army Is Smallest Since 1940, Navy Smallest Since 1915*, TAMPA BAY TIMES (Oct. 5, 2014, 5:44 PM), http://ec2-50-17-62-213.compute-1.amazonaws.com/truth-o-meter/statements/2014/oct/05/lindsey-graham/lindsey-graham-army-smallest-1940-navy-small est-19/ (According to the Quadrennial Defense Review, Army troops will decrease to 440,000 by 2019 and Navy ships will decrease to 234 by 2019, which are the lowest numbers since 1940 and 1915, respectively).

244. GILLESPIE, *supra* note 133, at 99.

dispersed small bomblets over a large area.[245] Finally, aerial bombardment missions brought an increase in the number of aircraft participating in the attack, either as support against surface-to-air defense systems or for the actual attack.[246]

C. *Back to Accuracy*

The shift to precision weapons has its origins in the Korean War[247] and, even more so, in the experience of the Vietnam War and the realization that nuclear weapons, while the basis for the United States' deterrence strategy against the Soviet Union, were unusable in any conflict short of a third world war.[248] Any real-world "limited" conflict required the capacity to exercise limited force.[249] With the focus turning back to conventional weapons, the need for greater accuracy became apparent. And with the introduction of television crews into the fighting in Vietnam, the need to limit collateral damage among civilians became as much a pressing political interest as a legal and moral concern for the Johnson and then Nixon Administrations.[250] Moreover, the desire to limit collateral damage among civilians matched military needs—the need to prevent fratricide ("friendly fire") in the jungles as well as the demonstrated need not merely to identify targets more clearly but to attack them with greater efficiency.[251] In 1972, this latter point was demonstrated during Operation Linebacker and, more famously, with the destruction of the Thanh Hoa Bridge in North Vietnam, which involved twelve F-4 aircraft armed with various types of guided bombs.[252] Previously, the bridge had survived seven years of aerial bombings in which twenty-nine U.S. aircraft were lost in over 700 sorties dropping 12,500 tons of bombs.[253]

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245. *Id.*

246. *Id.* at 98.

247. *Id.* at 62.

248. *Id.* at 65, 67. For a discussion of the use of precision-guided bombs by the United States in Vietnam, see *id.* at 96–122; HICKEY, *supra* note 184, at 75–110; BENJAMIN S. LAMBETH, THE TRANSFORMATION OF AMERICAN AIR POWER 39–41 (2000).

249. HERBERT Y. SCHANDLER, AMERICA IN VIETNAM 169 (2009); *see* GILLESPIE, *supra* note 133, at 65.

250. *See* DAVID OCHMANEK, MILITARY OPERATIONS AGAINST TERRORIST GROUPS ABROAD: IMPLICATIONS FOR THE UNITED STATES AIR FORCE 18 (2003).

251. *See* Charles R. Shrader, *Friendly Fire: The Inevitable Pric*e, PARAMETERS, Autumn 1992, at 29, 32, 38–39 (1992). *See also Drones Reduce the Number of American Troops*, PR NEWSWIRE (Oct. 10, 2014), http://www.prnewswire.com/news-releases/drones-reduce-number-of-american-troops-former-clinton-white-house-spokesman-robert-weiner--defense-analyst-tom-sherman-say-liberals-and-conservatives-should-both-advocate-them-278770111.html (claiming that drones make American troops three times safer from friendly fire attacks compared to traditional warfare).

252. *See* GILLESPIE, *supra* note 133, at 115–16; LAMBETH, *supra* note 248, at 38–39.

253. GILLESPIE, *supra* note 133, at 194 n.63.

Early weapons systems offered limited guidance and their operation was greatly dependent on weather conditions,[254] necessitating daytime attacks under clear skies, as the bombardiers needed to see the target in order to aim their bombs.[255] These limitations made precision systems less desirable as they placed aircrews at great risk of attack by enemy fighters and anti-aircraft fire.[256] In the late 1960s, new "second generation" in-flight guidance systems that offered greater targeting precision were deployed.[257] Electro-optical guided bombs (EOGBs), such as the AGM-62 Walleye and the AGM-65A/B Maverick missiles, transmit images—they initially used TV to provide visual images and later on used infrared imaging—in real time to their launchers through a camera installed in the bomb or missile's nose.[258] The launching aircraft can designate a specific target as the bomb approaches the ground. Providing much improved accuracy and targeting,[259] EOGBs still had

254. The most poignant reminder of the dependency of bombardiers on the vagaries of weather came on August 9, 1945 when the pilots of *Bock's Car* failed to visually sight the city of Kokura due to cloud cover and, with fuel running low, turned to drop *Fat Man* on their secondary target, Nagasaki. Nicholas D. Kristof, *Kokura, Japan: Bypassed by A-Bomb*, N.Y. TIMES (Aug. 7, 1995), http://www.nytimes.com/1995/08/07/world/kokura-japan-bypassed-by-a-bomb.html. That the bombs dropped on Hiroshima and Nagasaki missed their aim points by some 800 and 1500 feet, respectively, made, of course, little practical difference. *See* Mark Van Rhyn, *The Atomic Bomb (6 and 9 August 1945)*, PBS (Sept. 2007), http://www.pbs.org/thewar/detail_5234.htm.

255. GILLESPIE, *supra* note 133, at 26. Some systems depended on the operator or operators maintaining uninterrupted, continuous, visual contact with the bomb during its flight, contact that was extremely hard to maintain under battle conditions. Some depended on means of controlling the bomb or missile, such as a radio command link, that were susceptible to interruption either due to natural causes or due to enemy jamming and interference. *See, e.g.*, STEPHEN ROBERT TWIGGE, THE EARLY DEVELOPMENT OF GUIDED WEAPONS IN THE UNITED KINGDOM, 1940–1960 6–12 (1993).

256. *See, e.g.*, GILLESPIE, *supra* note 133, at 26 (noting the "considerable cost" of daytime bombing to aircrews). One major concern with a precision bomb used early in the Vietnam War—the AGM-12 Bullpup—was the need for the delivery aircraft to maintain its heading straight toward the target until impact. Understandably, "this feature did little to endear the weapon to flight crews, who incurred considerable risk approaching well-defended targets head-on, bereft of the option for evasive action." *Id.* at 102.

257. *Id.* at 103, 112.

258. KOPLOW, *supra* note 138, at 84. The Maverick entered service with the United States Air Force in 1972. The original models of the Maverick, AGM-65A/B, which used an electro-optical TV guidance system, are no longer in use by the United States military. *See* Andreas Parsch, *Raytheon (Hughes) AGM-65 Maverick*, DESIGNATION-SYSTEMS, http://www.designation-systems.net:80/dusrm/m-65.html (last updated Apr. 7, 2005). More advanced models of the missile now use an imaging infrared seeker, laser guidance, or an enhanced electro-optical TV guidance system (using a charge-coupled device seeker which, through digital imaging, offers three times the range of the original TV sensor and is well suited for desert operations). *AGM-65 Maverick*, U.S. AIR FORCE (Aug. 18, 2003), http://www.af.mil/AboutUs/FactSheets/Display/tabid/224/Article/104577/agm-65-maverick.aspx; *see also* KOPLOW, *supra* note 138, at 84–85.

259. HICKEY, *supra* note 184, at 98.

certain inherent limitations: for the bomb to "lock" on the desired target, the cameras required sharp contrast between the target and its surroundings.[260] Thus, target acquisition was greatly dependent on the weather and, particularly, lighting conditions, and could be made difficult by the enemy's use of camouflage, smokescreens, or high-contrast decoy targets.[261] It also meant that very symmetrical targets could also fool the system and prevent a lock.[262] Laser-guided bombs and missiles (LGBs), such as the Paveway series, use a laser-seeker to home onto laser beams that a target designator points at the target and which are then reflected off that target.[263] Once detected, the laser seeker and a built-in computer system automatically activate a control augmentation system that guides the bomb to its target. Both EOGB and LGB systems are relatively cheap and offer significantly greater accuracy than traditional gravity ("dumb") bombs.[264] The measure of a bomb's accuracy is its circular error probable (CEP), which is defined as the radius of a circle within which half the bombs or missiles fired would be expected to hit.[265] In the fall of 1944, the CEP for a bomb released at a medium altitude by a fighter-bomber in an optimal attack angle of forty-degree dive was about one thousand feet (305 meters).[266] In comparison, LGBs have a CEP of approximately three meters.[267]

260. Donald I. Blackwelder, The Long Road to Desert Storm and Beyond: The Development of Precision Guided Bombs 29–30 (May 1992) (unpublished thesis, Air University), *available at* http://uploads.worldlibrary.net/uploads/pdf/20121023214138road_to_desert_pdf.pdf.

261. *See id.* at 30; GILLESPIE, *supra* note 133, at 105.

262. GILLESPIE, *supra* note 133, at 192 n.29.

263. *See* Blackwelder, *supra* note 260, at 23–24 (describing the target-detecting capabilities of LGBs and the "Paveway" designating system affixed thereto).

264. GILLESPIE, *supra* note 133, at 113 (referring to the Paveway I LGB as "a precision guided weapon with a price tag palatable enough to use against common, everyday targets"). In addition, LGBs require less training for combat pilots on target accuracy and can be used by virtually every aircraft "compatible with an unmodified general-purpose bomb." *Id*. at 114.

265. Blackwelder, *supra* note 260, at 10 n.22.

266. Richard P. Hallion, *Precision Guided Munitions and the New Era of Warfare* 4 (Air Power Studies Ctr., Working Paper No. 53, 1997), *available at* http://airpower.airforce.gov.au/Publications/Details/110/Precision-Guided-Munitions-and-the-New-Era-of-Warfare.aspx. However, since the official figures did not include any bomb that struck outside three thousand feet, the actual CEP is probably significantly higher. Randy L. Kaufman, Precision Guided Munitions: History and Lessons for the Future 24 (June 2004) (unpublished thesis, Air University).

267. MICHAEL RUSSELL RIP & JAMES M. HASIK, THE PRECISION REVOLUTION 473 n.34 (2002) (noting a CEP of approximately three meters for an LGB dropped by an F-117A stealth strike); Carl Conetta, *Operation Enduring Freedom: Why a Higher Rate of Civilian Bombing Casualties* (Jan. 18, 2002), *available at* http://www.comw.org/pda/0201oef.html.

However, weather conditions continue to limit the usability of LGBs.[268] Furthermore, for an LGB to function properly, the target must be continuously "painted" by laser, either by an aircraft or by ground troops, until the moment of impact.[269] Thus, while allowing the delivery platform a safer distance from which to target the enemy, LGBs still require the presence of friendly aircraft or ground troops in the general zone of operations.[270] And while the delivery pilot could engage in evasive maneuvers against hostile enemy fire, such actions may well have meant breaking the continuous target tracking, (if the target was tracked from the air by the same aircraft) turning the "smart" bomb into a garden-variety "dumb" one.

The use of "smart" precision bombs by the Coalition forces during Operation Desert Storm, the 1991 campaign against Iraq, captured much of the public attention and signaled the promise of bombing the enemy with relative safety for one's own soldiers.[271] The computerization of battlespace turned the business of war into a deadly video game, at least for one party.[272] The new weapons offered the U.S. armed forces overwhelming military advantages and "full spectrum dominance,"[273] allowing them to "shock and awe"[274] their opponents while, at the same

268. While LGBs may be used during either daytime or nighttime attacks, laser beams dissipate when the air is dusty, smoky, or debris-ridden—precisely the conditions that are "common features of a battle environment." KOPLOW, *supra* note 138, at 85.

269. KOPLOW, *supra* note 138, at 84; RIP & HASIK, *supra* note 267, at 213; *see also* Tom Harris, *How Smart Bombs Work*, HOWSTUFFWORKS, http://science.howstuffworks.com/smart-bomb.htm (last visited Dec. 28, 2014).

270. For ground troops tasked with maintaining direct contact with the target while trying to keep a safe distance from it, this presents an increased risk of being discovered and engaged by enemy forces.

271. *See* Paul G. Gillespie, Precision Guided Munitions: Constructing a Bomb More Potent Than the A-Bomb 202–05 (June 2002) (unpublished Ph.D. dissertation, Lehigh University), *available at* http://www.dtic.mil/dtic/tr/fulltext/u2/a406542.pdf ("Because of the vivid video images of the destruction of Iraqi bridges and other structures on the television news, including one particularly memorable scene of a guided bomb going down the ventilation shaft of an office building, the American public very easily accepted laser guided bombs as virtually infallible."); HICKEY, *supra* note 184, at 173 ("The public perception of the near-perfect performance of PGMs in these two case studies only served to enhance the reputation that had first emerged during Operation DESERT STORM.").

272. IGNATIEFF, *supra* note 196, at 168 ("The bombing of Baghdad was the first war as light show and the aerial bombardment of Iraqi forces was the first battle turned into a video-arcade game. . . . Having been told to prepare for as many as 25,000 casualties, the electorate discovered the intoxicating reality of risk-free warfare.").

273. *See* JOINT VISION 2020, *supra* note 136, at 6–11 (underscoring the importance of information superiority and technological innovation to future U.S. military success).

274. FREDERICK W. KAGAN, FINDING THE TARGET 230 (2006) (explaining that the Department of Defense's Joint Vision 2010 is "little more than *Shock and Awe* watered down"); *see also* JOINT VISION 2010, *supra* note 136.

time, reducing the risks to American soldiers.[275] These weapons provide their launchers the safety of distance while assuring a high degree of accuracy and precision. For example, the United States fired Tomahawk missiles against Iraqi targets from ships in the Red Sea.[276] These systems are almost as accurate as LGBs.[277] Yet despite their obvious advantages, such smart ordnance constituted no more than 8% of the total ordnance dropped during the operation.[278] The use of this relatively small percentage of smart bombs was due to weather and budget constraints. With the Gulf experiencing the worst weather conditions in decades, the ability to use LGBs was severely compromised.[279] This factor, combined with the fact that unguided "dumb" bombs were much cheaper than their smarter relatives,[280] led the U.S. military to make heavy use of the former.[281] However, in order to avoid anti-aircraft fire,

275. NATO ended its aerial operations in Kosovo in 1999 without a single combat fatality. Javier Solana, *NATO's Success in Kosovo*, FOREIGN AFF., http://www.foreignaffairs.com/articles/55610/javier-solana/natos-success-in-kosovo (last visited Dec. 28, 2014). Operation Desert Storm resulted in approximately 148 U.S. combat fatalities and approximately sixty-five additional combat deaths among the rest of the Coalition troops. THE ENCYCLOPEDIA OF MIDDLE EAST WARS: THE UNITED STATES IN THE PERSIAN GULF, AFGHANISTAN, AND IRAQ CONFLICTS 264 (Spencer C. Tucker ed. 2010).

276. *War Chronology: January 1991*, NAVAL HIST. & HERITAGE COMMAND, http://www.history.navy.mil/wars/dstorm/dsjan2.htm (last visited Dec. 28, 2014).

277. The Joint Direct Attack Munition (JDAM) kit has an advertised CEP of thirteen meters when using GPS and thirty meters when using the secondary INS. *U.S. Air Force Fact Sheet: Joint Direct Attack Munitions GBU 31/32/38*, DEP'T OF THE AIR FORCE (Jan. 2006), http://www.minot.af.mil/library/factsheets/factsheet_print.asp?fsID=3900. Such systems are now considered "near-precision" guided weapons. For a weapon to be "precision-guided" it must have a CEP of three meters. Jack Sine, *Defining the "Precision Weapon" in Effects-Based Terms*, AIR & SPACE POWER (Mar. 6, 2006), http://www.airpower.maxwell.af.mil/airchronicles/apj/apj06/spr06/sine.html.

278. HICKEY, *supra* note 184, at 136.

279. *Id.* at 141.

280. Some of these systems are significantly more expensive than alternative guided weapons—the most advanced models of the sea-launched TLAM cost approximately $1.5 million per unit. Sam LaGrone, *CNO: Navy Will Need More Funds if Syria Standoff Extends into October*, USNI NEWS (Sept. 6, 2013, 1:34 PM), http://news.usni.org/2013/09/06/cno-navy-will-need-funds-syria-standoff-extends-october. The approximate price range of a Joint Standoff Weapon air-to-surface missile (JSOW) is about $280,000–$720,000 (depending on the configuration). *AGM-154A Joint Standoff Weapon [JSOW]*, FAS MILITARY ANALYSIS NETWORK, http://fas.org/man/dod-101/sys/smart/agm-154.htm (last updated June 27, 2000, 7:53 PM). Other systems are more akin to the Paveway series—kits that fit onto the existing arsenal of gravity bombs—and, as a result, are cheaper than the standalone systems. Thus, for example, the JDAM kit costs merely $25,000. Bootie Cosgrove-Mather, *Weapons Stockpile Meant for Saddam*, CBS NEWS (July 16, 2002, 1:55 PM), http://www.cbsnews.com/news/weapons-stockpile-meant-for-saddam/.

281. Other countries that participated in the "Coalition of the Willing" against Iraq lagged substantially behind the United States as far as PGMs were concerned. *See* GORDON ADAMS & GUY BEN-ARI, TRANSFORMING EUROPEAN MILITARIES 3–5 (2006). Thus, U.S. forces launched the vast majority of guided munitions during the campaign.

aircraft were ordered to fly at high altitudes.[282] While that may not have made a great difference for those platforms using precision-guided munitions, it had a significant impact on the accuracy of unguided munitions.[283]

Eight years later, a "zero-casualty" policy led to the imposition of similar restriction on low altitude flying during NATO's seventy-eight-day aerial campaign over Kosovo.[284] During that operation, the military was more concerned with a zero-casualty policy of force protection than with power projection when making its decisions.[285] Political and national elites shared (and continue to share) the belief that the American people have no stomach for casualties, leading to strong casualty-averse policies.[286] Indeed, so prominent has force protection become in American policy that some have dubbed it a fetish of American policy makers.[287] Carrying out operations at a minimal altitude of 15,000 feet protected the lives of NATO pilots—the Operation ended with no combat casualties for NATO despite over 38,000 sorties—but reduced the accuracy of unguided munitions and increased the likelihood of collateral damage.[288] In addition, flying at

282. Kaufman, *supra* note 266, at 37.

283. *Id.*

284. *See* Trevor A. Keck, *Not All Civilians Are Created Equal: The Principle of Distinction, the Question of Direct Participation in Hostilities and Evolving Restraints on the Use of Force in Warfare*, 211 MIL. L. REV. 115, 123–24 (2012); Tania Voon, *Pointing the Finger: Civilian Casualties of NATO Bombing in the Kosovo Conflict*, 16 AM. U. INT'L L. REV. 1083, 1098 (2001); Thomas Michael McDonnell, *Cluster Bombs over Kosovo: A Violation of International Law?*, 44 ARIZ. L. REV. 31, 39–40 (2002) [hereinafter McDonnell, *Cluster Bombs over Kosovo*]; A.P.V. Rogers, *Zero-Casualty Warfare*, 82 INT'L REV. OF RED CROSS 165, 168–69, 173 (2000). *But see* David Luban, *Risk Taking and Force Protection*, *in* READING WALZER 277, 279 (Yitzhak Benbaji & Naomi Sussmann eds., 2014) (arguing that the possibility of low-risk or risk-free warfare came to prominence when the U.S. dropped the atomic bomb on Hiroshima).

285. *See* Jon D. Michaels, *Beyond Accountability: The Constitutional, Democratic, and Strategic Problems with Privatizing War*, 82 WASH. U. L.Q. 1001, 1043–44 (2004); *cf.* Keric D. Clanahan, *Drone-Sourcing? United States Air Force Unmanned Aircraft Systems, Inherently Governmental Functions, and the Role of Contractors*, 22 FED. CIR. B.J. 135, 154 (2012) (noting that many "military decisions are more concerned with force protection than power projection").

286. GILLESPIE, *supra* note 133, at 156 ("[I]ntolerance for loss of life has virtually guaranteed that recent and future U.S. military interventions consist principally of precision air strikes."); KOPLOW, *supra* note 138, at 221–22 (noting "the psychic eddy of casualty aversion" both with respect to our own soldiers returning in body bags and a "general social squeamishness about imposing unnecessary casualties upon an enemy state's civilians, or even upon its soldiers").

287. Jeffrey Record, *Force-Protection Fetishism: Sources, Consequences, and (?) Solutions*, AEROSPACE POWER J., Summer 2000, at 4, 4, 7–8 (2000). Vietnam Syndrome, driven by the Weinberger–Powell Doctrine, turned into force-protection fetishism. *Id.*

288. McDonnell, *Cluster Bombs over Kosovo*, *supra* note 284, at 48–49; Eric Schmitt, *The World; It Costs a Lot More to Kill Fewer People*, N.Y. TIMES (May 2, 1999), http://www.nytim

such altitudes also meant that adverse weather conditions were more pronounced.[289] At the same time, all-weather guided weapons, which had made their first appearances during the Gulf War, left their first substantial imprint.[290] Some of the new weapons systems operated on the basis of a terrain-contour-matching radar that scanned the ground over which the missile was flying and compared the readings to digital maps that had been stored in advance in the missile's computer; they could adjust the missile's flight to correct any deviation detected.[291] Some systems combined this further with GPS navigation in order to get to the predesignated target.[292] For example, the Tomahawk Land Attack Missile (TLAM) uses an inertial navigation system (INS) or GPS to follow a preset course when flying over water.[293] Once over land, the missile utilizes a Terrain Contour Matching (TERCOM) system, and upon closing in on the target, the missile's guidance is enhanced by a Digital Scene Matching Area Correlation (DSMAC).[294]

IV. THE PROMISE OF DRONES: REDUCING RISKS TO OUR SOLDIERS AND THEIR CIVILIANS

The precision-guided-munitions revolution promised engagement in armed conflicts that were relatively risk-free for U.S. soldiers while also

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es.com/1999/05/02/weekinreview/the-world-it-costs-a-lot-more-to-kill-fewer-people.html ("[I]t's difficult to distinguish a farmer's truck from [an] armored infantry vehicle at 20,000 feet.").

289. ANTHONY H. CORDESMAN, THE LESSONS AND NON-LESSONS OF THE AIR AND MISSILE CAMPAIGN IN KOSOVO 48–49 (2001) ("Weather forced NATO to cancel at least half of its total number of planned sorties on 39 days of the 78-day campaign . . . ."); Kaufman, *supra* note 266, at 51 ("[C]louds covering more than 50 percent of the sky impeded operations 70 percent of the time, allowing unrestricted air strikes on only 24 of 78 days."); Schmitt, *supra* note 288 ("Politics and the elements have conspired to level out the allies' technological edge.").

290. PGMs constituted 8% of all bombs deployed against Iraq in Operation Desert Storm in 1991. EUGENE MIASNIKOV, INT'L COMM'N ON NUCLEAR NON-PROLIFERATION & DISARMAMENT, LONG-RANGE PRECISION-GUIDED CONVENTIONAL WEAPONS: IMPLICATIONS FOR STRATEGIC BALANCE, ARMS CONTROL AND NON-PROLIFERATION 4 (2008), *available at* http://www.armscontrol.ru/pubs/en/em090918.pdf. In Operations Allied Force in 1991, Enduring Freedom in 2001, and Iraqi Freedom in 2003, around 30%, over 50%, and over 60% (respectively) of bombs dropped were precision-guided. *Id.*

291. *See* KOPLOW, *supra* note 138, at 85.

292. RIP & HASIK, *supra* note 267, at 219.

293. *Id.* at 219, 256–57. The INS is used as a backup for the GPS system. *See id.* at 219. While it is less accurate than GPS (INS has been referred to as a "get you in the ballpark" system), INS has the advantage that, unlike GPS, it does not depend on receiving externally communicated signals and, therefore, cannot be jammed or otherwise become ineffective when the signal is "lost." *See id*.

294. *Id.* at 164, 219. The TERCOM system uses a digital map based on terrain elevation data that is loaded onto the missile. *Id.* at 164, 166. During flight, the missile automatically compares the stored data with radar data that is collected as the missile flies over land. *Id.* at 164. Comparing the two sets of data, the missile corrects its course. *Id.* DSMAC compares actual images of the target as "seen" by the missile with digitized images that have been preloaded into the missile's mission control system. *Id.*

potentially resulting in fewer military and, importantly, civilian casualties for the enemy due to improved precision.[295] PGMs changed the relationship between distance, accuracy, and lethality. Distance was no longer necessarily gained at the expense of accuracy. In turn, greater overall accuracy meant that smaller, less-lethal munitions could be used. Greater precision and smaller armaments, in turn, brought a potential reduction in collateral damage.

Yet, PGMs are not without their limitations. First, there is the matter of cost. Not only is the initial price tag of PGMs relatively high,[296] but there is also the cost of training the aircrews in using the smart munitions as well as that of fitting the various aircrafts with the requisite support equipment needed for the use of such advanced weapons systems. Second, there exists a certain trade-off between weather and the dynamism of the target. GPS-based PGMs, such as the Tomahawk missile, can be used in practically all weather conditions.[297] Yet their usefulness is limited when the target of the attack is dynamic rather than stationary. Other PGMs, such as LGBs, have a greater capacity to adjust to the movements of the target but may not be used in certain weather conditions.[298] Third, to be accurate, PGMs require accurate intelligence. Smart bombs and "dumb" intelligence can only lead to potentially disastrous—yet nonetheless accurate—strikes on the wrong targets.[299] The available capacities to collect intelligence will, therefore, bear great impact on the ability to use PGMs effectively.

The American wars in Afghanistan and Iraq (in the latter case, once the "mission [was] accomplished")[300] have highlighted these shortcomings. Rather than facing regular armies, the United States and its allies have found themselves dealing with paramilitary terrorist organizations and insurgents who cannot be easily distinguished from civilians and indeed have been using civilians and civilian locations as cover and shield from attacks and as logistical bases. Insurgents, guerillas, and terrorists have harnessed asymmetric warfare, turning

295. IGNATIEFF, *supra* note 196, at 164–65.

296. *See* Stuart Walters Belt, *Missiles over Kosovo: Emergence, Lex Lata, of a Customary Norm Requiring the Use of Precision Munitions in Urban Areas*, 47 NAVAL L. REV. 115, 167 (2000) (analyzing arguments that the cost of PGMs are prohibitive).

297. *See* Jefferson D. Reynolds, *Collateral Damage on the 21st Century Battlefield: Enemy Exploitation of the Law of Armed Conflict, and the Struggle for a Moral High Ground*, 56 A.F. L. REV. 1, 101 n.398 (2005) (suggesting that the development of "new PGM like the Tomahawk" mitigates the vulnerability of the PGM to weather and other conditions).

298. *See* RIP & HASIK, *supra* note 267, at 216.

299. *See, e.g.*, John Sweeney et al., *Nato Bombed Chinese Deliberately*, GUARDIAN (Oct. 16, 1999), http://www.theguardian.com/world/1999/oct/17/balkans.

300. Judy Keen, *Bush to Troops: Mission Accomplished*, USA TODAY (June 5, 2003, 3:31 AM), http://usatoday30.usatoday.com/news/world/iraq/2003-06-05-bush-qatar_x.htm.

their apparent weakness into strength.[301] In this kind of low-tech war of attrition, the technological and military dominance of the United States is practically negated.[302] The prolonged wars in Afghanistan and Iraq took a significant financial toll on Coalition forces, first and foremost the United States. Fighting insurgents who move in and out of civilian areas and who disguise themselves as civilians—farmer by day, fighter by night[303]—requires constant monitoring and continuous real-time intelligence in order to be able to credibly distinguish combatants from civilians, targeting the former while minimizing harm to the latter. And as the United States discovered, much to its chagrin, its intelligence capabilities were woefully lacking.[304] The perception of military dominance and disparity in force between the armed forces of the United States and its allies and the insurgents has made both sides to the conflict acutely aware of the impact of body-bag politics.[305] At the same time, the realities of asymmetric warfare—battling enemies who shun open confrontation with their far stronger opponents and who, instead, channel fighting to heavily populated urban areas in order to minimize their own casualties while, at the same time, deliberately exposing civilians to harm—challenge the more powerful military to engage with

301. VAN CREVELD, *supra* note 233, at 269 ("[M]ost guerrillas and terrorists won their struggles precisely because they were weak. It was their weakness that enabled them to hide; even more important, it was their weakness that permitted them to do what they wanted to do and what had to be done."). Historian Martin van Creveld argues that "from 1945 on, almost all attempts to deal with insurgencies have ended in failure" and that "most guerrillas and terrorists won their struggles precisely because they were weak." *Id*. at 268–69; *see also* HAMMES, *supra* note 137, at 3–4 ("Not only is 4GW [(fourth-generation warfare)] the only kind of war America has ever lost, we have done so three times: Vietnam, Lebanon, and Somalia. . . . The message is clear . . . only unconventional war works against established powers.").

302. *See* VAN CREVELD, *supra* note 233, at 227–28 (discussing the prolongation of war as a strategic concept for insurgents). This has also been the lesson of the second Lebanon War waged between Israel and Hezbollah, a terrorist organization numbering no more than 4000 men, in the summer of 2006. *Id.* at 225. During the forty days of the war, the Israeli Defense Forces (IDF) fired 170,000 artillery shells against terrorist targets, twice as many as it had fired during the Yom Kippur War in which Israel had faced three Arab armies consisting of 500,000 men and more than 4,000 tanks. *Id.* Each precision kill during the war cost the IDF over $2,000,000. *Id.* at 272. The Israeli Air Force ran out of high-end targets after four days of fighting, and merely 3% of ordnance dropped actually hit any target. *Id.* at 272–73. Van Creveld concludes that "against a lightly armed enemy . . . the Revolution in Military Affairs proved all but impotent." *Id*. at 272.

303. *See* Michael W. Lewis, *Drones and the Boundaries of the Battlefield*, 47 TEX. INT'L L.J. 293, 311 (2012).

304. *See, e.g.*, Diane Jean Schemo, *A Nation Challenged: The Academics; U.S. Finds Itself Lacking Experts on Afghanistan*, N.Y. TIMES (Oct. 11, 2001), http://www.nytimes.com/2001/10/11/us/a-nation-challenged-the-academics-us-finds-itself-lacking-experts-on-afghanistan.html.

305. VAN CREVELD, *supra* note 233, at 227 ("[A] strong army beating down on a much weaker insurgent will necessarily ask itself if its losses were avoidable and feel itself foolish for not having taken the measures necessary to avoid them.").

the enemy on the latter's own turf, in low-tech battles in close quarters.

Drones offer a "seductively attractive" response to these challenges.[306] The main attraction of all of the robotic systems described in Part I is the fact that they distance soldiers from harm and contribute significantly to force protection. Force protection—taking "preventive measures" to "mitigate hostile actions against" troops, military resources and facilities, and critical information[307]—has played a significant role in U.S. military policy at least since the 1990s' military engagements in Kosovo and Somalia.[308] The teleoperated drone serves to distance, indeed remove altogether, its operator from the battlefield, offering her maximum protection.[309] Drone pilots are able to fly their aircraft over Afghanistan (and Pakistan) from ground control stations located in Nevada and Langley, Virginia.[310] At the same time, the fact that these aerial vehicles are unmanned means that they do not need to fly at high, risk-free altitudes. That means, in turn, that accuracy need not be significantly compromised.

Most debates about the concept of force protection pertain to the question of whether soldiers must accept greater risks to themselves in order to protect enemy civilians from harm, and if so, to what extent they must do so.[311] Force protection has, in this equation, an inverse

306. David Ignatius, *Dazzling New Weapons Require New Rules for War*, WASH. POST (Nov. 11, 2010), http://www.washingtonpost.com/wp-dyn/content/article/2010/11/10/AR2010111005500.html; *see also* Michael W. Lewis & Emily Crawford, *Drones and Distinction: How IHL Encouraged the Rise of Drones*, 44 GEO. J. INT'L L. 1127, 1152 (2013) ("Because observing these restrictions when fighting an enemy that conducts its operations in close proximity to the civilian population effectively negates much of the firepower advantage enjoyed by state armed forces, regular militaries involved in asymmetric conflicts have reacted to the restrictions in one of two ways. They have either ignored the restrictions imposed by international humanitarian law (IHL) or they have attempted to comply with them by changing their weaponry and tactics to better account for the modern interpretation of distinction."). *See generally* Mary Ellen O'Connell, *Seductive Drones: Learning from a Decade of Lethal Operations*, 21 J.L. INFO. & SCI. 116 (2011) (discussing the use of drones and precision satellite technology from 2001 to 2010).

307. DEP'T OF DEF., DICTIONARY OF MILITARY AND ASSOCIATED TERMS 98 (2010), *available at* http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf.

308. Record, *supra* note 287, at 5.

309. *See, e.g.*, Lewis & Crawford, *supra* note 306, at 1133 ("Today, cruise missiles and UAVs, such as the Predator drone, can strike targets hundreds of miles from their launch point and are often controlled by operators located thousands of miles from the 'battlefield.'").

310. Vogel, *supra* note 6, at 133. To clarify, throughout this Article, references to drone "pilots," include both the drone's pilot, who controls the aircraft flight maneuvers, and the drone sensor operator (or "sensor" for short), whose job it is to control the drone's various input sensors (such as cameras), aim the weapons at the target, and be in charge of the weapons' terminal guidance once they have been launched.

311. *See, e.g.*, Gabriella Blum, *The Dispensable Lives of Soldiers*, 2 J. LEGAL ANALYSIS 115, 116, 137, 149 (2010).

relationship to protection of innocent civilians.[312] But in the context of drones, force protection and minimizing collateral damage are not mutually exclusive. This is so for several interrelated reasons. First, as noted above, drones can fly at lower altitudes than fighter jets without exposing their operators to any harm. Lower altitude means, almost by definition, greater capacity for accuracy. Second, drones are armed almost exclusively with PGMs such as Hellfire missiles.[313] That means that they enjoy the dual benefits of great accuracy and precision, which allow them to carry smaller weapons, resulting in reduced zones of lethality. Third, drones have the capacity to endure in the air for hours on end and hover over their targets.[314] In aerial attacks carried out by manned aircraft such as fighter jets or helicopters, the pilots are over the target for a very short time. In fact, with some of the advanced weapons that are available, often the pilots are not physically "over" the target at all and do not establish visual contact without the aid of machines.[315] This is not the case with drones. Drones hover over the target, collecting information and real-time intelligence about it.[316] This increases the likelihood of correct identification of the target, which has been significantly augmented with the introduction of ever more advanced high-resolution sensors on board drones.

Significantly, staying with the target for a long duration also allows establishing a "pattern of life analysis."[317] As noted, in the context of asymmetric warfare it is all too frequently difficult to distinguish combatants from civilians. Indeed, this forms a critical component of the military strategy of urban guerillas, terrorists, and insurgents. The difficulty is especially significant when we consider the problem of

312. Ziv Bohrer & Mark Osiel, *Proportionality in Military Force at War's Multiple Levels: Averting Civilian Casualties vs. Safeguarding Soldiers*, 46 VAND. J. TRANSNAT'L L. 747, 749 (2013) ("Military concern with force protection has increased as Western publics have grown averse to suffering military casualties, even as most people recognize that force protection often comes at the price of increased civilian harm.").

313. *See, e.g.*, McDonnell, *Sow What You Reap?*, *supra* note 24, at 253–54 (discussing the Predator Drone MQ-1 and its capacity to be equipped with Hellfire missiles).

314. Afsheen John Radsan & Richard Murphy, *Measure Twice, Shoot Once: Higher Care for CIA-Targeted Killing*, 2011 U. ILL. L. REV. 1201, 1203 ("A small drone—unburdened by a pilot who must protect himself from enemy fire—can hover unseen above a potential target for many hours.").

315. *See* Bruce T. Smith, *Air Force Medical Personnel and the Law of Armed Conflict*, 37 A.F. L. REV. 239, 245 (1994).

316. Robert Molko, *The Drones Are Coming! Will the Fourth Amendment Stop Their Threat to Our Privacy?*, 78 BROOK. L. REV. 1279, 1286–87 (2013).

317. Blank, *After "Top Gun," supra* note 58, at 693 (internal quotation marks omitted); 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, 311–26 (2011), *available at* http://journals.cambridge.org/action/displayFulltext?type=1&fid=8354058&jid=YHL&volumeId=13&issueId=-1&aid=8354057.

shifting identities or dual status, known also as the phenomenon of "farmer by day, fighter by night."[318] The laws of armed conflict make it clear that while civilians may not be targeted directly, they lose this protection from attack when they "directly participate in hostilities."[319] While the exact contours and content of this concept are subject to much debate,[320] there is little doubt that whatever view one holds as to what constitutes direct participation in hostilities, establishing such participation to justify attacking civilians is easier in theory than in practice.[321]

The capacity of drones to stay with the target closes the gap between theory and practice by allowing precise targeting at the relevant timeframe—while the target is directly participating in hostilities. Furthermore, staying with the target also means that drone pilots can carefully choose the moment of engagement with the target in order to, once again, minimize the potential harm to innocent civilians. The notion of "targets of opportunity," with its greater propensity for errors, has, similarly, less purchase when drones are concerned. At the same time, drones have a greater ability to successfully engage dynamic targets at the best opportunity—maximizing the probability of critically damaging the target itself while minimizing collateral damage—than either manned aerial aircraft or "fire and forget," GPS-based precision-guided munitions.

Removed from harm's way, drone pilots can fly their vehicles and launch attacks relieved of much of the battlefield stress. The distancing of the pilot from the battlefield does not merely reduce, but eliminates altogether, his fear of being killed.[322] The pilot engages the target

318. *See, e.g.*, SOLIS, *supra* note 162, at 208 ("During the U.S.–Vietnam War, an often-heard phrase regarding the Viet Cong, a Vietnamese civilian group of clandestine fighters, was, 'Farmer by day, fighter by night.'").

319. Laurie Blank & Amos Guiora, *Teaching an Old Dog New Tricks: Operationalizing the Law of Armed Conflict in New Warfare*, 1 HARV. NAT'L SEC. J. 45, 73 (2010) ("Persons who directly participate in hostilities a single time or intermittently are legitimate targets only when they are preparing for, engaged in, or returning from hostilities.").

320. *See, e.g.*, HCJ 769/02 Pub. Comm. Against Torture in Isr. v. Gov't of Isr. 62(1) PD 507, [2006] (Isr.); INT'L COMM. OF THE RED CROSS, INTERPRETIVE GUIDANCE ON THE NOTION OF DIRECT PARTICIPATION IN HOSTILITIES UNDER INTERNATIONAL HUMANITARIAN LAW 11–12 (2009); Geoffrey Corn & Chris Jenks, *Two Sides of the Combatant Coin: Untangling Direct Participation in Hostilities from Belligerent Status in Non-International Armed Conflicts*, 33 U. PA. J. INT'L L. 313, 313–14 (2011); Ryan Goodman & Derek Jinks, *The ICRC Interpretive Guidance on the Notion of Direct Participation in Hostilities Under International Humanitarian Law: An Introduction to the Forum*, 42 N.Y.U. J. INT'L L. & POL. 637, 637 (2010); Keck, *supra* note 284, at 115–16; Michael N. Schmitt, *The Interpretive Guidance on the Notion of Direct Participation in Hostilities: A Critical Analysis*, 1 HARV. NAT'L SECURITY J. 5, 5–6 (2010).

321. *See* Karl S. Chang, *Enemy Status and Military Detention in the War Against al-Qaeda*, 47 TEX. INT'L L.J. 1, 31 n.164 (2011).

322. *See supra* Section III.A.

without being subject to the heightened negative emotions that soldiers on the battlefield experience.[323] Indeed, the specter of dispassionate killing from afar has been one of the persistent battle cries against the use of drones.

The image of "cubicle warriors" with a "Playstation mentality" engaged in a "turkey shoot,"[324] conducting "push button" killing in faraway lands of images on their screens, losing sight of the humanity of those targets—colloquially referred to by drone pilots as "squirters"[325]—while spending the evening having dinner with their own families and friends, has been at the forefront of challenges to the new American way of war. Drones, it is argued, make it easier to kill.[326] However, pattern-of-life analysis and hovering over the target mean that drone operators spend much more time "with" their target compared with fighter pilots, both before the attack and after it has been carried out.[327] Fighter pilots rarely, if ever, see the actual damage caused by their bombs and missiles; drone pilots often do. It is such "voyeuristic intimacy"[328] that results unsurprisingly, yet often without acknowledgment, in drone pilots developing PTSD.[329]

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323. *See supra* note 309 and accompanying text; JOHN KEEGAN, A HISTORY OF WARFARE 3–4 (1993) ("Warfare is almost as old as man himself, and reaches into the most secret places of the human heart, places where self dissolves rational purpose, where pride reigns, where emotion is paramount, where instinct is king.").

324. IGNATIEFF, *supra* note 196, at 161.

325. *See* Mayer, *supra* note 6.

326. Blank, *After "Top Gun," supra* note 58, 688.

327. *See, e.g.*, Matthew Power, *Confessions of a Drone Warrior*, GQ (Oct. 23, 2013), http://www.gq.com/news-politics/big-issues/201311/drone-uav-pilot-assassination ("[Brandon Bryant, a drone 'sensor'] watched the targets drink tea with friends, play with their children, have sex with their wives on rooftops, writhing under blankets. There were soccer matches, and weddings too. He once watched a man walk out into a field and take a crap, which glowed white in infrared. . . . After a strike he was tasked with lingering over a site for several haunting hours, conducting surveillance for an 'after-action report.'").

328. *Id*.

329. *Id*. In addition to the story of Airman First Class Brandon Bryant who "fell into a black depression" and would "drink himself to blackout . . . vanishing for days or weeks on end," the article also mentions other drone pilots who, "whenever [they] made a kill, went home and chugged an entire bottle of whiskey," and others who "refused to fire again even under the threat of court martial," and who suffered from nightmares. *Id.*; *see also* Elisabeth Bumiller, *Air Force Drone Operators Report High Levels of Stress*, N.Y. TIMES (Dec. 18, 2011), http://www.nytimes.com/2011/12/19/world/asia/air-force-drone-operators-show-high-levels-of-stress.html; Michael Cochrane, *Far from Battle, Drone Pilots Still Feel Stress of War*, WORLD, (Oct. 6, 2014), http://www.worldmag.com/2014/10/far_from_battle_drone_pilots_still_feel_stress_of_war; Dao, *supra* note 34; Robert Johnson, '*Did We Just Kill A Kid?'—Six Words That Ended a US Drone Pilot's Career*, BUS. INSIDER (Dec. 17, 2012, 6:59 AM), http://www.businessinsider.com/did-we-just-kill-a-kid-nicola-abe-der-spiegel-brandon-bryant-2012-12; Hernando J. Ortega, Jr., *Challenges in Monitoring and Maintaining the Health of Pilots Engaged in Telewarfare*, MED. SURVEILLANCE MONTHLY REP., March 2013, at 2, *available at* www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA578676; Scott Fitzsimmons & Karina

Carrying out aerial strikes on the battlefield using drones offers real-time situation awareness and intelligence gathering (and processing). At the same time, the characteristics of drones, as detailed above, also offer a critical possibility of real-time legal review of the operation.[330] Military lawyers can review the images sent in by the drones and assess the attack in terms of the rules of LOAC. Moreover, with operators removed from harm's way and with the virtually continuous presence of drones in the sky, time is not as much of the essence as it used to be. The lawyers can evaluate the situation coolly, seek further information if need be, revisit the data and cross check it, and consult their manuals, all without losing the possibility of hitting the target either immediately or at some future time. And once the attack has been carried out, drones may offer robust accountability. Their high-powered sensors and cameras can record the scene.[331] If retained and reviewed in a later debriefing, this recording can enable an ex-post review in a manner that is often not possible in ordinary combat operations. In fact, the ability of drones to capture images and record incidents without interruption for a length of time has also been invoked by some human rights activists who sought to harness drones to monitor human rights violations in places such as Syria.[332]

This results in lower numbers of casualties from collateral damage when drones are used to launch the attack than is the case with alternative means and methods of warfare. Exact figures of civilian casualties in the various drone campaigns conducted by the United States since the mid-2000s are hard to come by because the identity of those killed may be hard to ascertain and their status as combatants or civilians is often a matter of controversy and dispute. However, the figures provided by the three most credible independent sources that follow drone strikes in Pakistan[333] put the estimated numbers of civilian

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Sangha, *Killing in High Definition: Combat Stress Among Operators of Remotely Piloted Aircraft*, CANADIAN POL. SCI. ASS'N 2 (2013), http://www.cpsa-acsp.ca/papers-2013/Fitzsimmons.pdf; Anna Mulrine, *Drone Pilots: Why War is Also Hard for Remote Soldiers*, CHRISTIAN SCI. MONITOR (Feb. 28, 2012), http://www.csmonitor.com/USA/Military/2012/0228/Drone-pilots-Why-war-is-also-hard-for-remote-soldiers.

330. On the role played by Judge Advocate General lawyers in targeting decisions in previous wars, see Vanessa Blum, *JAG Goes to War*, LEGAL TIMES, Nov. 11, 2001, at 1, 13; Charles J. Dunlap, Jr., *The Revolution in Military Legal Affairs: Air Force Legal Professionals in 21st Century Conflicts*, 51 A.F. L. REV. 293, 308–09 (2001).

331. *See* Hillary B. Farber, *Eyes in the Sky: Constitutional and Regulatory Approaches to Domestic Drone Deployment*, 64 SYRACUSE L. REV. 1, 12 (2014) ("All drones can be fitted with high-resolution cameras and imaging technologies, the capabilities of which advance year after year.").

332. Andrew Stobo Sniderman & Mark Hanis, *Drones for Human Rights*, N.Y. TIMES (Jan. 30, 2012), http://www.nytimes.com/2012/01/31/opinion/drones-for-human-rights.html.

333. Problematic as the data about drone strikes may be, the best information is available with respect to strikes carried out in Pakistan.

deaths at between 5.7% and 25.7% of total deaths caused by the attacks.[334] Furthermore, all three sources also agree that the rate of civilian deaths has seen a significant decline in recent years. According to these sources, in the years 2012–2013, the civilian death ratio in drone attacks in Pakistan was about 2% to 3%.[335] Although these are by no means insignificant rates of civilian deaths, they ought to be put in context. First, under LOAC's principle of proportionality, the critical question with regard to collateral damage is whether it is "excessive," not whether it is "extensive."[336] As Professor Yoram Dinstein notes, the two terms ought not to be confused and are not interchangeable: "'[I]njury/damage to non-combatants can be exceedingly extensive without being excessive, simply because the military advantage anticipated is of paramount importance.'"[337]

The number of injured or dead civilians is, therefore, insufficient in and of itself to establish that the attacks were disproportionate. Rather, the numbers ought to be evaluated against the military advantage that was reasonably anticipated to result from the attack. Second, one ought also to consider the alternatives. Although estimates of civilian death rates in past wars vary greatly, a conservative estimate is that, "[o]n the average, half of the deaths caused by war happened to civilians . . . . The civilian percentage share of war-related deaths remained at about 50% from century to century."[338] Whatever the exact

334. The Long War Journal estimates that 156 civilians have been killed in drone attacks in Pakistan between 2004–2013, compared with 2574 deaths among Taliban and al-Qaeda members, putting the total civilian death rate at 5.7%. *Charting the Data for US Airstrikes in Pakistan, 2004–2014*, LONG WAR J., http://www.longwarjournal.org/pakistan-strikes.php (last updated Jan. 4, 2015, 11:10 AM). As of the date of this writing, the New America Foundation gives the figures of 560 civilian and "unknown" deaths compared with 2455 militants' deaths between 2004 and January 15, 2015, putting the civilian death rate at 18.6%. NEW AM. FOUND., *supra* note 16; The Bureau of Investigative Journalism puts the numbers at between 416 and 951 civilians killed out of between 2534 and 3642 total deaths from 2004 to November, 2013. *November 2013 Update: US Covert Actions in Pakistan, Yemen and Somalia*, BUREAU INVESTIGATIVE JOURNALISM (Dec. 3, 2014), http://www.thebureauinvestigates.com/2013/12/03/november-2013-update-us-covert-actions-in-pakistan-yemen-and-somalia/.

335. *E.g.*, *Key Findings*, NEW AM., http://securitydata.newamerica.net/drones/pakistan/key-findings (last visited Dec. 28, 2014) (noting that "2% of the drones' victims were characterized as civilians in news reports" in 2012, and "civilian casualties were at their lowest ever" in 2013).

336. *See* Geoffrey S. Corn & Gary P. Corn, *The Law of Operational Targeting: Viewing the LOAC Through an Operational Lens*, 47 TEX. INT'L L.J. 337, 353 (2012) ("The LOAC principle of proportionality prohibits the selection of any means or method of attack anticipated to produce collateral damage or incidental injury that is excessive in relation to the concrete and direct military advantage anticipated.").

337. SOLIS, *supra* note 162, at 280 (quoting Yoram Dinstein, *Discussion: When Civilian Objects Become Military Objectives*, *in* 78 INT'L L. STUD., LEGAL AND ETHICAL LESSONS OF NATO'S KOSOVO CAMPAIGN 215 (Andru E. Wall ed., 2002)).

338. William Eckhardt, *Civilian Deaths in Wartime*, 20 SECURITY DIALOGUE 89, 97 (1989), *available at* http://sdi.sagepub.com/content/20/1/89.full.pdf.

figures, there is little doubt that the civilian death ratio in previous wars using means of warfare less discriminating than drones was significantly higher than even the highest estimated civilian death rates resulting from the American drone campaign in Pakistan (and presumably in other countries as well).[339] As Journalist William Saletan pithily put it, drones may well be "the worst form of warfare in the history of the world, except for all the others."[340]

A final argument in favor of drones as a means of warfare is that they are cost-effective. They come with a significantly lower initial price tag than fighter jets; the costs for drone flight hours are lower than those for fighter jets; and drone pilots require significantly less training than do the pilots who man the cockpits of fighter planes.[341]

To be sure, using drones comes with its own share of pragmatic challenges. As humane as removing soldiers from harm's way (and reducing civilian casualties) may seem,[342] it is precisely that attribute of drones that lowers the costs of going to and fighting war, making it politically more acceptable to embark on military operations. Wars may become more frequent, and once combat operations have begun there may be fewer incentives to terminate the violence. With few, if any body bags coming back home, a government may find more sustained support for its military adventures. Indeed, the lower cost of war may result in countries (at least those that possess the technology) resorting to force not as a last resort but as a measure to be considered equivalent to nonviolent alternatives such as diplomatic efforts or economic sanctions.

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339. *Cf.* Lewis & Crawford, *supra* note 306, at 1154–56 (arguing that the American turn to drones was, among other things, the result of pressure due to mounting criticisms of excessive civilian casualties caused by conventional airstrikes and night raids by special forces in Afghanistan and Pakistan and that "what is inarguable is that civilian casualties from drone strikes have declined sharply in the past few years").

340. William Saletan, *In Defense of Drones*, SLATE (Feb. 19, 2013, 11:40 PM), http://www.slate.com/articles/health_and_science/human_nature/2013/02/drones_war_and_civilian_casualties_how_unmanned_aircraft_reduce_collateral.single.html; *see also* Romesh Ratnesar, *Five Reasons Why Drones Are Here to Stay*, BUS. WEEK (May 13, 2013), http://www.businessweek.com/articles/2013-05-23/five-reasons-why-drones-are-here-to-stay ("By those standards, U.S. drones strikes have been remarkably precise—and their accuracy has improved with time."); Scott Shane, *The Moral Case for Drones*, N.Y. TIMES (July 14, 2012), http://www.nytimes.com/2012/07/15/sunday-review/the-moral-case-for-drones.html.

341. Ratnesar, *supra* note 340; Ashley Boyle, *The US and Its UAVs: A Cost–Benefit Analysis*, AM. SECURITY PROJECT (July 24, 2012), http://www.americansecurityproject.org/the-us-and-its-uavs-a-cost-benefit-analysis/.

342. *But see* Paul Kahn, *Imagining Warfare*, 24 EUR. J. INT'L L. 199, 218–19 (2013) (discussing the "ethos of reciprocity" that underlies traditional war as comprised of reciprocal acts of self-sacrifice, and questioning to what extent the introduction of drones undermines our understanding of the nature of war).

The very promise of greater accuracy and precision offered by drones creates expectations that are both unrealistic and dangerous. Speaking after the conclusion of Operation Allied Force, General Anthony Zinni, commander of U.S. Central Command, stated that precision-guided munitions created "expectations [that] are so great now: zero casualties, perfect execution, completely flawless."[343] However, such expectations are unrealistic, as mistakes can be, and are, made. Flawed intelligence,[344] information overload,[345] human errors,[346] active defensive countermeasures taken by the potential targets,[347] the "soda straw" effect of targeting (zooming in on the target and losing sight of the larger picture—missing, for example, the fact that civilians have entered the target area),[348] and a whole range of technological malfunctions[349] may result in missing the intended target or hitting the wrong target, causing excessive loss of civilian lives.

Although mistakes are an unfortunate part of the reality of any war, judged against the background promise of accuracy, they seem politically and morally (if not legally) unacceptable. On the one hand, accuracy and precision may encourage mission expansion—carrying out strikes in densely populated civilian areas or areas that are otherwise protected from attack under LOAC—that would not have occurred but for the promise of pinpoint targeting accuracy, thus increasing the

343. *See* HICKEY, *supra* note 184, at 180 (internal quotation marks omitted); *see also* IGNATIEFF, *supra* note 196, at 186 ("Sacrifice in battle has become implausible or ironic in the course of the twentieth century as the gulf between military and civilian values has grown. To some extent, this reflects the gradual banishment of death as the over-riding pre-occupation of civilian society. As infant mortality has declined, as life expectancy has increased, as peace has become a settled expectation of civilian populations, the idea of martial sacrifice and the nobility of death in combat have become ever more extreme destinies, now seen as increasingly implausible to cultures raised to count on a full adult life."); Michael N. Schmitt, *Precision Attack and International Humanitarian Law*, 87 INT'L REV. RED CROSS 445, 445 (2005).

344. McDonnell, *Sow What You Reap?*, *supra* note 24, at 258–59; Shah, *supra* note 52, at 3.

345. *See, e.g.*, Thom Shanker & Matt Richtel, *In New Military, Data Overload Can Be Deadly*, N.Y. TIMES (Jan. 16, 2011), http://www.nytimes.com/2011/01/17/technology/17brain.html.

346. *See, e.g.*, David Zucchino, *U.S. Drones Suffer from Human Error, Computer Glitches in Afghanistan*, HUFFINGTON POST (July 7, 2010), http://www.huffingtonpost.com/2010/07/07/us-drones-suffer-from-hum_n_637767.html.

347. *See, e.g.*, *Al-Qaida Engineers in Pakistan Developing System to Counter Drones*, TIMES INDIA (Sept. 4, 2013, 10:52 AM), http://timesofindia.indiatimes.com/world/pakistan/Al-Qaida-engineers-in-Pakistan-developing-system-to-counter-drones/articleshow/22281116.cms.

348. Shah, *supra* note 52, at 2–3.

349. *Id.* at 3 (noting why the overreliance on drone technology may result in "mistakes in targeting and, ultimately, civilian casualties"); *see also* McDonnell, *Sow What You Reap?*, *supra* note 24, at 256–59 (referencing jamming, taking over drones, and the quality of sensors' output which puts tall, bearded men in Pakistan particularly at risk).

magnitude of potential mistakes.[350] On the other hand, adversaries and critics are unlikely to accept that such collateral damage is the result of mistake, arguing that precision technology must necessarily mean that the target was intentionally hit, and that the harm caused was similarly intended.[351]

Drones, like PGMs more generally, may minimize the frequency of mistakes, but they make every mistake made that much more costly in terms of the ability to continue with effective military operations,[352] and the impact on the civilian population in the country where the bombing takes place.[353] Furthermore, the very perception that accuracy and precision mean elimination of collateral damage may, paradoxically, increase the incentive of insurgents and terrorists to use the civilian population as human shields and to actively blur the distinction between themselves and the civilians around them. Indeed, the nature of warfare has seen tactical and strategic paradigm shifts in precisely this direction: weaker forces avoid open clashes and channel fighting to heavily populated urban areas in order to minimize casualties among the insurgents; they also seek to deter the stronger force from attacking otherwise legitimate targets, while deliberately exposing civilians to harm with the hope that, should such harm materialize, it might be used as a propaganda tool against the stronger force.[354]

Then there is the question of military honor. Honor has long been intertwined with the turn to weapons that create (or increase) distance between soldiers of different armies. In Homer's *The Iliad*, the Cretan captain Idomeneus answers a man who has come to him asking for a spear to fight by saying that "if it's spears you want you'll find not one but twenty . . . . It's not *my* way, I'd say, to fight at a distance, out of

350. *See, e.g.*, Sweeney et al., *supra* note 299 (discussing the NATO bombing of the Chinese Embassy in Belgrade); Thomas Keaney, Collateral Damage in the Gulf War: Experience and Lessons (2002) (unpublished manuscript), *available at* http://www.hks.harvard.edu/cchrp/Use%20of%20Force/June%202002/Keaney_Final.pdf (discussing the bombing of the Al Firdos command and control bunker in Baghdad); HUMAN RIGHTS WATCH, WHY THEY DIED 8, 119 (2007), *available at* http://www.hrw.org/sites/default/files/reports/lebanon0907.pdf (discussing the Qana incident during the Second Lebanon War of 2006).

351. To illustrate this point, if you kill a civilian it is not because of a mistake but rather because you intended to kill that civilian; if you hit the Chinese Embassy in Belgrade it is not because of a mistake but because you meant to do so. Precision seems to remove the ability to argue mistake.

352. *See supra* notes 343–49.

353. Some see drones as a cause for radicalization of the population and as a recruiting tool. Audrey Kurth Cronin, *Why Drones Fail: When Tactics Drive Strategy*, FOREIGN AFF., July/Aug. 2013, at 44, 46; Knoops, *supra* note 5, at 716; Ofek, *supra* note 9, at 38; Gregory P. Gilbreath, America's Targeted Killing Policy: Is it Right? Is it Working? 11–12 (March 2013) (unpublished research paper, U.S. Army War College), *available at* http://public.carlisle.army.mil/sites/Landpower/Shared%20Documents/Gilbreath%20Gregory%20SRPA.pdf; *see also* DAVID PETRAEUS, U.S. DEP'T OF THE ARMY, FIELD MANUAL NO. 3-24, COUNTERINSURGENCY § 1-141 (2006) ("An operation that kills five insurgents is counterproductive if collateral damage leads to the recruitment of fifty more insurgents.").

354. VAN CREVELD, *supra* note 233, at 226–27.

enemy range."[355] Similarly, the code of chivalry, which governed the conduct of the knights, rejected the use of long-distance weapons that were mostly used by lower-class infantrymen.[356] In 1139, the Second Lateran Council forbade, under penalty of anathema, the use ("against Christians and Catholics"), of "that deadly and God-detested art of slingers and archers."[357] Colonel G.I.A.D. Draper notes that to the Church, the crossbow and the arrow "were hateful to God. To the knights they were weapons whereby men not of the knightly order could fell a knight. . . . Worse, they were *weapons that enabled a man to strike without the risk of being struck*."[358] For similar reasons, the Corpus Juris Canonicus forbade the use of darts and catapults.[359] "Distancing" weapons raise questions about the honor of soldiers killing from a distance as well as of those killed from a distance by an unseen, "cowardly" enemy, especially when that enemy uses high-tech weapons.[360] Such weapons have had a significant role to play in ushering in the post-heroic military age, in which material realities of weapons trump heroic will power and the cult of the heroic warrior[361] and facilitate the instrumentalization of war through technology.[362]

Thus, even if we accept honor as a social and individual measure of worth,[363] the concerns mentioned above are neither new nor unique to drones.

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355. HOMER, THE ILIAD 350 (Robert Fagles trans., 1990).

356. LESLIE C. GREEN, *Cicero and Clausewitz or Quincy Wright: The Interplay of Law and War*, *in* ESSAYS ON THE MODERN LAW OF WAR 41, 54 (2d. ed. 1999).

357. MATTHEW BENNETT ET AL., FIGHTING TECHNIQUES OF THE MEDIEVAL WORLD 232 (2007) (internal quotation marks omitted); STUART CROFT, STRATEGIES OF ARMS CONTROL 24 (1996) ("Crossbows were used by relatively unskilled lower class soldiers, yet were able to pierce the armour of the knights . . . . Thus the crossbow was a weapon with potentially socially revolutionary implications.").

358. G.I.A.D. Draper, *The Interaction of Christianity and Chivalry in the Historical Development of the Law of War*, 5 INT'L REV. RED CROSS 3, 18–19 (1965) (emphasis added); *see also* COKER, *supra* note 230, at 105.

359. GREEN, *supra* note 356, at 54.

360. George Monbiot, *With Its Deadly Drones, the US Is Fighting a Coward's War*, GUARDIAN (Jan. 30, 2012, 4:00 PM), http://www.theguardian.com/commentisfree/2012/jan/30/deadly-drones-us-cowards-war.

361. *See* COKER, *supra* note 230, at 113.

362. *Id*. at 114 ("In [the United States'] obsession with technology it has instrumentalised war almost entirely.").

363. Contrast, for example, the idea of "Death before Dishonor," which is often associated (albeit informally) with the U.S. Marine Corps, with the following observation set forth by Michael Ignatieff:

> In a society increasingly distant from the culture of war, the rhetoric politicians use to mobilize their populations in support of military operations becomes unreal and insincere. As commanders-in-chief of their armed forces, Presidents and Prime Ministers are required to use a language saturated with military values: sacrifice, honor, courage. But to leaders and voters who have never gone to war, these phrases have a nostalgic, inauthentic feel and the consensus that the rhetoric creates is bound to be skin-deep . . . .

IGNATIEFF, *supra* note 196, at 189.

V. A DUTY TO USE DRONES?

Imagine the following scenario: A military commander engages in the planning of an operation against the enemy in a densely populated urban area. Unfortunately, such an operation may result in collateral damage—loss of civilian life, injury to civilians, or damage to civilian objects. Despite such harms, the attack may still be carried out lawfully under the law of armed conflict since LOAC merely aims at minimizing civilian casualties, not eliminating them altogether. But, if the commander is to attempt to minimize such casualties, is she not required to employ the most precise weapons in her arsenal? Should she not deploy the most discriminating means of warfare at her disposal, allowing her to distinguish combatants from civilians and to attack the former while sparing the latter? If, in fact, drones offer the promise of both greater precision and reduced lethality, should not the commander deploy them over less discriminatory means? And if that is the case, is there (or should there be) a duty for states to research, develop, procure, and field the appropriate technology and make it available to their armies?

This Part argues that although there are no treaties that deal specifically with the use of drones in armed conflict and no customary norms obligating the use of drones, such a duty may be derived from the cardinal principles of the law of armed conflict. It argues that such an interpretation is merited if we accept that drones offer the possibility of a more humane war by combining remote and accurate use of force and reduced lethality among both friendly forces and innocent civilians. This Part concludes by setting out further challenges that ought to receive careful attention in developing and elaborating on the obligation to use drones on the battlefield.

A. *Might Makes Ought?*

In light of the successful use of precision-guided munitions during Operation Desert Storm and Operation Allied Force, some writers explored whether a legal duty requiring the use of such weapons had emerged in international law.[364] For the most part their conclusion was that such an obligation did not exist *de lege lata*, i.e., under the existing

364. *See, e.g.*, Belt, *supra* note 296, at 116, 164; Frederic L. Borch, *Targeting After Kosovo: Has the Law Changed for Strike Planners?*, 56 NAVAL WAR C. REV. 64, 67 (2003); Nathan A. Canestaro, *Legal and Policy Constraints on the Conduct of Aerial Precision Warfare*, 37 VAND. J. TRANSNAT'L L. 431, 434, 459–60, 465 (2004); Danielle L. Infeld, Note, *Precision-Guided Munitions Demonstrated Their Pinpoint Accuracy in Desert Storm; But Is a Country Obligated to Use Precision Technology to Minimize Collateral Civilian Injury and Damage?*, 26 GEO. WASH. J. INT'L L. & ECON. 109, 133–40 (1992); Puckett, *supra* note 180, at 681–83.

norms of international law.[365] While "planners and operators choosing between laser-guided ordnance or 'dumb' bombs now more than ever must consider collateral damage," it remains the case that "there is no legal requirement to use PGMs."[366] The same can be said about the use of armed drones in the battlefield. Briefly put, to date, there is no treaty that deals specifically with the use of drones in armed conflict, nor can it be seriously argued that customary norms have emerged obligating the use of drones.[367] There is very little relevant state practice on the matter and the practice that does exist is far from being generally consistent,[368] or reflecting "sufficient *density*, in terms of uniformity, extent and representativeness,"[369] let alone amounting to the level of "extensive and virtually uniform"[370] practice. Further, no *opinio juris* has emerged with respect to a duty to use drones as a means of warfare. Thus, the truly challenging question is whether an obligation to "use" drones in the battlefield ought to exist, and if so, what the possible contours of such an obligation would be.

Drones offer the specter of aerial attacks that are more accurate and precise against the intended military targets while, at the same time, less lethal to civilians.[371] Of course, to say that a weapon is more precise does not necessarily mean that the attack actually carried out is going to be accurate. For example, as noted above, faulty intelligence can result in an accurate strike on the wrong target.[372] However, such is the case with all means and methods of warfare. At the same time, drones do (at least potentially) offer more significant and robust accuracy and reduced

365. *See* Belt, *supra* note 296, at 158–67, 173 (recognizing the emergence of a norm in customary international law on the use of precision weapons in urban settings); Puckett, *supra* note 180, at 681–82 ("[A] review of the relevant provisions of international agreements shows that there is no textual basis for concluding that the United States should ever be obligated by law to use only precision-guided munitions in a conflict.").

366. Borch, *supra* note 364, at 67; *see also* SOLIS, *supra* note 162, at 275 ("Precision-guided munitions are not a LOAC/IHL requirement, but a failure, or inability, to discriminate may be inherently disproportional.").

367. Michael Shank & Elizabeth Beavers, *Sign a Drone Treaty Before Everyone Does as We Do*, U.S. NEWS (Feb. 4, 2014, 1:35 PM), http://www.usnews.com/opinion/blogs/world-report/2014/02/04/us-must-support-an-international-drone-treaty.

368. Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), 198 I.C.J. 14, ¶ 186 (June 27).

369. INT'L LAW ASSOC., COMM. ON THE FORMATION OF CUSTOMARY (GEN.) INT'L LAW, STATEMENT OF PRINCIPLES APPLICABLE TO THE FORMATION OF GENERAL CUSTOMARY INTERNATIONAL LAW 20 (2000) (footnote omitted).

370. North Sea Continental Shelf Cases (Ger./Neth.), Judgment, 1969 I.C.J. 4, ¶ 74 (Feb. 20).

371. *See, e.g.*, Blank, *After "Top Gun," supra* note 58, at 687 ("The ability to track a target for hours, even days, before launching an attack facilitates accurate targeting and enhances the protection of civilians by giving drone operators the ability to choose the time and place of attack with an eye towards minimizing civilian casualties or damage.").

372. *See supra* notes 343–53 and accompanying text.

lethality together with greater accountability. Drones may be "the most humane form of warfare ever."[373] Their use on the battlefield has the potential to "enhance the protections to which various persons and objects are entitled under international humanitarian law."[374] This makes the case for their use on the battlefield compelling. But should drones be used instead of traditional, less-precise alternative means and methods of warfare? If drones are the worst form of war, "except for all the others,"[375] should drones be the first choice on the menu of military commanders over all the others?

There are several initial challenges to the imposition of broad legal obligations on states to use drones as their go-to weapon in war. The very precision that characterizes drones may not be required or even desirable in all scenarios. When the targets are enemy forces spread over a large area where no civilians are to be found, pinpoint accuracy is unnecessary under LOAC. Even in urban settings, where collateral damage is a highly relevant consideration (politically, morally, and legally), there may be circumstances in which the use of unguided weapons may be preferable—both from a tactical standpoint and in order to minimize collateral damage—to the use of precision-guided munitions.[376]

Even if we could define and accurately capture the circumstances in which the use of drones may be preferable to the alternatives, significant challenges remain. Although drone technology is rapidly proliferating—estimates are that currently between seventy-five and eighty-seven countries possess drone technology, and twenty-six of those have systems that "are already armed or of a model that has been armed in the past"[377]—not all states have the requisite technology and

373. Michael W. Lewis, *Drones: Actually the Most Humane Form of Warfare Ever*, THE ATLANTIC (Aug. 21, 2013, 10:00 AM), http://www.theatlantic.com/international/archive/2013/08/drones-actually-the-most-humane-form-of-warfare-ever/278746/.

374. Schmitt, *supra* note 317, at 313; *see also* Frederik Rosén, *Extremely Stealthy and Incredibly Close: Drones, Control and Legal Responsibility*, 19 J. CONFLICT & SEC'Y L. 113, 115 (2014) (States may have an obligation to employ drone technology "to exhaust all feasible means of information gathering if any doubt exists as to whether an attack may lead to civilian casualties.").

375. Saletan, *supra* note 340.

376. Puckett, *supra* note 180, at 717–18 (concluding that unguided cannons mounted on helicopters may often be more accurate than Hellfire missiles—for example, when the target is found in a densely populated urban area and when "[c]oncrete dust and dirt from previous explosions in the area make use of the Hellfire difficult [or where] the building has a large amount of glass which, like the dust, will cause a specular reflection instead of the diffuse spot needed to fire a laser weapon").

377. P.W. Singer, *The Global Swarm*, FOREIGN POL'Y, (Mar. 11, 2013), http://www.foreignpolicy.com/articles/2013/03/11/the_global_swarm; *see also* Maggie Ybarra, *Europe, Asia Plan to Spend Big on Drone Development*, WASH. TIMES (Apr. 28, 2014), http://www.washingtontimes.com/news/2014/apr/28/europe-asia-plan-to-spend-big-on-drone-develop

capacity to operate drones or the financial resources and capabilities necessary to have available a fleet of unmanned aircraft.[378] In short, drones are not available to all. In these circumstances, imposing an obligation to use drones would result either in preventing some countries from fighting even in self-defense (or at least severely curtailing their options) or, more likely, precluding those countries from adhering to the relevant rules of international law. It is with this challenge in mind that some scholars have considered the possibility of introducing normative relativism or differential rules to the law of armed conflict[379]: imposing different normative obligations on different states based on each nation's capabilities.[380]

Professor Gabriella Blum notes that the idea of correlating obligations with resources and capabilities, and the concomitant notion of common-but-differentiated responsibilities, is a widely accepted norm in the fields of international trade and environmental law.[381] Yet its possible adoption into the law of armed conflict is controversial. LOAC—premised on notions of sovereign equality,[382] the principle of parity or moral equality of combatants,[383] and the rejection of

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ment/?page=all (noting that he "U.S. military's unquestioned lead in drone technology is narrowing," and estimating that by 2022, the United States will spend less than half the worldwide total on drone research and development).

378. Michael N. Schmitt, *Bellum Americanum: The U.S. View of Twenty-First Century War and Its Possible Implications for the Law of Armed Conflict*, 19 MICH. J. INT'L L. 1051, 1088 (1998) (noting that "due to their high cost, not all states can afford the precision munitions that help foster discrimination and proportionality").

379. *See, e.g.*, *id.* at 1088 (discussing "normative relativism" to confront issues of unequal military capabilities between different states); Gabriella Blum, *On a Differential Law of War*, 52 HARV. INT'L L. J. 164, 165–66 (2011) (introducing the concept of differential law based on the concept of "Common-but-Differentiated Responsibilities").

380. *E,g.*, Blum, *supra* note 379, at 165.

381. *Id.* at 177–85.

382. U.N. CHARTER art. 2, para. 1 ("The Organization is based on the principle of the sovereign equality of all its Members"); *see also* Blum, *supra* note 379, at 171 ("The fiction of sovereign equality undoubtedly features in IHL.").

383. The principle of parity means that LOAC applies to any armed conflict regardless of the legality of its inception. The *jus in bello* is, therefore, independent from *jus ad bellum* considerations. Fighting a just war does not give one party privileges vis-à-vis *jus in bello*. Nor does fighting a war of aggression limit the means and methods of warfare that would otherwise be lawful under international law. In other words, the justness or lawfulness of one party's cause does not change—neither expands nor contracts—the scope of the means and methods of warfare that are available to it and to its soldiers. Blank, *Targeted Strikes*, *supra* note 44, at 1659 ("The basic principle that the rights and obligations of jus in bello apply regardless of the justness or unjustness of the overall military operation thus remains firmly entrenched. Indeed, if the cause at arms influenced a state's obligation to abide by the laws [of armed conflict] . . . states would justify all departures from jus in bello with reference to the purported justness of their cause."); Louise Doswald-Beck, *International Humanitarian Law and the Advisory Opinion of the International Court of Justice on the Legality of the Threat or Use of Nuclear Weapons*, 316 INT'L REV. RED CROSS 35, 53 (1997) ("For at least two centuries it has

reciprocity as a condition for compliance[384]—has always been applied equally to all belligerent states, as well as to all individuals based on their status as combatants or civilians.[385] Attempts to deviate from this universality and generality in application of LOAC have been branded "double standards" and "lawfare" or, on the other hand, castigated as serving the interests of a few powerful countries at the expense of weaker members of the community of nations.[386] Indeed, it seems unlikely that any changes to the universality of LOAC norms can come about by modifying the norms by treaty or through the more arduous and less certain processes of customary international law (this Article refers to this as the legislative track). Examining, among other things, the imposition of differential obligations pertaining to the use of precision-guided munitions, Blum argues that the adoption of a "differential legislative scheme that . . . applie[s] explicitly different rules to differently situated parties or exempt[s] weaker parties from compliance with certain humanitarian obligations" or imposes "heightened obligations on richer countries" is politically unlikely.[387] If this is true in the context of precision-guided munitions, it is all the more so in the context of drones. The widespread opposition to drones around the world makes any progress towards imposing an explicit legal

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been absolute dogma that international humanitarian law applies equally to all parties to a conflict, irrespective of which is acting in self defence; this has been confirmed by very long-standing State practice and universally acknowledged in legal literature."); Robert D. Sloane, *The Cost of Conflation: Preserving the Dualism of Jus ad Bellum and Jus in Bello in the Contemporary Law of War*, 34 YALE J. INT'L L. 47, 56 (2009) ("Just war theory is much older than international law. It originated and evolved principally in theological and ethical, not legal, terms."); MICHAEL WALZER, JUST AND UNJUST WARS 41–47 (1977). *But see* Michael Walzer, *Coda: Can the Good Guys Win?*, 24 EUR. J. INT'L L. 433, 440 (2013) ("[T]he *ad bellum/in bello* distinction is not absolute. Fighting a just war does not give you privileges *vis-à-vis jus in bello*, but fighting unjustly may in some cases de-privilege you *vis-à-vis jus ad bellum*."); Jeff McMahan, *On the Moral Equality of Combatants*, 14 J. POL. PHIL. 377, 378 (2006) (discussing the moral equality of soldiers who fight in "unjust wars").

384. One party's violations of LOAC do not justify reciprocal violations by the other parties to the conflict. This foundational concept should be distinguished from what Professor Paul Kahn calls the ethos of reciprocity by which he refers to war as comprised of reciprocal acts of self-sacrifice. Paul W. Kahn, *Imagining Warfare*, 24 EUR. J. INT'L L. 199, 218–21 (2013).

385. Adam Roberts, *The Equal Application of the Law of War: A Principle Under Pressure*, 90 INT'L REV. RED CROSS 931, 945–46 (2008).

386. *See, e.g.*, Cherif Bassiouni, *The New Wars and the Crisis of Compliance with the Law of Armed Conflict by Non-State Actors*, 98 J. CRIM. L. & CRIMINOLOGY 711, 783 n.292 (2008) (discussing examples of the "application of double standards that reflect non-compliance by one set of combatants and in a perverse way invite or enhance non-compliance by non-state actor groups"); Blum, *supra* note 379, at 175–76 ("Variously defined, lawfare captures everything from manipulating legal rules to one's advantage to using courts as an alternative battleground.").

387. Blum, *supra* note 379, at 186.

duty to use such aerial platforms by legislative measures highly unlikely. To be sure, there are some voices calling on the United States to take the lead in drafting an international agreement that would regulate the use of drones.[388] However, those who do not wish to ban drones outright seek to strictly limit their use by raising the specter of proliferation of drone technologies among other countries and non-state actors as an incentive for the United States to lead the way. There is, at present, no talk of imposing an affirmative duty to use drones whatever the circumstances. Nor does such conversation seem politically feasible any time soon.[389]

A much more realistic path to introducing differential norms into LOAC is the interpretive track—adapting the substantive content of existing norms and rules and linking it to the different circumstances and capabilities of the relevant different states.[390] This may be particularly possible in the context of such LOAC standards as the prohibition on "excessive" harm to civilians or the existing duty to take all "feasible" precautions in the choice of means and methods of attack in order to minimize incidental loss of civilian life.[391] As Blum correctly notes,

> the application of the principle of proportionality is highly contingent on interpretation, context, and ultimately, the development of a sub-codex of rules for particular circumstances. These are susceptible to considerations of relative power, capabilities, and resources, all of which potentially affect the application of the standard to differently situated parties.[392]

Interpretation of standards such as those related to proportionality or the principle of avoidance allows for considerations of capabilities and

388. *See, e.g.*, Ratnesar, *supra* note 340 ("For that reason, Obama should take the lead in establishing an international protocol governing the acceptable use of drones.").

389. *Cf.* Schmitt, *supra* note 378, at 1085 (noting that, in the context of less lethal (sometimes referred to as "non-lethal") weapons, "we can expect many of these weapons to be targeted for prohibition, regardless of their military necessity or the possibilities they offer for proportionate use").

390. *See id.* at 1088 ("As the gap between the military 'haves' and 'have nots' widens, there will be subtle stressors that encourage an interpretation of the law of armed conflict relative to the state to which it is applied.").

391. AP I, *supra* note 60, art. 51, § 4; *id.* art. 57, § 2; *see* Blum, *supra* note 379, at 188–95 (discussing the principles of civilian immunity and proportionality under international law); *see also* Rosén, *supra* note 374, at 127–29 (arguing that drone technology removes two of the classic dilemmas that arise in taking precautionary measures to assess targets: the need for urgency that makes precautionary measures infeasible, and the need to protect human personnel against the risks inherent in reconnaissance missions necessary to precaution).

392. Blum, *supra* note 379, at 192.

resources to enter the equation.[393] A party to an armed conflict that possesses weapons, munitions, and modes of delivery capable of greater precision in targeting than those possessed by its adversary may thus be subject to a higher level of responsibility both with respect to the enemy's soldiers and, more significantly for our purposes, to innocent civilians.[394]

Such differential interpretation may be based on more nuanced understandings of the idea of responsibility. As Professor Michael Walzer suggests, armed conflicts raise instances for both negative and positive responsibilities.[395] Thus, when insurgents deliberately use civilians as human shields against attacks, they ought to "accept responsibility for [civilian deaths], whether or not the number of likely deaths is proportionate to the expected military advantage."[396] At the same time, armies fighting insurgents bear their own responsibilities, including the responsibility to act in positive, affirmative ways in order to minimize collateral damage and mitigate harmful consequences to innocent civilians.[397] Such responsibility is not merely a moral matter. It is incorporated into LOAC through the complementary principles of proportionality and avoidance.[398] The principle of proportionality requires, as we have already seen, that military attacks that are anticipated to result in "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," must be cancelled or suspended.[399]

Proportionality's emphasis on "excessive" harm clearly means that LOAC recognizes that some civilian casualties are unavoidable in war.[400] Yet the principle of avoidance (taking precautions) imposes an affirmative duty on military planners to "take all feasible precautions" in the choice of means and methods of attack "with a view to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to

393. *See, e.g.*, Schmitt, *supra* note 378, at 1088 (arguing that a disparity in capabilities may create a disparate application of principles of proportionality between the "haves" and "have nots").

394. *See id.* (arguing that in the abstract "an identical standard is applied to both states," but that, in practice, "the developed state is held to a higher standard" and "belligerents are held to the standards to which they are capable of reasonably rising").

395. Walzer, *supra* note 383, at 437.

396. *Id*.

397. *Id*.

398. AP I, *supra* note 60, art. 51, § 5(b); *id.* art. 57, § 2(a)(iii).

399. *Id.* art. 57 § 2(a)(iii).

400. This recognition goes against what Walzer identifies as the modern trend towards "restrictive proportionality" that "permits hardly anything at all in the way of collateral damage and seems almost designed to make it difficult for states and armies to fight." Walzer, *supra* note 383, at 438.

civilians and damage to civilian objects."[401] This principle of avoidance means, in other words, that it is not enough to not intend to kill civilians while attacking legitimate targets. Rather, a deliberate, affirmative effort has to be made not to harm them.[402] Military commanders must exercise due care when selecting their targets and matching the weapons and tactics to use against those targets.[403] Thus, even when the proportionality calculus indicates that the likely collateral damage is not going to be excessive when compared with the anticipated military objective sought by the attack, LOAC imposes a duty on soldiers to take precautions—all feasible precautions—in order to minimize that otherwise proportionate harm to civilians.[404] Whatever else such a positive obligation may mean,[405] it "comes first, without regard to proportionality calculations."[406]

Notions of moral and legal responsibility can be harnessed to the issue of drones in warfare. If one accepts, as this Article argues above,

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401. AP I, *supra* note 60, art. 57, § 2(a)(ii).

402. Walzer, *supra* note 383, at 437 ("[I]t was not enough *not to intend* civilian casualties; it was necessary *to intend not* to inflict such casualties.").

403. *See* Schmitt, *supra* note 378, at 1082. On matching weapons to targets, see, for example, U.S. DEP'T OF DEF., CONDUCT OF THE PERSIAN GULF WAR: FINAL REPORT TO CONGRESS, at T-76 to T-79 (1992), *available at* http://www.dod.mil/pubs/foi/operation_and_plans/PersianGulfWar/404.pdf.

404. *See* CHIEFS OF STAFF, *supra* note 150, ¶¶ 2.6, 2.7, 2.7.1–.2.

405. During the Gulf War of 1990–1991, which followed Iraq's invasion of Kuwait, the United States argued that general warnings—by using leaflets dropped from aircraft or radio calls—advising the civilian population to avoid remaining in proximity to military objectives were sufficient. *Id.* ¶ 5.32.8 n.207.

During Operation Cast Lead, the Israeli Defense Forces (IDF) used both general warnings and specific warnings to civilians in or near military targets that were about to be attacked. Pnina Sharvit Baruch & Noam Neuman, *Warning Civilians Prior to Attack Under International Law: Theory and Practice*, 87 INT'L L. STUD. 359, 370–71 (2006). The warnings included media broadcasts to the local population, leaflets dropped from planes, phone calls warning of impending attack, and a procedure known as "roof-knocking" (firing non-explosive munitions at a roof in order to warn the inhabitants of an impending attack) which was used in particular in response to Hamas's forcing civilians to go to the rooftops of houses marked for targeting by the IDF. *Id.*

The procedures adopted by the IDF were criticized in the Goldstone Report without offering any viable alternatives short of abandoning the attack and rewarding those who use civilians as shields with impunity from attack. *See* Moshe Halbertal, *The Goldstone Illusion*, NEW REPUBLIC (Nov. 6, 2009), http://www.newrepublic.com/article/world/the-goldstone-illusion; U.N. Human Rights Council, Rep. of the United Nations Fact Finding Mission on the Gaza Conflict 498–540, U.N. Doc. A/HRC/12/48 (2009), *available at* http://www2.ohchr.org/english/bodies/hrcouncil/docs/12session/A-HRC-12-48.pdf.

As noted above, while it is generally accepted that soldiers must assume certain risks to themselves in order to reduce risk of harm to civilians that is brought about as a result of the soldiers' actions, it is a matter of debate how far the soldiers, and the military sending them, should go.

406. Walzer, *supra* note 383, at 437.

that drones offer the possibility of more accurate and precise attack against the intended military targets and, at the same time, of reduced lethality among civilians, then there is a strong case to be made that their use in the battlefield, compared with the alternatives, is in line with the idea of responsibility to take positive measures to reduce the harm to civilians in war. Moreover, this would be the case both from a moral perspective and from the perspective of the laws of armed conflict. In fact, even in the absence of treaties (or customary norms of international law) that deal specifically with drones, the analysis above suggests that we can derive a duty to use drones in the battlefield from the very foundational principles of LOAC.[407]

B. *Scope of Obligation: The Road Ahead*

To argue, as this Article does in the previous Section, that LOAC can already be interpreted as imposing a duty to use drones in the battlefield (and, in any event, ought to include such a duty), does not put an end to our inquiry. Rather, if we accept the existence of such an obligation, either *de lege lata* or as *de lege ferenda*, we must then attempt to define the substantive scope of such an obligation. Unfortunately, the precise criteria for the imposition of an affirmative duty to use drones may prove extremely difficult to set out and define in advance. The duty to use drones that this Article seeks to identify and defend is a positive, affirmative duty. It is a duty to use a weapon rather than to refrain from doing so. It is (by extension) a duty to study, develop, acquire, or adopt a weapon rather than to refrain from doing so. And it is precisely this essential character of the duty that makes it harder to capture and define.

As already noted, when the targets are enemy forces spread over a large area where no civilians are to be found—in circumstances in which there is no risk of collateral damage—pinpoint accuracy is unnecessary under LOAC.[408] Moreover, even in urban settings, where collateral damage is highly likely, there may be circumstances in which the use of unguided weapons may be preferable, both from a tactical standpoint and in order to minimize collateral damage, over the use of precision-guided munitions.[409] Indeed, the very distinction between the two scenarios may be difficult to make in the abstract. Such difficulties suggest that the answer ought to be fashioned not through the legislative track (at least not initially) but rather through the interpretive track. Rather than attempting to delineate, in advance, the contours of the

407. *See also* Schmitt, *supra* note 378, at 1088 (suggesting that a "move towards a capability-based humanitarian regime may play itself out in an obligation to *field* weapons that pose the least risk to protected persons and objects").

408. *See supra* Section V.A.

409. *See supra* Section V.A.

obligation to use drones, a better method would be to approach the issue on a case-by-case basis, building experience as we go along and as practice is accumulated. Such a casuistic approach would also mean that, again at least initially, questions about the duty to use drones and the violations of such duty are unlikely to come about in the context of enforcement of international criminal legal norms if only because the scope of the obligation and its substantive contours are uncertain and ill-defined. This is true even if we agree that an identifiable core of obligation does exist. The actual practice of states together with international reports by credible organizations that monitor armed conflicts around the world, as well as the possibility of invoking the duty to use drones as part of a state responsibility challenge, may prove more hospitable venues for the further clarification of the scope of the obligation.

An additional challenge in imposing a duty to use drones concerns the identification of the states that may be subject to such a duty. If, as suggested by Blum in a different yet related context, the obligation is to be correlated and linked to capabilities,[410] we will need to identify those capabilities that are relevant for the purposes of the specific obligation. Should we consider in this context military, financial, or technological capabilities? Responsibilities that are linked to capabilities surely mean, if anything, that countries lacking the above-mentioned capabilities do not bear the same obligation to use drones.[411]

But what should we make of a country that does have the financial and technological capacities to develop, manufacture, and acquire drones, but chooses not to do so? Should the policy reasons underlying that choice be relevant? In other words, does it matter if the country chooses not to develop drone technology because it professes objection to the use of such weapons; because it wishes to keep its military expenditures low; because it does not anticipate being involved in international armed conflicts; or because it wishes to direct its resources in other directions, be they civilian or military? Indeed, would not an imposition of a duty to use drones create incentives to states to divert resources from research, development, production, and procurement of such aerial platforms to other means of warfare, precisely so as not to be subject to such a legal obligation? On the other hand, if we find that an obligation to use drones does exist under the principles of LOAC (or, according to the alternative argument that it ought to exist as a legal norm), how far upstream does the obligation extend? If an obligation to use drones exists, must it not, logically, extend to a duty to develop,

410. *Cf.* Blum, *supra* note 379, at 164–66, 195.

411. *See* Schmitt, *supra* note 378, at 1088.

manufacture, or procure such weapons?[412] Moreover, if an obligation to use drones exists, if it applies differentially to states based on their own capabilities, and if we accept that such a duty is based on the fact that drones offer a more precise and less lethal way of war, should international law impose a corollary obligation on states that possess drone technology to share the technology with those states that do not? After all, if drones can make war more humane, does not their proliferation—precisely that proliferation of which we are currently warned—hold the promise of maximizing human welfare by spreading the promise to a greater number of conflicts?

What if, the duty to use them notwithstanding, drones cannot actually be used in specific circumstances—perhaps because of countermeasures by the defenders (e.g., jamming of radio signals between the operators and the drone) or due to finite supply of human resources that are needed to fly a great number of drones?[413] Under such circumstances, must the attacking forces abandon (at least temporarily) their plans of attack, awarding the enemy with immunity from attack, or can they turn to alternative means and methods of warfare—e.g., using manned aircraft or unguided bombs?

To a large extent, the issues raised here derive from a basic conundrum. Although the principles of LOAC impose both negative and positive duties on the parties to an armed conflict,[414] as far as the rules that pertain to weapons are concerned, the obligations are, for the most part, structured as negative obligations. The overarching principle that pertains to weapons systems is the prohibition of superfluous injury or unnecessary suffering.[415] It is true that AP I imposes a positive obligation on each High Contracting Party—as part of any "study, development, acquisition or adoption of a new weapon"[416]—to determine whether the employment of a new weapon will be prohibited under international law. However, this obligation is ancillary to the basic prohibition on weapons that cause unnecessary suffering.[417] The duty to use drones that this Article seeks to identify and defend is a positive, affirmative duty. It is a duty to use a weapon rather than to

412. *Id.* at 1088–89 (raising the possible claim that "if a wealthy state has the economic wherewithal to arm its forces with precision weapons, it should be obligated to do so, . . . so long as doing so is otherwise operationally sound").

413. *See, e.g.*, Brannen, *supra* note 1 (noting the inability of the U.S. to deploy sufficient drones in Syria and Iraq because its capabilities are used up in Afghanistan).

414. *See supra* note 395 and accompanying text.

415. AP I, *supra* note 60, art. 35, § 2; Hague Regulations IV, *supra* note 139, art. 23(e).

416. AP I, *supra* note 60, art. 36; *see, e.g.*, U.S. DEP'T OF DEF., *supra* note 145 (requiring a LOAC compliance review to be conducted for every new weapon and ammunition used by the U.S. military).

417. *See* AP I, *supra* note 60, art. 35 ("In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited."); *id.* art. 35, § 2.

refrain from doing so. It is, by extension, a duty to study, develop, acquire, or adopt a weapon rather than to refrain from doing so. It is precisely this essential character of the duty that makes it harder to capture and define ex ante and which would entail a careful development and elaboration on a case-by-case basis.

CONCLUSION

Journalist Matthew Power suggests that drones are "too easy a placeholder or avatar for all of our technological anxieties—the creeping sense that screens and cameras have taken some piece of our souls, that we've slipped into a dystopia of disconnection."[418] This criticism is not unique to drones. Technology has often provoked opposition. Romanticism,[419] religious beliefs, environmental issues, safety considerations, socio-economic and cultural concerns, rejection of human hubris, and even gender have all contributed to versions of technophobia.[420] Opposition to technology has always been particularly pronounced when the relevant technology at issue is military in nature.[421]

Almost all of human history has witnessed advances in military technology that have made war an increasingly more lethal and more destructive affair. The very destructiveness of new technologies has often been touted as a promise for a more peaceful future. Famously, Alfred Nobel argued (at first) that the destructive force of dynamite

418. Power, *supra* note 327.

419. COKER, *supra* note 230, at 114 ("Many (including myself) fear that scientists may well be on the way to eradicating the last vestiges of the romantic world view from which the warrior myth still continues to draw its popular appeal.").

420. *See generally, e.g.*, JACQUES ELLUL, THE TECHNOLOGICAL SOCIETY 132 (1964) (discussing the tragedy of a civilization increasingly dominated by technology and technique and the erosion of moral values brought about by technical specialization); STEVEN E. JONES, AGAINST TECHNOLOGY (2006) (examining the history and ideas of the Luddites and discussing how those ideas have permeated culture and society). *But see* Daniel H. Wilson, *The Terrifying Truth About New Technology*, WALL ST. J. (June 11, 2011), http://online.wsj.com/news/articles/SB10001424052702304392704576375473021288898 ("We think we're afraid of the technology. But we're really afraid of getting old.").

421. *See, e.g.*, EUROPEAN COMMISSION, SOCIAL VALUES, SCIENCE AND TECHNOLOGY 74 (2005), *available at* http://ec.europa.eu/public_opinion/archives/ebs/ebs_225_report_en.pdf (providing data on perceptions of military technology). The survey discovered that, on the whole, a majority of European Union respondents believed that the development of various surveyed new technologies would have a positive effect on society in the next twenty years. *Id.* While this finding held true across all areas covered in the survey except nanotechnology, it is noticeable that two areas received a significantly lower show of optimism, namely military and security equipment and nuclear energy (both scored at 52%). *Id.* at 76. It is also notable that in almost half the countries, (twelve out of twenty-five) those surveyed had an overall negative view about the prospects of military technology. *Id.* at 180.

would make war unthinkable.[422] Similar arguments have been made with respect to gunpowder, artillery, and more recently, nuclear weapons.[423] This sorry history ought to be considered and reflected upon when developing the argument that drones may offer the possibility of a more accurate and "humane" war. There is much to oppose with regard to the current use of drones for the CIA's covert operations in countries such as Pakistan and Yemen. Yet we should not close our eyes to the possibilities that drones may offer in places that are, in fact, active combat zones. At the end of the day, drones may well be "the worst form of warfare in the history of the world, except for all the others."[424] Hyperbolic proclamations that "drones kill civilians" thus miss the point.[425] Ill-guided drone attacks may certainly cause loss of civilian life; so, too, do other means and methods of warfare. It is war that kills civilians (as well as combatants), and for as long as war is with us we may as well recognize that some means and methods of warfare kill fewer civilians than others. Refusing to discuss the right and duty to use more discriminating means and methods would not contribute to lessening collateral damage to civilians. It may, in fact, facilitate it.

422. ULF LAGERKVIST, THE ENIGMA OF FERMENT 136 (2005). Notably, Alfred Nobel wrote a letter to Baroness Bertha von Suttner, stating: "My factories may make an end of war sooner than your [peace] congresses. The day when two army corps can annihilate each other in one second, all civilized nations, it is to be hoped, will recoil from war and discharge their troops." *Id.* (internal quotation marks omitted).

423. JOSEPH MASCO, THE NUCLEAR BORDERLANDS 5 (2006); George Orwell, *You and the Atomic Bomb* (1945), *reprinted in* 4 THE COLLECTED ESSAYS, JOURNALISM AND LETTERS OF GEORGE ORWELL: IN FRONT OF YOUR NOSE, 1946–1950, at 6–7 (Sonia Orwell & Ian Angus eds., 1968).

424. Saletan, *supra* note 340.

425. Schmitt, *supra* note 378, at 1089 (noting that "[i]n terms of *humanitarian* principles, opposition to weaponry may not always be a positive stance. After all, much of the weaponry . . . will effectively reduce collateral damage and incidental injury to civilians and civilian objects").