PACING CHINA: LETHAL AUTONOMOUS WEAPON SYSTEMS AND OBJECT-BASED TARGETING

MAJOR RILEY A. GRABER*

> Detective Del Spooner: "Human beings have dreams. Even dogs have dreams, but not you, you are just a machine. An imitation of life. Can a robot write a symphony? Can a robot turn a canvas into a beautiful masterpiece?"
>
> Robot Sonny: "Can you?"[1]

---

* Judge Advocate, United States Air Force. Presently assigned as Chief, Fiscal Law, U.S. Indo-Pacific Command. LL.M., 2023, The Judge Advocate's Legal Center and School; J.D., 2014, University of Arkansas at Little Rock William H. Bowen School of Law; B.A., B.S., 2010, University of Central Florida. Previous assignments include Student, 71st Judge Advocate Officer Graduate Course, The Judge Advocate's Legal Center and School, United States Army, Charlottesville, Virginia, 2022-2023; Deputy Staff Judge Advocate, Air Force Research Laboratory, Information Directorate, Rome, New York, 2020-2022; Deployed Operations Law Attorney, Combined Joint Task Force – Operation Inherent Resolve, Camp Arifjan, Kuwait, 2020; Chief of Military Justice (Deputy Chief of Military Justice, General Law Officer in Charge, Chief of Adverse Actions), 86th Airlift Wing, Ramstein Air Base, Germany, 2017-2020; Deployed Assistant Staff Judge Advocate (Litigation Support), Joint Task Force – Guantanamo Bay, Cuba, 2016-2017; Chief of General Law (Chief of Legal Assistance), 28th Bomb Wing, Ellsworth Air Force Base, South Dakota, 2015-2017. Member of the Bars of Arkansas; Florida; the United States District Court, Eastern District of Arkansas; and the Air Force Court of Criminal Appeals. This article was submitted in partial completion of the Master of Laws requirements of the 71st Judge Advocate Officer Graduate Course.

[1] I, ROBOT, Blu-ray (20th Century Fox 2004). Robot Sonny has just asserted that he has dreams, which Detective Spooner doesn't believe, because only humans dream. *Id.* He dismisses the robot's claim to basic human ability by describing the things robots cannot do, like write a symphony or create art. *Id.* Sonny counters that no matter how human Detective Spooner is, he may not be able to do these human things. *Id.* As you read this article, consider whether humans, people, are as capable as we believe them to be.

I. Introduction

Lethal autonomous weapon systems (LAWS)[2] are the future of armed conflict.[3] With the rise of artificial intelligence (AI) technology,[4] the use of machine learning algorithms to spur AI growth,[5] and the competition of nations to stay militarily ahead of one another,[6] LAWS will become a major contributor to armed conflict in the near future.[7] Whether as the central pillar supporting the nuclear capabilities of today,[8] or as a variant

---

[2] The acronym LAWS specifically encompasses "lethal" in its name. Some commentators have limited the phrase to autonomous weapons systems (AWS), but still imply the lethality of the weapon system. *See* Michael N. Schmitt, *Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics*, HARV. L. SCH. NAT'L SEC. J. (Feb. 5, 2013), https://harvardnsj.org/2013/02/05/autonomous-weapon-systems-and-international-humanitarian-law-a-reply-to-the-critics/ [https://perma.cc/9B77-D5M3]. This article will rely on the phrase "LAWS," with a more robust definition described in Part II.A.

[3] *See* Kai-Fu Lee, *The Third Revolution in Warfare*, THE ATLANTIC (Sept. 11, 2021), https://www.theatlantic.com/technology/archive/2021/09/i-weapons-are-third-revolution-warfare/620013/ [https://perma.cc/UH54-8BBT] ("First there was gunpowder. Then nuclear weapons. Next: artificially intelligent weapons."); *but see* KELLY M. SAYLER, CONG. RSCH. SERV., IF11294, INTERNATIONAL DISCUSSIONS CONCERNING LETHAL AUTONOMOUS WEAPON SYSTEMS 1 (2023) ("Although the pursuit of LAWS is not yet widespread, some analysts have argued that Israel's Harpy loitering munition—which the weapon's manufacturer, IAI, describes as being fully autonomous—qualifies.").

[4] *See* Joe McKendrick, *AI Adoption Skyrocketed Over the Last 18 Months*, HARV. BUS. REV. (Sept. 27, 2021), https://hbr.org/2021/09/ai-adoption-skyrocketed-over-the-last-18-months/ [https://perma.cc/7TPZ-NMGY] ("Fifty-two percent of companies accelerated their AI adoption plans because of the Covid crisis . . . . Just about all, 86%, say that AI is becoming a 'mainstream technology' at their company in 2021.").

[5] *See XAI: Explainable Artificial Intelligence*, DEF. ADVANCED RSCH. PROJECTS AGENCY, https://www.darpa.mil/program/explainable-artificial-intelligence/ [https://perma.cc/C3VN-K3FB] (last visited Sep. 10, 2025) ("Dramatic success in machine learning has led to a torrent of Artificial Intelligence (AI) applications.").

[6] *See* U.S. DEP'T OF DEF., 2022 NATIONAL DEFENSE STRATEGY OF THE UNITED STATES OF AMERICA 4 [hereinafter National Defense Strategy].

[7] Some measure of autonomy in weapons systems already exists. *See infra* Section II.A.

[8] *See generally* Lieutenant Commander Joshua M. M. Portzer, *Kanyon's Reach: Rethinking the Nuclear Triad in the Autonomous Age*, U.S. NAVAL INSTITUTE, PROCEEDINGS (July 2020), https://www.usni.org/magazines/proceedings/2020/july/kanyons-reach-rethinking-nuclear-triad-autonomous-age/ [https://perma.cc/R8DY-7YPU] (describing Russia's Kanyon weapon system—an "autonomous unmanned undersea vehicle[]" (AUUV) capable of delivering a nuclear warhead—and arguing the United States should consider developing its own nuclear-capable AUUV).

of weapon in their own right,[9] autonomous weapons—waging armed conflict at the speed of computers—will have to be developed, trained, tested, and ready for the battle of tomorrow.

There is currently a battle among legal practitioners, scholars, and non-governmental organizations (NGOs) as to whether LAWS can comply with the law of armed conflict as accurately as humans.[10] The Group of Government Experts (GGE) at the United Nations Convention on Certain Conventional Weapons (CCW)[11] has been discussing this issue for about eleven years.[12] In 2019, the High Contracting Parties to the CCW affirmed eleven guiding principles for states developing LAWS.[13] To adhere to those principles, states must ensure that any autonomous weapon

---

[9] *See generally* SAYLER, *supra* note 3 (describing variants of LAWS in use or being manufactured today).

[10] *See A Hazard to Human Rights: Autonomous Weapons Systems and Digital Decision-Making,* HUM. RTS. WATCH, https://www.hrw.org/report/2025/04/28/hazard-human-rights/autonomous-weapons-systems-and-digital-decision-making [https://perma.cc/2E6X-97ML] (Apr. 28, 2025) ("Autonomous weapons systems present numerous risks to humanity, most of which infringe on fundamental obligations and principles of international human rights law."); *Autonomous Weapons Open Letter: AI & Robotic Researchers*, FUTURE OF LIFE INST. (Feb. 9, 2016), https://futureoflife.org/open-letter/open-letter-autonomous-weapons-ai-robotics/ [https://perma.cc/2SGJ-X47D] (a call by "AI/Robotics Researchers," well known business and technology leaders (like Stephen Hawking, Elon Musk, and Steve Wozniak), and "others" (including 34,378 signatures as of Aug. 19, 2025), for "a ban on offensive autonomous weapons beyond meaningful human control"); Schmitt, *supra* note 2 (countering Human Rights Watch's argument, by "suggest[ing] that whereas some conceivable autonomous weapon systems might be prohibited as a matter of law, the use of others will be unlawful only when employed in a manner that runs contrary to international humanitarian law's prescriptive norms").

[11] Commonly referred to as the Convention on Certain Conventional Weapons (CCW), but more fully titled the 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. *Opened for signature* Apr. 10, 1981, 1342 U.N.T.S. 137 (entered into force Dec. 2, 1983).

[12] *Timeline of LAWS in the CCW*, U.N. OFF. FOR DISARMAMENT AFF., https://disarmament.unoda.org/timeline-of-laws-in-the-ccw/[https://perma.cc/2SGJ-X47D] (last visited Sep. 10, 2025).

[13] Meeting of the High Contracting Parties to the 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, *Final Rep*., Nov. 13-15, 2019, U.N. Doc. CCW/MSP/2019/9, ¶ 31 (Dec. 13, 2019) [hereinafter CCW, Final Rep., 2019].

they develop complies with international humanitarian law (IHL).[14] The GGE has reiterated these principles multiple times since, including in their work on the rolling text during the first 2025 session.[15] Of course, regardless of the weapon used in armed conflict, compliance with international humanitarian law, termed the law of armed conflict (LOAC) in the United States, is required.[16]

Some states, such as Austria, and NGOs, such as Human Rights Watch (HRW), have called for an outright ban on the development and use of LAWS.[17] They believe that these systems could never comply with the LOAC if used in armed conflict.[18] The International Committee of the Red Cross (ICRC), while not calling for an outright ban, does want to make it illegal to target persons using LAWS.[19] Additionally, their position includes creating "legally binding rules" on states' use of autonomous weapons.[20]

[14] *Id.* at Annex IV ¶ (a). That principle, in full, is "International humanitarian law continues to apply fully to all weapons systems, including the potential development and use of lethal autonomous weapons systems." *Id.*

[15] 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, *Chair's Summary – First 2025 session of the GGE on LAWS*, 3-4 Mar. 2025, U.N. Doc. CCW/GGE.1/2025/WP.1, ¶ 9 (Apr. 7, 2025). The rolling text is a provisional consensus on the work of the GGE and is available at https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2025)/CCW_GGE_LAWS_-_Revised_rolling_text_as_of_12_May_2025.pdf [https://perma.cc/4E7S-5SL7].

[16] *See What is International Humanitarian Law?*, INT'L COMM. OF THE RED CROSS (2004) [hereinafter *What is IHL*]; OFF. OF GEN. COUNS., U.S. DEP'T OF DEF., DEPARTMENT OF DEFENSE LAW OF WAR MANUAL § 3.2 (12 June 2015) (C3, 31 Jul. 2023) [hereinafter LAW OF WAR MANUAL].

[17] SAYLER, *supra* note 3; FEDERAL MINISTRY EUROPEAN AND INTERNATIONAL AFFAIRS REPUBLIC OF AUSTRIA, AUTONOMOUS WEAPONS SYSTEMS (AWS) https://www.bmeia.gv.at/en/european-foreign-policy/disarmament/conventional-arms/autonomous-weapons-systems [https://perma.cc/X6AJ-K4VC] (last visited Aug. 24, 2025); Bonnie Docherty, *Losing Humanity: The Case Against Killer Robots*, HUMAN RIGHTS WATCH, (Nov. 19, 2012), https://www.hrw.org/report/2012/11/19/losing-humanity/case-against-killer-robots [https://perma.cc/K7V6-WELN] [hereinafter *Losing Humanity*].

[18] *See* SAYLER, *supra* note 3; *Losing Humanity*, *supra* note 17.

[19] *Submission on Autonomous Weapon Systems to the United Nations Secretary-General*, INT'L COMM. OF THE RED CROSS (Mar. 19, 2024), https://www.icrc.org/sites/default/files/wysiwyg/war-and-law/icrc_submission_on_autonomous_weapons_to_unsg.pdf [https://perma.cc/BL9F-MW94] [hereinafter ICRC SUBMISSION ON AWS].

[20] *Id.*

In contrast, this article will argue that, at a minimum, LAWS built specifically for object-based targeting can comply with the LOAC, and their use in armed conflict would be lawful. In addition, slowing the ongoing development of LAWS—or ending that development altogether—will place the United States at a strategic disadvantage in competition with China.

Part II of this article identifies the differing definitions of LAWS, including the Department of War's (DoW) definition as articulated in its directives. It will describe some of the legal objections to LAWS put forth by NGOs like the ICRC and Human Rights Watch. Finally, it will argue the strategic imperative for creating and utilizing LAWS, especially considering China's development of such technology.

Part III discusses weapon reviews conducted on new weapons before they are fielded, along with LOAC compliance as applied to object-based targeting. It will discuss some applications and technologies that are already developed, or in development now, which can comply with these requirements.

Part IV concludes that the DoW must be prepared for the wave of autonomy that is coming to defense systems and weapons.[21] DoW attorneys cannot be luddites in the face of AI and its application to weapons. Not only must attorneys understand how AI and autonomy work, they must also be fluent in domestic, treaty, and customary international law to analogize old rules to this new technology. Old rules cannot be roadblocks to new technology when compliance with LOAC principles is possible.

---

[21] *See* Edward Graham, *DoD Official: AI and Autonomy are Critical to the Future of War*, NEXTGOV/FCW (Feb. 23, 2023), https://www.nextgov.com/emerging-tech/2023/02/dod-official-ai-and-autonomy-are-critical-future-war/383263/ [https://perma.cc/8KEW-HJQY]; Charles Pope, *Kendall Details 'Seven Operational Imperatives' & How They Forge the Future Force*, AIR FORCE (Mar. 3, 2022), https://www.af.mil/News/Article-Display/Article/2953552/kendall-details-seven-operational-imperatives-how-they-forge-the-future-force/ [https://perma.cc/JC3L-LE5A] (one imperative being "[d]efining the Next Generation Air Dominance (or NGAD) System of Systems," which will include autonomy in its design. *Id.*). See also Stephen Losey, *US Air Force Eyes Fleet of 1,000 Drone Wingmen as Planning Accelerates*, DEFENSENEWS (Mar. 8, 2023), https://www.defensenews.com/air/2023/03/08/us-air-force-eyes-fleet-of-1000-drone-wingmen-as-planning-accelerates/ [https://perma.cc/9SDV-QCZG] (former U.S. Air Force Secretary Frank Kendall noted that the Air Force would be asking for fiscal year 2024 funds for "the CCA [collaborative combat aircraft] program," one version of an autonomous wingman.).

II. Lethal Autonomous Weapon Systems, Objections, and Strategic Imperatives

A. What Are Lethal Autonomous Weapon Systems (LAWS)?

Before discussing the legal issues involved with utilizing LAWS, we must first understand what is encapsulated by that term. While many definitions exist for LAWS,[22] this article will focus on the DoW's definition. In *Autonomy in Weapon Systems*, which the DoW updated in 2023, an autonomous weapon system is defined as:

> A weapon system that, once activated, can select and engage targets without further intervention by an operator. This includes, but is not limited to, operator-supervised autonomous weapon systems that are designed to allow operators to override operation of the weapon system, but can select and engage targets without further operator input after activation.[23]

---

[22] *See* Michael C. Horowitz, *Why Words Matter: The Real World Consequences of Defining Autonomous Weapons Systems*, 30 TEMP. INT'L & COMP. L.J. 85, 86-87 (2016) (noting at least six different definitions between the DoW, the United Nations, and other researchers).

[23] U.S. DEP'T OF DEF., DIR. 3000.09, AUTONOMY IN WEAPONS SYSTEMS 21 (25 Jan. 2023) [hereinafter DoDD 3000.09]. When discussing LAWS, landmines are usually brought up as an example of LAWS which is already in use today. *Compare ICRC Position and Background Paper: ICRC Position on Autonomous Weapon System*, INT'L COMM. OF THE RED CROSS 5 (12 MAY 2021), https://www.icrc.org/en/document/icrc-position-autonomous-weapon-systems [https://perma.cc/2FUD-GJ7U] [hereinafter ICRC POSITION ON AWS] ("Mines have also been described as crude AWS."), *with* Horowitz, *supra* note 22, at 86 ("This definition adds the processing of information to the definition to describe what the machine is doing, along with the word 'independent' (in the attempt to distinguish AWS from 'automatic' weapons, like landmines, that are merely triggered)."). The distinction is that a landmine does not "select" targets. DoDD 3000.09, at 21. Instead, the operator emplaces a mine and the device "exists in only two states: off or on." Frank Sauer, *An Ethical Mine Field? On Counter-Mobility and Weapon Autonomy*, WAR ON THE ROCKS (Oct. 8, 2024), https://warontherocks.com/2024/10/an-ethical-mine-field-on-counter-mobility-and-weapon-autonomy/. The device "cannot discriminate between legitimate and illegitimate targets, civilians and combatants." *Id.*

Importantly, this definition encompasses systems where a human is "on-the-loop" [24] to override the action of the weapon system if deemed necessary.[25]

When discussing LAWS, it is necessary to understand where the human or operator exists with regard to "the loop." In a traditional weapon system, a human is *in*-the-loop.[26] In its most simplistic terms, for instance, a Soldier aiming and firing their rifle is in-the-loop of the rifle.[27] A remote pilot flying a drone over a battlespace, selecting a target, and then deciding to fire a missile to destroy the target is very much in-the-loop.[28] Even though the operator might fire a precision-guided munition, which flies itself to the target, the human selected the target, selected the munition, and told it to fire.[29]

In a human *on*-the-loop weapon, the human has the opportunity, no matter how minuscule, to intervene in the operation of the weapon.[30] This could include a system like the Super aEgis II, "a gun turret that's able to identify, track and shoot targets," which "will not fire without first

---

[24] "The-loop" refers to the decision-making cycle used to search for, select, and engage targets. *See Losing Humanity*, *supra* note 17. One way to visualize such a loop is through John Boyd's "OODA Loop," which stands for "Observe, Orient, Decide, Act." William C. Marra & Sonia K. McNeil, *Understanding "The Loop": Regulating the Next Generation of War Machines*, 36 HARV. J.L. & PUB. POL'Y 1139, 1144-45 (2013). In the OODA Loop, the actor "*observes* the world around her, gathering data . . . *orients* herself, or interprets the information she has gathered . . . *decides* how to act . . . [and] she *acts*, or executes the decision." *Id.* at 1145 (emphasis in original).
[25] DoDD 3000.09, *supra* note 23.
[26] Paul Scharre & Michael C. Horowitz, *An Introduction to Autonomy in Weapon Systems* 8 (Ctr. for New Am. Sec., Working Paper, 2015) ("Weapon systems that use autonomy to engage individual targets or specific groups of targets that a human has decided are to be engaged.").
[27] *See* Gregory P. Noone & Diana C. Noone, *The Debate Over Autonomous Weapons Systems*, 47 CASE W. RES. J. INT'L L. 25, 28 (2015).
[28] *See* Noone & Noone, *supra* note 27 (most commonly recalling "Predator or Reaper UAVs" *Id.* at 28).
[29] *Id.*; *see* Schmitt, *supra* note 2.
[30] Scharre & Horowitz, *supra* note 26 ("Weapon systems that use autonomy to select and engage targets where a human has not decided those specific targets are to be engaged, but human controllers can monitor the weapon system's performance and intervene to halt its operation if necessary.").

receiving an OK from a human," after selecting its target.[31] Or it could be the intervention by a human to prevent a weapon system from carrying out an attack based on its target selection, such as in the U.S. Patriot and Phalanx anti-missile systems.[32] As mentioned above, this aligns with the DoW's definition for an autonomous weapon system.[33] The DoW's use of autonomy in weapons systems is currently limited to defense-postured weapons.[34]

A human *out*-of-the-loop weapon requires no human intervention once activated or engaged.[35] These systems "use autonomy to select and engage targets where a human has not decided those specific targets are to be engaged, and human controllers cannot monitor the weapon system's performance and intervene to halt its operation if necessary." [36] Autonomous loitering munitions, such as Israel's Harpy, are currently in use in armed conflict.[37] The Harpy is an unmanned aerial vehicle (UAV)

---

[31] Simon Parkin, *Killer Robots: The Soldiers That Never Sleep*, BBC (July 16, 2015), https://www.bbc.com/future/article/20150715-killer-robots-the-soldiers-that-never-sleep [https://perma.cc/QTN6-TZ9C]. "The Super aEgis II can "identify, track and destroy a moving target from a great distance." *Id.* While the manufacturer designed the system to operate without human intervention, in its current configuration, a human operator must give the go-ahead for the weapon to fire on its target. *Id.*

[32] Kenneth Anderson & Matthew C. Waxman, *Law and Ethics for Autonomous Weapon Systems: Why a Ban Won't Work and How the Laws of War Can*, STAN. UNIV., THE HOOVER INST. JEAN PERKINS TASK FORCE ON NAT'L SEC. & LAW ESSAY SERIES 1 (2013).

[33] *See* DoDD 3000.09, *supra* note 23.

[34] For instance, the U.S. Navy has employed the MK 15 Phalanx Close-In Weapon System (CIWS) since 1980 on many of its ships at sea. *MK 15 - Phalanx Close-In Weapon System (CIWS)*, UNITED STATES NAVY (Sept. 20, 2021), https://www.navy.mil/resources/fact-files/display-factfiles/article/2167831/mk-15-phalanx-close-in-weapon-system-ciws/ [https://perma.cc/HCD2-HDG3]. The Phalanx automatically engages missiles, aircraft, and other ships, all without a human in the loop. *Id.* The autonomous system discovers, tracks, and engages the enemy munition. *Id.* A land version, called Counter-Rocket, Artillery, Mortar (C-RAM) Intercept Land-Based Phalanx Weapon System (LPWS), is used by the U.S. Army for similar, autonomous defense on land. *Phalanx Weapon System)*, RAYTHON, https://www.rtx.com/raytheon/what-we-do/sea/phalanx-close-in-weapon-system [https://perma.cc/KY8U-GXPY] (last visited Sep. 17, 2025).

[35] Scharre & Horowitz, *supra* note 26.

[36] *Id.*

[37] *See* Stuart Russell, *AI Weapons: Russia's War in Ukraine Shows Why the World Must Enact a Ban*, NATURE (Feb. 23, 2023), https://www.nature.com/articles/d41586-023-00511-5 [https://perma.cc/3XXY-AAXP].

which loiters in an area programmed into the UAV before launch.[38] Once loitering, it can "seek targets in a designated area, locate and identify their frequency, and autonomously pursue a strike from any direction," without human input or intervention.[39]

Finally, two addenda on humans and "the loop." Throughout the development of LAWS, humans will be involved in the creation and programming of the weapon system.[40] During development is the time to ensure attorneys are engaged with developers and programmers to ensure LOAC compliance.[41] Waiting for a complete system before involving attorneys will likely lead to failure.[42]

Additionally, while LAWS "can select and engage targets without further intervention by an operator,"[43] they must also receive "high-level mission tasking" from the commander or Soldier responsible for the

---

[38] HARPY: ANTI RADIATION LOITERING MUNITION, IAI, https://www.iai.co.il/p/harpy [https://perma.cc/6GFC-XAQU] (last visited Feb. 26, 2023) (advertising itself as "Fully Autonomous" on the manufacturer's website).

[39] *Id.* Expectedly, specific data on the successfulness of the Harpy is not present on the manufacturer's website. *See id.* However, the manufacturer, Israel Aerospace Industries, has previously marketed the Harpy as having "up to 9 hours" endurance, a range of 200 km, and "high hit accuracy." ISRAEL AEROSPACE SYSTEMS HARPY LOITERING MUNITION, Automated Decision Research, https://automatedresearch.org/weapon/israel-aerospace-systems-harpy-loitering-munition/ [https://perma.cc/H57W-HMS9] (last visited Aug. 20, 2025). By contrast, articles have been written about the Harpy being used in conflict, but nothing about a specific instance of a wrongful strike. *See* Matthew Anzarouth, *Robots that Kill: The Case for Banning Lethal Autonomous Weapon Systems*, HARV. POL. REV. (Dec. 2, 2021), https://harvardpolitics.com/robots-that-kill-the-case-for-banning-lethal-autonomous-weapon-systems/ [https://perma.cc/5QMB-9TYQ].

[40] Schmitt, *supra* note 2 ("Either the system designer or an operator would at least have to program the system to function pursuant to specified parameters."); Marco Sassóli, *Autonomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to be Clarified*, 90 INT'L L. STUD. 308, 309 (2014) ("Despite the system's autonomy, human beings will inevitably be involved . . . at least in producing and programming the weapon systems.").

[41] *See infra* Section IV.

[42] *Id.*

[43] DoDD 3000.09, *supra* note 23.

system.[44] Thus, at stages prior to the autonomous weapon's use, humans will very much be designing the loop.[45]

As noted above, regardless of where the human is with respect to the loop, compliance with LOAC in armed conflict is mandatory.[46] In the next section, this article will discuss current objections to LAWS.

B. Major Objections to LAWS

The ICRC is a leading advocate on international humanitarian law issues.[47] They focus on two main prohibitions which they recommend placing in an international agreement regarding LAWS: (1) LAWS must allow for human users to "understand, predict and explain how the AWS will function," specifically when it "will trigger the system to apply force," and (2) LAWS should be prohibited from being "designed or used in such a manner to be triggered by the presence, proximity or contact of one or more persons."[48] The ICRC also calls for restricting the types of targets

---

[44] RONALD C. ARKIN, GOVERNING LETHAL BEHAVIOR IN AUTONOMOUS ROBOTS 150 (2009) (such tasking allows an autonomous weapon system to act commiserate with a commander's intent). The DoW has been working on a networked approached to command and control called Joint All-Domain Command and Control (JADC2). Joseph M. McGiffin, *Mission (Command) Complete: Implications of JDAC2*, JOINT FORCE Q. 113, 2nd Quarter 2024 at 86, 87; *see also* JOHN R. HOEHN, CONG. RES. SERV., IF11493, JOINT ALL-DOMAIN COMMAND AND CONTROL (JADC2) 1 (2022). "DoD envisions a 'system of systems' network" which integrates "joint force C4ISR [Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance] . . . to create a connected battlespace*." Id.,* at 88.

[45] Schmitt, *supra* note 2; Sassóli, *supra* note 40.

[46] *See What is IHL*, *supra* note 16; LAW OF WAR MANUAL, *supra* note 16.

[47] *See International Committee of the Red Cross*, INT'L COMM. OF THE RED CROSS, https://www.icrc.org/en [https://perma.cc/8HGM-XFJ2] (last visited Sep. 16, 2025).

[48] ICRC SUBMISSION ON AWS, *supra* note 19, at 5-6. Because this article does not deal with person-based targeting, it does not rule out that it may one day be possible for LAWS to target persons in an armed conflict. The ICRC has argued in the past that it is unethical to use an autonomous system to target persons: "most agree that an algorithm—a machine process—should not determine who lives or dies." ICRC POSITION ON AWS, *supra* note 23 at 8. However, that position is not grounded in international humanitarian law which considers who is and is not a valid military target, a status essentially, chosen by the actor who is himself a target: someone who chooses to be a Soldier or who directly participates in hostilities chooses to be targetable. *See* LAW OF WAR MANUAL, *supra* note 16, at § 5.5.1 & § 5.8. Thus, the algorithm does not create a person's status, it assesses it. "To target a person is, however, definitely not to render justice or more precisely, it is not a

("to only those which are military objectives by nature"), limiting locations and times of operation, and "the number of engagements that the AWS can undertake," among others.[49] They have been active in the CCW's talks on LAWS and have presented these proposed restrictions to that forum.[50]

The ICRC has previously stated that using LAWS "actually weaken[s] precision and accuracy" in targeting.[51] They rely on the fact that the armed force using LAWS would not necessarily know which targets it will select and destroy.[52] However, others argue the exact counterpoint: that using LAWS will increase precision on the battlefield.[53] The United States has already faced multiple issues of errant strikes with humans in-the-loop.[54]

determination that the person deserves the death penalty, but involves exclusively a categorization of the person (as a combatant) or their conduct (direct participation in hostilities) without any determination of fault or culpability." Sassóli, *supra* note 40, at 332-33. Military necessity, the "justifi[cation] [for] the use of all measures needed to defeat the enemy as quickly and efficiently as possible that are not prohibited by the law of war," determines whether a particular person's targeting is of benefit to the military mission. LAW OF WAR MANUAL, *supra* note 16, § 2.2. So, once a person chooses their status, it is inherent on the LAWS to be able to assess that status and then move through the rest of the LOAC principles to determine if a strike would be lawful.

[49] ICRC SUBMISSION ON AWS, *supra* note 19, at 6.

[50] ICRC POSITION ON AWS, *supra* note 23.

[51] *Id.*

[52] *See id.*

[53] *See* The United States of America, Humanitarian Benefits of Emerging Technologies in the Area of Lethal Autonomous Weapon Systems, Group of Governmental Experts of the High Contracting Parties to the 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, U.N. DOC. CCW/GGE.1/2018/WP.4, ¶ 5 (Apr. 9-13, 2018) [hereinafter CCW, U.S. Comments on Humanitarian Benefits of LAWS, 2018] ("This is especially the case because 'smart' weapons that use computers and autonomous functions to deploy force more precisely and efficiently have been shown to reduce risks of harm to civilians and civilian objects."); Kenneth Anderson, *Why the Hurry to Regulate Autonomous Weapon Systems-but not Cyber-Weapons?*, 30 TEMP. INT'L & COMP. L.J. 17, 30-31 (2016) ("But it is also true that advances in the precision of weapons that might translate into increased discrimination on the battlefield is almost certainly only available through advances in robotics, automation, and machine programming.").

[54] *See* Paul Szoldra, *US Strike that Killed 10 Civilians in Kabul Relied on Intel Search for Ubiquitous 'White Toyota Corolla'*, TASK & PURPOSE (Sept. 17, 2021, 8:44 PM), https://taskandpurpose.com/news/afghanistan-toyota-corolla-kabul-strike/ [https://perma.cc/BN7X-QZEQ] (humans, relying on "'60 pieces of intelligence'" and 8 hours of overhead surveillance, struck a car suspected of being "an imminent threat to U.S.

A desire to improve accuracy, leading to a reduction of harm to civilians who are affected by armed conflict, will drive states to invest heavily in the creation of such technology.[55] Currently, the United States is relying on human-centric processes to reduce civilian harms,[56] whereas human-led design of autonomous weapons will allow for appropriate control of LAWS while adding computer-enabled accuracy to warfare.[57]

Human Rights Watch (HRW), a leading international human rights organization,[58] appeared to go further than the ICRC in 2012 by calling for a complete ban on "the development, production, and use of fully autonomous weapons," among other restrictions.[59] This would prohibit not just those LAWS which are built to target humans, like the ICRC's position,[60] but also LAWS which are designed and operated to conduct object-based targeting.[61]

---

forces" which actually resulted in the death of "as many as 10 civilians"); Peter Margulies, *CENTCOM Report on the Kunduz Hospital Attack: Accounting for a Tragedy of Errors*, LAWFARE (May 2, 2016, 3:48 PM), https://www.lawfareblog.com/centcom-report-kunduz-hospital-attack-accounting-tragedy-errors [https://perma.cc/MW85-V8EB] (when trying to provide air support to ground forces, an AC-130U crew mistakenly fired on a civilian hospital in Kunduz, Afghanistan; the error occurred due to miscommunication between personnel on the ground and in the aircraft).

55 Anderson, *supra* note 53, at 34 (for instance, investment has already occurred in multiple defensive autonomous weapon systems, such as the Iron Dome over Israel, which demand precision and accuracy to be effective).

56 *See generally*, U.S. DEP'T OF DEF., CIVILIAN HARM MITIGATION AND RESPONSE ACTION PLAN (CHMR-AP) (Aug. 25, 2022) (establishing committees and personnel positions aimed at mitigating civilian harm).

57 *See* Schmitt, *supra* note 2; Sassóli, *supra* note 40.

58 *Human Rights Watch*, MACARTHUR FOUNDATION (last visited Sep. 10, 2025), https://www.macfound.org/grantee/human-rights-watch-2172/ [https://perma.cc/2NYB-F8AH].

59 *Compare* ICRC SUBMISSION ON AWS, *supra* note 19 ("While these obligations do not necessarily demand direct human control over the weapon system itself at all stages of its deployment and use and therefore do not prohibit all AWS in all circumstances"), *with Losing Humanity*, *supra* note 17 (these restrictions include "laws and policies to prohibit the development, production, and use of fully autonomous weapons").

60 This article does not deal with person-based targeting. Such targeting involves different complications than object-based targeting and its issues have been highlighted by many scholars, including those who appear to lean in favor of utilizing LAWS. *See* Austin Wyatt & Jai Galliott, *Proposing a Regional Normative Framework for Limiting the Potential for Unintentional or Escalatory Engagements with Increasingly Autonomous Weapon Systems*, *in* LETHAL AUTONOMOUS WEAPONS 259, 264 (Jai Galliott, Duncan MacIntosh & Jens David Ohlin, eds., 2021).

61 *See Losing Humanity*, *supra* note 17.

HRW's more recent paper, *A Hazard to Human Rights*, appears to be more in line with ICRC's position, calling for a prohibition against "weapons systems that inherently operate without meaningful human control or that target people."[62] Since they base their discussion on "human rights," the paper does not directly discuss object-based targeting, which this article advocates.[63]

Additionally, HRW has declared that once a state has autonomous weapons, it will be required to employ those weapons to comply with the LOAC principle of necessity, as they will be superior to any other weapon.[64] This is a misapplication of the law and a poor representation of the principle of necessity, which does not require an armed force to utilize a particular weapon in its arsenal.[65] Instead, it allows for "destroying . . . property"[66] by "us[ing] all measures needed to defeat the enemy as quickly and efficiently as possible that are not prohibited by the law of war."[67] Thus, it does not *require* the use of a particular weapon; it *allows* for the use of a weapon that has not already been prohibited by the law of war.[68]

The ICRC's position that LAWS will lead to imprecision in targeting is simply unsupported.[69] The call for regulation by the ICRC and HRW is unnecessary because there is a requirement for all weapons to abide by

[62] Human Rights Watch & International Human Rights Clinic, *A Hazard to Human Rights: Autonomous Weapons Systems and Digital Decision-Making* 1 (Apr. 2025), https://www.hrw.org/sites/default/files/media_2025/04/arms0425%20web.pdf [https://perma.cc/34AZ-PARP] [hereinafter *A Hazard to Human Rights*].

[63] *See generally A Hazard to Human Rights*, *supra* note 62.

[64] *Losing Humanity*, *supra* note 17 (Again quoting Armin Krishnan, "'Once [autonomous weapons] are widely introduced, it becomes a matter of military necessity to use them, as they could prove far superior to any other type of weapon.' He argues such a situation could lead to armed conflict dominated by machines, which he believes could have 'disastrous consequences.'").

[65] *Compare* LAW OF WAR MANUAL, *supra* note 16, at § 2.2; *with id.* at § 14.9.2.

[66] *Id.* at § 2.2.1.

[67] *Id.* at § 2.2. The *Law of War Manual* specifically addresses this issue in the chapter on *Air and Space Warfare*. *Id.* at Ch. XIV. There it states, "there is no law of war requirement to use precision-guided weapons when non-precision-guided weapons may be used in compliance with the law of war." *Id.* at § 14.9.2 (internal citations omitted).

[68] *Id.* at § 2.2. "The selection of weapons may be among the available precautions that a commander could take in order to reduce the risk of harm to the civilian population." *Id.* at § 14.9.2.

[69] *Compare* ICRC POSITION ON AWS, *supra* note 23, *with* CCW, U.S. Comments on Humanitarian Benefits of LAWS, 2018, *supra* 53, at ¶ 5.

IHL.[70] The United States has not adopted these viewpoints, and both the ICRC and HRW fail to make legal arguments that should halt the United States' development of LAWS.[71] Object-based targeting, as this article addresses, is possible within the bounds of the LOAC. Signing a legally binding agreement that would restrict the development of LAWS would put the United States at a disadvantage in its strategic competition with China.

C. The Strategic Imperative to Create LAWS

According to at least one China scholar, China's rise and its goal of challenging the United States has been going on for many years, but the United States, at least since President Richard Nixon's administration, has been blind to the potential challenge.[72] However, "by 2014, U.S. government officials were telling Congress there was just such a new pattern of assertiveness" by China.[73]

President Donald Trump has "committed to ensuring that the United States military possesses the most lethal warfighting capabilities in the world."[74] This is in response to "adversaries like China . . . rapidly advancing their own military technologies," with the president calling for "cutting-edge capabilities [for] our Armed Forces."[75]

---

[70] *See What is IHL*, *supra* note 16; LAW OF WAR MANUAL, *supra* note 16, at § 3.2.

[71] *See* Bureau of Arms Control, Deterrence, and Stability, *Political Declaration on Responsible Military Use of Artificial Intelligence and Autonomy*, U.S. DEPARTMENT OF STATE (Feb. 16, 2023), https://www.state.gov/political-declaration-on-responsible-military-use-of-artificial-intelligence-and-autonomy/ [https://perma.cc/8KA5-9FT2].

[72] *See generally* MICHAEL PILLSBURY, THE HUNDRED YEAR MARATHON (2015).

[73] *Id.* at 209; *see also* U.S. DEP'T OF DEF., QUADRENNIAL DEFENSE REVIEW 2014, at 6 ("In the coming years, countries such as China will continue seeking to counter U.S. strengths using anti-access and area-denial (A2/AD) approaches and by employing other new cyber and space control technologies.").

[74] Exec. Order No. 14265, 90 Fed. Reg. 15621 (Apr. 9, 2025).

[75] *Fact Sheet, President Donald J. Trump Modernizes Defense Acquisitions and Spurs Innovation in the Defense Industrial Base*, WHITE HOUSE (Apr. 9, 2025), https://www.whitehouse.gov/fact-sheets/2025/04/fact-sheet-president-donald-j-trump-modernizes-defense-acquisitions-and-spurs-innovation-in-the-defense-industrial-base/ [https://perma.cc/48NW-N9TB]. Former-President Joseph Biden's National Security Strategy was similarly focused on China as a challenge to domestic security and international stability. WHITE HOUSE, NATIONAL SECURITY STRATEGY (Oct. 2022).

Secretary of War Pete Hegseth has focused his Department on "deter[ing] aggression in the Indo-Pacific by Communist China,"[76] referring to "'our pacing threat in the Indo-Pacific.'"[77] While directing his Department to draft a National Defense Strategy,[78] Secretary Hegseth has spoken about the President's budget request to Congress, comparing the Department's request for funds to rebuild the Department's advantage against a China that has "carried out an unprecedented military buildup."[79] To rebuild and face the "threats . . . in the Indo-Pacific,"[80] the President is seeking funding for "rapidly fielding emerging technology and new weapons to warfighters,"[81] including "autonomous weapons [and] long range drones."[82]

The DoW has previously worked to ensure that the United States is prepared for the next fight, so our adversaries understand that the benefits of aggression are outweighed by the potential detriments of aggression (*i.e*., the juice isn't worth the squeeze).[83] This is similar to current DoW efforts to achieve "Peace Through Strength."[84]

China has been developing autonomous weapons of its own.[85] They are "the world's largest exporter of military drones," and are working on

---

[76] Memorandum from Sec'y of Def. to All Dep't of Def. Personnel, subject: Message to the Force (Jan. 27, 2025) (on file with the author).

[77] C. Todd Lopez, *Hegseth says Shipbuilding, Golden Dome, Nuclear Deterrence Make up DoD Budget Request for Billions in Funding*, DOD NEWS (Jun. 12, 2025) (quoting Secretary Hegseth's statement to Congress), https://www.defense.gov/News/News-Stories/Article/Article/4213571/hegseth-says-shipbuilding-golden-dome-nuclear-deterrence-make-up-dod-budget-req/ [https://perma.cc/44GK-S59G].

[78] *Statement on the Development of the 2025 National Defense Strategy*, U.S. DEP'T OF DEF. (May 2, 2025), https://www.defense.gov/News/Releases/Release/Article/4172735/statement-on-the-development-of-the-2025-national-defense-strategy/ [https://perma.cc/7SWC-8T77].

[79] DEP'T OF DEF., *Defense Secretary Pete Hegseth Provides Testimony Before the Senate Appropriations Committee*, at 40:15-40:20 (YouTube, June 11, 2025), https://www.youtube.com/watch?v=XqTb4VyekD8 [https://perma.cc/926S-EHU] [hereinafter *SECDEF Senate Testimony*].

[80] *Id.* at 1:03:34-1:05:57.

[81] Lopez, *supra* note 77.

[82] *SECDEF Senate Testimony*, *supra* note 79, at 41:12-41:23.

[83] U.S. DEP'T OF DEF., 2022 NATIONAL DEFENSE STRATEGY OF THE UNITED STATES OF AMERICA at 1 [hereinafter NATIONAL DEFENSE STRATEGY].

[84] *Statement on the Development of the 2025 National Defense Strategy*, *supra* note 78.

[85] U.S. DEP'T OF DEF., MILITARY AND SECURITY DEVELOPMENTS INVOLVING THE PEOPLE'S REPUBLIC OF CHINA 2024 at 26.

a system "where an autonomous aircraft flies in a team alongside a crewed aircraft." [86] Although China has been the Pentagon's focus, [87] past wargames playing out a Chinese invasion of Taiwan are unclear on whether the United States could repel such an invasion, and do not indicate that a victory for the United States would be quick.[88] These exercises highlight the need for the United States to develop technologically advanced weapons, including LAWS, to level the battlefield.[89]

In a fight with China, it is reasonable to conclude that communications will be degraded, and UAV pilots will not be able to pilot their drones from far away.[90] Autonomous drones can work alongside a traditional

---

[86] Jacob Stokes, *Military Artificial Intelligence, the People's Liberation Army, and U.S.-China Strategic Competition*, CENTER FOR A NEW AMERICAN SECURITY 4 (Feb. 1, 2024), https://www.cnas.org/publications/congressional-testimony/military-artificial-intelligence-the-peoples-liberation-army-and-u-s-china-strategic-competition [https://perma.cc/9Y5X-U59V].

[87] *See* NATIONAL DEFENSE STRATEGY, *supra* note 83.

[88] *See generally* Helen Davidson, *Malfunctions, Overreactions and a Steep Learning Curve: Wargaming a Chinese Attack on Taiwan*, THE GUARDIAN (June 17, 2025, at 21:08 ET), https://www.theguardian.com/world/2025/jun/18/taiwan-war-games-china-attack [https://perma.cc/XB7B-53QT]; Ritu, Sharma, *China Scores 8 Victories Against US, Japanese Troops; US-Held Wargames Give Decisive Edge to Beijing*, THE EURASIAN TIMES (Mar. 4, 2024), https://www.eurasiantimes.com/12-us-china-wargames-over-taiwan-give-decisive-edge/ [https://perma.cc/7URE-8X9M]; MARK F. CANCLAN, MATTHEW CANCLAN & ERIC HEGINBOTHAM, THE FIRST BATTLE OF THE NEXT WAR: WARGAMING A CHINESE INVASION OF TAIWAN, (2023); STACIE PETTYJOHN, BECCA WASSER & CHRIS DOUGHERTY, DANGEROUS STRAITS: WARGAMING A FUTURE CONFLICT OVER TAIWAN (2022).

[89] One exercise, held in 2018, relied on the Next Generation Air Dominance (NGAD) fighter. Valerie Insinna, *A US Air Force War Game Shows What the Service Needs to Hold Off—Or Win Against—China in 2030*, DEFENSE NEWS (Apr. 12, 2021), https://www.defensenews.com/training-sim/2021/04/12/a-us-air-force-war-game-shows-what-the-service-needs-to-hold-off-or-win-against-china-in-2030/ [https://perma.cc/Y6FN-5M8M]. The NGAD is still in development, with a U.S. Air Force contract for development going to Boeing in 2025, with hopes of developing the aircraft "in the next decade." Thomas Newdick, *Boeing Wins F-47 Next Generation Air Dominance Fighter Contract (Updated)*, TWZ (Mar. 22, 2025), https://www.twz.com/air/boeing-wins-air-forces-next-generation-air-dominance-fighter-contract [https://perma.cc/R58V-VCBK]. The NGAD is expected to be the centerpiece of a system of aircraft with "high degrees of autonomy." *Id.*

[90] *See* Paul Scharre, *Centaur Warfighting: The False Choice of Humans vs. Automation*, 30 TEMP. INT'L & COMP. L.J. 151, 163 (2016) ("The current 'remotely piloted' model where high-definition full motion video is streamed from uninhabited systems forward in the battlespace back to remote human controllers is both impossible in contested environments and unnecessary.").

aircraft, like the Next Generation Air Dominance (NGAD) fighter, which still has a human at the controls.[91]

To ensure the United States is ready for a future fight, as stated by the most recent National Defense Strategy, the DoW must engage "militarily-relevant capabilities in trusted artificial intelligence and autonomy . . . and speed their delivery to the warfighter."[92] The DoW's own research arm (and those of its Services) should be developing these technologies on their own, or partnered with industry, to ensure they are fielded before or on par with China, which has called for a ban on using fully autonomous weapon systems, but not on developing them.[93]

III. Applying the Law of Armed Conflict to LAWS via Object-Based Targeting

As mentioned above, all armed forces must comply with the LOAC when in armed conflict.[94] Article 36 of Additional Protocol I (AP I) to the 1949 Geneva Conventions requires that, prior to fielding a new weapon, states must ensure those weapons will not "be prohibited by [AP I] or by any other rule of international law."[95] The United States, which is not a

[91] *See* Newdick, *supra* note 89.
[92] NATIONAL DEFENSE STRATEGY, *supra* note 83, at 19
[93] Brian Stauffer, *Stopping Killer Robots: Country Positions on Banning Fully Autonomous Weapons and Retaining Human Control*, HUMAN RIGHTS WATCH (Aug. 10, 2020), https://www.hrw.org/report/2020/08/10/stopping-killer-robots/country-positions-banning-fully-autonomous-weapons-and/ [https://perma.cc/BD4Q-6G3Z]. China has called for developing "ethical norms" for technology development in this area. CHINA, WORKING PAPER OF THE PEOPLE'S REPUBLIC OF CHINA ON LETHAL AUTONOMOUS WEAPONS SYSTEMS 4 (Jul. 2022), available at https://documents.unoda.org/wp-content/uploads/2022/07/Working-Paper-of-the-Peoples-Republic-of-China-on-Lethal-Autonomous-Weapons-Systems%EF%BC%88English%EF%BC%89.pdf [https://perma.cc/77Q9-G4MR] (implying that China does not intend to stop its own development of AI technology, to include lethal autonomous weapons).
[94] *See What is IHL*, *supra* note 16; LAW OF WAR MANUAL, *supra* note 16.
[95] Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Additional Protocol I) art. 36, June 8, 1977, 1125 U.N.T.S. 3 [hereinafter AP I]. ("In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.").

party to AP I, reviews its new weapons in accordance with its own internal regulation,[96] which was established prior to the adoption of AP I.[97] This ensures a weapon, by its nature, will not violate the LOAC.[98] Once a weapon is fielded, it is incumbent on the user (and the commander directing the weapon's use) to ensure compliance with the LOAC by

---

[96] U.S. DEP'T OF DEF., DIR. 2311.01, DOD LAW OF WAR PROGRAM para. 1.2(d) (July 2, 2020) [hereinafter DoDD 2311.01] ("It is DoD policy that: . . . The intended acquisition, procurement, or modification of weapons or weapon systems is reviewed for consistency with the law of war.").

[97] W. Hays Parks, *Means and Methods of Warfare*, 38 GEO. WASH. INT'L L. REV 511, 516 (2006) ("Although the United States is not a State Party to Additional Protocol I, its weapons review program preceded by three years the requirement, adopted in Article 36.") (some scholars have stated that Article 36 is recognized as customary international law by the United States); Wing Commander Duncan Blake & Lieutenant Colonel Joseph S. Imburgia, *"Bloodless Weapons"? The Need to Conduct Legal Reviews of Certain Capabilities and the Implications of Defining Them as "Weapons"*, 66 A.F. L. REV. 157, 157 (2010); Major Graham H. Todd, *Armed Attack in Cyberspace: Deterring Asymmetric Warfare with an Asymmetric Definition*, 64 A.F. L. REV. 65, 80 (2009); LAW OF WAR MANUAL, *supra* note 16, at § 6.2.3 (The DoW's Law of War Manual, the "(DoD)-wide resource for DoD personnel . . . on the law of war," only states that the "DoD policy and practice of conducting legal reviews of weapons preceded this AP I provision."); in a memorandum directed to the Secretary of Defense, the Joint Chiefs of Staff reviewed AP I in 1985 and provided comments on each article. Memorandum from Joint Chiefs of Staff to Sec'y of Def., subject: Review of the 1977 First Additional Protocol to the Geneva Conventions of 1949 (3 May 1985) [hereinafter JCS Review of AP I Memo]. Regarding Article 36, the memo simply states, "The United States already conducts such reviews, and this article would cause no problems for this country." *Id.* at app. 26. In other areas, however, the memo describes whether the law or requirement already exists elsewhere; for instance, for Article 37, the memo states, "The clarification of existing law in Article 37 is both accurate and helpful from a military standpoint." *Id.* at app. 27. Thus, it could be concluded that if Article 36 were customary international law by 1985, the memo would have said as such. Finally, even W. Hays Parks, a well-regarded U.S. attorney on law of war issues, in an 88-page analysis of weapons reviews never concluded that Article 36 was customary international law. *See* W. Hays Parks, *Conventional Weapons and Weapons Reviews*, 8 YEARBOOK OF INT'L HUMAN L. 55 (2005). Instead, his article provides an analysis of the obligations to be considered in a weapons review, stemming all the way back to "Article 1 of Hague Convention II with Respect to the Laws and Customs of War on Land of 29 July 1899." *Id.* So, it is this author's opinion that Article 36 has not yet become customary international law.

[98] Parks, *Means and Methods of Warfare*, *supra* note 97, at 517 n.25 (While the weapon may not, by its nature, violate the LOAC, this tenet does not mean that a combatant could not use the weapon in a way that violates the LOAC. As Parks describes, "'In determining legality, a State is not required to foresee or anticipate all possible uses or misuses of a weapon, for almost any weapon can be misused in ways that might be prohibited. A soldier armed with a handgun may murder an innocent civilian or a prisoner of war in his or her custody.'").

applying the principles of necessity, humanity, proportionality, distinction, and honor.[99]

A. Legal Reviews of New Weapons

Before the United States employs a new weapon in armed conflict, the weapon must first pass a legal review.[100] The DoW requires that "[t]he intended acquisition, procurement, or modification of weapons or weapon systems is reviewed for consistency with the law of war."[101] Each of the military services has implemented this requirement via regulations that require the submission of new weapon acquisitions (or acquisitions of modifications to weapons) to legal review.[102] The services require the same review for weapons being developed within the service.[103]

Weapons reviews should cover three main issues: whether the weapon or weapon system complies with international law (ensuring there is no specific prohibition on the weapon or weapon system), whether the weapon or weapon system employs "projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering," and whether the weapon is "of a nature to be indiscriminate."[104] Since there are currently no obligations under treaty or domestic law to refrain from using LAWS, the first question is not stalled due to the

---

[99] *See What is IHL*, *supra* note 16 (describing restrictions on the use of weapons and tactics); LAW OF WAR MANUAL, *supra* note 16.
[100] DoDD 2311.01, *supra* note 96.
[101] *Id.* at 4.
[102] *See generally* U.S. DEP'T OF ARMY, REGUL. 27-53, LEGAL REVIEW OF WEAPONS AND WEAPON SYSTEMS, para. 1 (23 Sept. 2019) [hereinafter AR 27-53]; U.S. DEP'T OF NAVY, SEC'T OF NAVY INSTR. 5000.2G, DEPARTMENT OF THE NAVY IMPLEMENTATION OF THE DEFENSE ACQUISITION SYSTEM AND THE ADAPTIVE ACQUISITION FRAMEWORK enclosure 18 (8 Apr. 2022) [hereinafter SECNAVINST 5000.2G]; U.S. DEP'T OF AIR FORCE, INSTR. 51-401, THE LAW OF WAR 9-10 (3 Aug. 2018) [hereinafter AFI 51-401].
[103] AR 27-53, *supra* note 102, para. 4.f.(1); SECNAVINST 5000.02G, *supra* note 102, enclosure 18, para. 2.a.; AFI 51-401, *supra* note 102, para. 2.1.2.1.
[104] William H. Boothby, *Regulating New Weapon Technologies*, *in* NEW TECHNOLOGIES AND THE LAW OF WAR AND PEACE 16, 18-22 (William H. Boothby, ed., 2019.; *see also* AFI 51-401, *supra* note 102, para. 7 (laying out the contents of a U.S. Air Force legal review of a weapon, which includes consideration of international and domestic law, whether the weapon "is calculated to cause unnecessary suffering or unnecessary injury," and "whether the weapon . . . is capable of being directed against a specific military objective").

autonomous nature of the weapon.[105] This remains true as long as LAWS are not incorporated into to a weapon which is already banned by treaty, such as chemical weapons.[106] Provided that a previously banned weapon is not coupled with autonomy, the review can move on to the next question.

The second issue is the requirement that states not use weapons that will "cause superfluous injury or unnecessary suffering."[107] While states have not agreed to a particular definition of unnecessary suffering, the United States looks at whether "the injury caused is considered . . . disproportionate to the military necessity for it, that is, the military advantage to be gained from its use."[108] However, as an autonomous weapon system is not likely to be a new weapon itself, but rather the application of autonomy and artificial intelligence to a preexisting weapons system, the weapon should continue to not inflict "superfluous injury or unnecessary suffering" (that is, it is likely that a weapon which is already approved for use in armed conflict will be added to LAWS or have autonomy applied to the weapon).[109] So, where an autonomous system "can select and engage targets without further intervention by an operator,"[110] the restriction on unnecessary suffering is not violated due to the autonomy.[111]

The third issue is whether the weapon is indiscriminate.[112] Distinction, one of the LOAC principles, requires that belligerents "distinguish

[105] *See* Bonnie Docherty & Mary Wareham, *Latin America and Caribbean Nations Rally Against Autonomous Weapons Systems*, JUST SEC. (Mar. 6, 2023), https://www.justsecurity.org/85369/latin-america-and-caribbean-nations-rally-against-autonomous-weapons-systems/ [https://perma.cc/QGZ8-76CX] (discussing a 2023 meeting of Latin American and Caribbean States which ended with a "push to prohibit and regulate autonomous weapons systems" adopted by "over 30 States").

[106] *See generally* Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction art I, *opened for signature* Jan. 13, 1992, 97 T.I.A.S. 525, 1975 U.N.T.S. 45 (setting forth the obligations of state parties to refrain from chemical weapon development and use in wartime).

[107] Boothby, *supra* note 104, at 19.

[108] Parks, *Means and Methods of Warfare*, *supra* note 97, at 517 n.25.

[109] *See* Schmitt, *supra* note 2; *see also* Anderson & Waxman, *supra* note 32, at 5-8, 10.

[110] DoDD 3000.09, *supra* note 23.

[111] The requirement to refrain from causing superfluous injury or unnecessary suffering cannot be applied to objects. *See* Boothby, *supra* note 104, at 20. When a weapon designed to attack object may cause second- and third-order effects which may cause superfluous injury or unnecessary suffering to persons, those issues are analyzed under the LOAC principle of humanity; *see infra* Section III.B.2.

[112] Boothby, *supra* note 104, at 20.

principally between the armed forces and the civilian population, and between unprotected and protected objects."[113] Essentially, civilians are not to be made the "object of [an] attack,"[114] only the armed forces and objects that qualify as military objects based on their "nature, location, purpose, or use."[115] Thus, an autonomous weapon that cannot distinguish between valid military objectives (or targets) would fail on this issue, and it would not be permissible to field the weapon.[116] But if it can, the weapon would pass the legal review.[117]

During development and before fielding, DoW policy will require a legal review of LAWS.[118] So long as the weapon used is not already banned by treaty, it does not cause superfluous injury, and is able to comply with distinction, the LAWS will pass the legal review in the United States. Once fielded, it is incumbent on the commander employing that LAWS to ensure that the system continues to comply with the LOAC.[119]

B. The Principles of the Law of Armed Conflict

When a new weapon passes the legal review requirement, its use in armed conflict is still governed by the LOAC.[120] The principles of necessity, humanity, proportionality, distinction, and honor "provide the

[113] LAW OF WAR MANUAL, *supra* note 16, at § 2.5; *see* Boothby, *supra* note 104, at 20 ("The latter principle requires parties to the conflict at all times to . . . direct their military operations against combatants and military objectives.").
[114] LAW OF WAR MANUAL, *supra* note 16, at § 2.5.2.
[115] *Id.* at § 5.6.3 (citation omitted).
[116] Boothby, *supra* note 104, at 21 (failure could occur "either because they cannot be directed at a specific military objective or because their effects cannot be limited, essentially do not distinguish as required by the principle of distinction").
[117] The issue of LAWS distinguishing between valid military objectives is discussed *infra* III.B.4.
[118] DoDD 3000.09, *supra* note 23.
[119] *See* Schmitt, *supra* note 2, at 33-34 (arguing that concerns regarding lack of accountability for commanders employing fully autonomous weapons are assuaged by U.S. military policy); Boothby, *supra* note 104, at 21 ("The indiscriminate weapons principle [in the weapon review] is concerned with the inherent nature or characteristics of the weapon and not with its use on a particular occasion."); LESLIE C. GREEN, THE CONTEMPORARY LAW OF ARMED CONFLICT 309-10 (3d ed. 2008).
[120] *See What is IHL*, *supra* note 16 (detailing how restrictions on weapons and tactics are continuous under international humanitarian law); LAW OF WAR MANUAL, *supra* note 16, at § 3.2 (listing situations to which the law of war applies).

foundation for the specific law of war rules."[121] These principles assist in analyzing whether an engagement complies with the LOAC.[122] Each principle will be discussed below alongside a discussion of how an object-based targeting LAWS could comply, within certain parameters, with those principles, starting with necessity.[123]

1. Necessity

Necessity, sometimes referred to as "military necessity," is "the principle that justifies the use of all measures needed to defeat the enemy as quickly and efficiently as possible that are not prohibited by the law of war."[124] This does not mean that any action whatsoever which might lead to a military advantage for one side is permissible in armed conflict.[125] For instance, in *The Hostage Case* from the post-World War II tribunals, it was noted that "[d]estruction as an end in itself is a violation of international law. There must be some reasonable connection between the destruction of property and the overcoming of the enemy forces."[126] States in armed conflict are obligated to "consider[] military factors" when deciding what to target.[127] Another way to look at necessity is that the targeting of the object must "offer[] a definite military advantage."[128] So,

---

[121] LAW OF WAR MANUAL, *supra* note 16, at § 2.1.2.

[122] *Id.* ("Legal principles, however, are not as specific as rules, and thus interpretations of how principles apply to a given situation may vary.").

[123] Importantly for the argument in favor of LAWS, a given weapon system does not have to be able to operate ethically in all environments, against all enemies, so long as it is not programmed or designed to violate the LOAC at the outset. *See* Anderson & Waxman, *supra* note 32, at 6. "It is a mistake, when imagining legal or ethical issues of autonomous weapons, to start with the most difficult operational environment, for which a lawful fully autonomous weapon would be the hardest (if even possible) to design." *Id.*, at 6. Rather, LAWS analysis should start where designers are capable of programming compliance and commanders can ensure they abide by the LOAC and work towards more difficult operating environments in the future. *Id.*, at 7.

[124] LAW OF WAR MANUAL, *supra* note 16, at § 2.2.

[125] See Michael N. Schmitt, *Military Necessity and Humanity in International Humanitarian Law: Preserving the Delicate Balance*, 50 VA. J. INT'L L. 795, 796-98 (2010).

[126] *Id.* at 797 (quoting United States v. List (The Hostage Case), Case No. 7 (Feb. 19, 1948), *reprinted in* 11 TRIALS OF WAR CRIMINALS BEFORE THE NUREMBERG MILITARY TRIBUNALS UNDER CONTROL COUNCIL LAW NO. 10, at 1230 (1950)).

[127] *Id.* at 799.

[128] *Id.* at 803 (quoting AP I, *supra* note 95, art. 51(3)).

LAWS must be able to find a target and then assess whether its destruction provides an advantage to its side.[129]

In object-based targeting, there already exist limitations on the LAWS' autonomy based on its programming.[130] The weapon system is not permitted to go anywhere and destroy anything; it still must operate within the confines of what its programming allows. So, a commander could decide that a specific area includes targets which, if destroyed, would help to "defeat the enemy as quickly and efficiently as possible."[131] Then, they could authorize the LAWS to operate within a geographic footprint that is specific to that area (say, an enemy military base). Additionally, such LAWS could be designed to only target and destroy objects that, by their nature, are military objects.[132] Thus, the commander would have evaluated the military necessity for destroying targets within a certain geographic area, satisfying this principle.

2. Humanity

Humanity can be considered "the logical inverse of the principle of military necessity."[133] It "seeks to limit the suffering and destruction incident to warfare," countering necessity's implication that suffering and destruction are part of warfare.[134] Not only the suffering of civilians, but also the suffering of the armed forces of a state.[135]

For instance, it may be within the bounds of militarily necessity to shoot an enemy combatant on sight to prevent him from shooting at an

---

[129] *See* Benjamin Kastan, *Autonomous Weapons Systems: A Coming Legal "Singularity"?*, 45 J. L., TECH. & POL'Y 45, 58 (2013) ("The destruction of enemy forces and materiel generally would meet this test; therefore, the question of whether an AWS could meet the requirements of military necessity becomes a question of whether it can meet the requirements of discrimination.").

[130] *See* Schmitt, *supra* note 2 Sassóli, *supra* note 40, at 309.

[131] LAW OF WAR MANUAL, *supra* note 16, at § 2.2.

[132] *See id.* at § 5.6 ("Certain classes of persons and objects are categorically recognized as military objectives.").

[133] *Id.* at § 2.3.1.1; *see* Schmitt, *supra* note 125, at 798 ("Rather, IHL represents a carefully thought out balance between the principles of military necessity and humanity.").

[134] Schmitt, *supra* note 125, at 796 ("In this central role, military necessity exists in equipoise with the principle of humanity.").

[135] *Id.* at 799. "The principle of humanity, which operates to protect the population (whether combatants or noncombatants) and its property, advances this imperative." *Id.*

infantry platoon making their way to an objective. Because he is identified as a member of the enemy armed force, he is a legitimate target in the initial shooting.[136] However, if he is not killed by the shot, but instead is injured and unable to continue the fight (making him *hors de combat*), he cannot then be shot again.[137] This is inherent in the principle of humanity.[138]

Additionally, humanity prohibits purposely causing the unnecessary suffering of an enemy,[139] as well as the use of weapons that are indiscriminate.[140] As discussed above, both of these issues must first be addressed in the weapon review before fielding a new or altered weapon.[141] However, a weapon could pass the review stage as not causing unnecessary suffering or being indiscriminate but still be used in violation of the LOAC, such as when a combatant purposefully uses a pistol against a civilian.[142] Thus, the commander ordering an attack and the combatant using the weapon must still ensure compliance with the LOAC.[143] Finally, those weapons that are generally designed to attack objects and not persons are not likely to cause unnecessary suffering.[144]

With this in mind, LAWS should not have an issue complying with the LOAC principle of humanity. As this article speaks to specifically, creating LAWS that only target military objects rather than persons will remove much of the concern of unnecessary suffering.[145] When a strike intends to destroy enemy tanks or parked aircraft, the weapon employed,

---

[136] LAW OF WAR MANUAL, *supra* note 16, at § 4.4 (stating "combatants . . . are liable to being made the object of attack by enemy combatants.").
[137] *Id.* at § 5.9.4. "*Hors de combat* is a French phrase that means 'out of the battle.' It is generally used as a term of art to mean persons who may not be made the object of attack because they are out of the fighting and who therefore must be treated humanely." *Id.* at § 5.9.1.
[138] *Id.* at § 2.3.1. While wrapped in the principle of humanity, attacking an enemy combatant who is placed *hors de combat* also fails the necessity test: it is no longer militarily necessary to continue to injure or to kill a combatant who is out of the fight. *Id.*
[139] *Id.* at § 2.3.
[140] *Id.* at § 2.3.2 ("Humanity animates certain law of war rules, including . . . prohibitions on weapons that are inherently indiscriminate.").
[141] *See supra* Section III.A.
[142] *See* Parks, *Means and Methods of Warfare*, *supra* note 97, at 517 n.25 ("'The fact that a pistol was used to perpetrate the crime does not transform an otherwise lawful weapon into an illegal weapon.'").
[143] *See* Schmitt, *supra* note 2.
[144] *See* Boothby, *supra* note 104, at 20.
[145] *See id.*

whether a precision-guided munition or even an unguided bomb, is not "of a nature to cause superfluous injury or unnecessary suffering."[146]

3. Proportionality

Proportionality is about weighing the costs or harms to civilians against the gains to be had by the attacking military.[147] Militaries must "refrain from attacks in which the expected [civilian] harm incidental to such attacks would be excessive in relation to the concrete and direct military advantage anticipated to be gained."[148] Said another way, "it is not permissible to do 'any mischief which does not tend materially to the end [of victory], nor any mischief of which the conduciveness to the end is slight in comparison with the amount of the mischief.'"[149] Does the military advantage to be gained outweigh the loss of civilian life or infrastructure?

When considering proportionality, a commander or combatant determines that there is a military necessity to destroy[150] the object in question.[151] However, proportionality restricts which weapon or what type of weapon the combatant can use against the target, based on its effect.[152] Certainly, a nuclear weapon could destroy any target, and a bullet from a rifle would likely not harm any building; but the calculus must be made as to which weapon will have the right effect on the target with no greater effect on civilians or civilian objects (collateral damage) than the

---

[146] *Id*. at 19
[147] LAW OF WAR MANUAL, *supra* note 16, at § 2.4.
[148] *Id.* at § 2.4.1.2.
[149] MICHAEL WALZER, JUST AND UNJUST WARS: A MORAL ARGUMENT WITH HISTORICAL ILLUSTRATIONS 128-29 (5th ed. 2015) (*quoting* HENRY SIDGWICK, THE ELEMENTS OF POLITICS 254 (1891)).
[150] Or to capture the object. LAW OF WAR MANUAL, *supra* note 16, at §2.2.1.
[151] *See supra* Section III.B.1.
[152] Michael Press, *Of Robots and Rules: Autonomous Weapon Systems in the Law of Armed Conflict*, 48 GEO. J. INT'L L. 1337, 1350-51 (2017) ("For example, in an urban environment, certain indirect weapons, such as artillery, may be restricted because the damage that would result from destroying an enemy target in a populated area could also include the excessive death and destruction of civilians and civilian infrastructure.").

destruction of the target is worth.[153] This determination must be made regardless of the delivery system, human or LAWS.[154]

To avoid excessive civilian harm, militaries must take "feasible precautions" during their attack.[155] This can start with the type of weapon selected to conduct an attack,[156] which is referred to as "weaponeering" and also includes using appropriate "aimpoints" and "fusing."[157] The time of the attack can be adjusted to when there would be less danger to civilians.[158] Warnings could be put out in the vicinity of the attack in a variety of ways to inform civilians to stay away.[159] The attack could be planned in an area where civilians are unlikely to be present (such as in an active military area of operations),[160] or only categorically military objectives could be selected (instead of objects which began as civilian objects, but due to their use have become military objectives).[161]

LAWS could apply some or all of these feasible precautions in various ways that would ensure proportionality in the attack. First, as this article

---

[153] *See id.* "This idea is encapsulated in the U.S. justification for unleashing the atomic bomb over Hiroshima and Nagasaki in 1945." *Id.* "[T]he considerable advantage the United States sought—notably the unconditional surrender of the Empire of Japan . . . justified, in its view of LOAC, the dropping of both bombs despite the considerable civilian casualties that resulted from the decimation of the cities." *Id.*

[154] *Id.*

[155] LAW OF WAR MANUAL, *supra* note 16, at § 5.11. Crucial to the analysis here is the word "feasible." Not all precautions are feasible. *Id.* at § 5.2.3.2. "A wanton disregard for civilian casualties or harm to other protected persons and objects is clearly prohibited," but that does not mean doing "everything possible." *Id.* The circumstances ruling at the time of the attack must be taken into account, including "the effect . . . on mission accomplishment," "risk to one's own forces," "likelihood and degree of humanitarian benefit," "cost[s] of taking the precaution," or "whether taking precaution forecloses alternative courses of action." *Id.* Feasibility must be assessed before taking precautions and it could be determined that there are no precautions to take. *Id.*

[156] *Id.* at § 5.11.6. *See* Press, *supra* note 152, at 1350 ("For example, in an urban environment, certain indirect weapons, such as artillery, may be restricted . . . [y]et, in an unpopulated area where a reasonable individual would not think civilians live, an artillery barrage or airstrike would be allowed.").

[157] JOINT CHIEFS OF STAFF, JOINT PUB. 3-30, JOINT AIR OPERATIONS, at III-21 (Apr. 28, 2025).

[158] LAW OF WAR MANUAL, *supra* note 16, at § 5.11.3.

[159] *Id.* at § 5.11.5.

[160] *Id.* at § 5.11.2.

[161] *Id.* at § 5.11.7. By way of example in this situation, a farmhouse owned by a civilian is a civilian object. *See id.* at § 5.5.2. However, if the farmhouse is taken over by enemy combatants, such as for billeting, then the farmhouse is now a military objective. *Id.* at § 5.6.6.1.

argues most fervently, LAWS can be limited to only engaging military objects.[162] Researchers from China published a paper describing the ability of a simulated UAV with a camera being able to identify simulated tanks on the ground with a mean average precision of 99.2 percent.[163] Though commanders may demand even higher accuracy from LAWS, this research shows that object recognition, specific to military objects, is possible.[164] Keep in mind, however, that the LOAC only requires a "good faith" determination that the object in question is a military object.[165]

Second, the U.S. Armed Forces already have capabilities to broadcast advanced warning messages to civilians in the areas of attack.[166] The EC-

---

[162] What exactly qualifies as a military object is discussed further along, *infra* Section III.B.4.

[163] Huanhua Liu et al., *A Military Object Detection Model of UAV Reconnaissance Image and Feature Visualization*, MDPI 15 (2022) (the simulation was created with scale tanks and scale camera speeds to replicate what a UAV would see from low altitudes). Drones used in Ukraine have been utilizing a form of automatic target recognition employed by ZIR System which "can identify various target types—including infantry, civilian automobiles, minivans, trucks, air defense systems, artillery, armored vehicles, and tanks." Kateryna Bondar, *Ukraine's Future Vision and Current Capabilities for Waging AI-Enabled Autonomous Warfare*, CTR. FOR STRATEGIC & INT'L STUD., 24 (Mar. 2025), https://csis-website-prod.s3.amazonaws.com/s3fs-public/2025-03/250306_ Bondar_Autonomy_AI.pdf?VersionId=E2h8uqROea77udoc_og82HWsrfgfJRTZ [https://perma.cc/9ZLD-2EP3]. No information was presented about the accuracy of such target recognition systems. *Id.*

[164] *Id.* The current DoW AI Ethical Principles, upon which the DoW is building its strategy to acquire and employ AI across multiple domains, speaks only to the AI being "responsible." U.S. DEP'T OF DEF. RESP AI WORKING COUNCIL, U.S. DEPARTMENT OF DEFENSE RESPONSIBLE ARTIFICIAL INTELLIGENCE STRATEGY AND IMPLEMENTATION PATHWAY at 5 (June 2022). Ultimately, a decision will have to be made as to what "responsible" means and how it is applied to LAWS.

[165] LAW OF WAR MANUAL, *supra* note 16, at § 2.5.2. Regardless of the baseline standard under the LOAC, states can decide to apply a higher standard via policy. For instance, under then-President Barack Obama, when conducting a strike against a terrorist outside "areas of active hostilities," there must have been "near certainty that the individual being targeted is in fact the lawful target and located at the place where the action will occur." *Presidential Policy Guidance on Procedures for Approving Direct Action Against Terrorist Targets Located Outside the United States and Areas of Active Hostilities*, 1 (May 22, 2013), https://www.justice.gov/oip/foia-library/procedures_for_approving_direct_ action_against_terrorist_targets/dl?inline. [https://perma.cc/R2YH-6CUE]

[166] *See* JOINT CHIEFS OF STAFF, JOINT PUB. 3-53, MILITARY INFORMATION SUPPORT OPERATIONS, at IV-12 (XXX); *see also* JOINT CHIEFS OF STAFF, JOINT PUB. 3-13.2, MILITARY INFORMATION SUPPORT OPERATIONS, at B-5 (Nov. 21, 2014) (this previous

130J Commando Solo aircraft "conducts airborne Information Operations via digital and analog radio and television broadcasts" and was upgraded in 2018 to be able to modify "broadcast formats" including "AM, FM, TV, [and] Cellular."[167] The Israeli Defense Force has sent out text message alerts prior to attacks in Gaza.[168] In the ongoing Russia-Ukraine conflict, Russia has been able to send text messages to Ukrainian soldiers on the battlefield.[169] Finally, as of at least 2022, some of the United States' adversaries were "us[ing] AI to craft messages."[170] Thus, it is foreseeable that LAWS could carry with it the capabilities to craft and disseminate an advanced warning message prior to initiating an attack. Messages,

---

iteration of the Joint Publication on Military Information Support Operations went into more detail on specific capabilities, including the use of the "EA-18G Growler . . . [to] transmit MISO messages on a wide range of frequencies").

[167] *EC-130J Commando Solo*, AIR FORCE (Mar. 2021), https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104535/ec-130j-commando-solo/ [https://perma.cc/W2N5-8ALS] ("[T]he EC-130J has the capability to conduct live broadcasts. In the last two deployments, the live broadcast option has gained considerable popularity.").

[168] Geoff Corn, *Civilian Risk Mitigation: Why Context Matters*, ARTICLES OF WAR (Sept. 27, 2022), https://lieber.westpoint.edu/civilian-risk-mitigation-why-context-matters/.

[169] Lucas Scarasso, *Text Messages from Hell: Restraint and Information Warfare*, MODERN WAR INSTITUTE (Apr. 21, 2020), https://mwi.westpoint.edu/text-messages-hell-restraint-information-warfare/; *see also* Henning Lahmann, *Should States Use Social Media to Warn Civilians in Armed Conflict?*, ETHICS & INTERNATIONAL AFFAIRS (Feb. 3, 2025), https://www.ethicsandinternationalaffairs.org/online-exclusives/should-states-use-social-media-to-warn-civilians-in-armed-conflict [https://perma.cc/Q6JE-XG4F]. During the 2014 Russian invasion of Ukraine, Russia was utilizing cell tower simulators "allowing them to intercept or even fake data." Associated Press, *Sinister Text Messages Reveal High-tech Front in Ukraine War*, VOA (May 11, 2017), https://www.voanews.com/a/sinister-text-messages-high-tech-frony-ukraine-war/3848034.html [https://perma.cc/KY8Q-F6W6]. That same article stated that the United States had been using similar technology in Iraq and Afghanistan. *Id.*

[170] Stew Magnuson, *U.S. Still Playing Catch Up in Information Operations*, NATIONAL DEFENSE (Feb. 11, 2022), https://www.nationaldefensemagazine.org/articles/2022/2/11/still-playing-catch-up-in-information-operations/ [https://perma.cc/W6VL-9A7C] (this article was unclear about which "adversary" was using AI in crafting their messages, but did discuss "China, Russia, [and] Iran"). AI enabled chatbots like ChatGPT "interact[] in a conversational way" allowing it to "answer followup [sic] questions, admit its mistakes, challenge incorrect premises, and reject inappropriate requests." *Introducing ChatGPT*, OPENAI, https://openai.com/blog/chatgpt (last visited Sep. 10, 2025). As of August 2025, ChatGPT is trained to read and respond in "most major languages, including . . English, Spanish, French, German, Italian, Portuguese, Dutch, Russian . . .Chinese . . . and Korean." Internet Chat Interview with ChatGPT, OpenAI (Aug. 21, 2025) (transcript on file with the author). With current technology, AI can already create messages, in a number of languages, which can then be used as advanced warnings for armed attacks.

disseminated to cellular phones in the area of attack, which stated the location to be attacked and an estimate of the time of attack (or an attack window), would allow civilians in the area to evacuate before the attack.

Third, loitering munitions like Israel's Harpy are already being programmed to loiter in a specific geographic area.[171] Though the manufacturer does not describe fully what technology is responsible for this, many commercial-off-the-shelf drones are designed to be able to "fence" the drone out of areas via Global Positioning System (GPS) coordinates and software that comes pre-installed in the drones.[172] These systems, called geofences, allow airports or prisons to restrict compliant drones from coming within the bounds of their geo-fence.[173] Thus, LAWS drones could be programmed in a similar fashion, with specifics on where the commander wants the system to loiter or where attacks are permissible, along with fences that tell the LAWS where it cannot attack, regardless of what type of military object the system detects.

Fourth, weaponeering has already been programmed into computer software.[174] Software used as early as 2003 could "take[] account of the dynamics of specific munitions as well as the characteristics of the terrain or objects being struck to predict an often irregular pattern of damage."[175] U.S. Joint Chiefs of Staff doctrine references the "Joint Targeting Toolbox," which is a suite of software used in the targeting process,

---

[171] HARPY: AUTONOMOUS WEAPON FOR ALL WEATHER, IAI, *supra* note 38 ("HARPY is equipped to hunt—seek targets in a designated area . . . .").
[172] Keith Davis, *Geofencing on Drones (All You Need to Know)*, DRONEBLOG, https://www.droneblog.com/geofencing-on-drones/ [https://perma.cc/K3X8-L7DZ] (last visited Sep. 10, 2025).
[173] *Id.* DJI, a leader in consumer drones, has recently removed the automatic restrictions from their drones. DJI VIEWPOINTS TEAM, *DJI Updates GEO System in U.S. Consumer & Enterprise Drones* (Jan. 13, 2025), https://viewpoints.dji.com/blog/geo-system-update [https://perma.cc/8WWZ-GPSW]. Instead, the drone operator will receive a warning message about flying into a restricted area. *Id.* While the technology has been removed from DJI drones, they have proven capable, and the technology could still be reapplied to consume drones or to military drones. *See id.*
[174] Press, *supra* note 152, at 1359.
[175] Bradley Graham, *Military Turns to Software to Cut Civilian Casualties*, WASH. POST (Feb. 20, 2003), https://www.washingtonpost.com/archive/politics/2003/02/21/military-turns-to-software-to-cut-civilian-casualties/af3e06a3-e2b2-4258-b511-31a3425bde31/ [https://perma.cc/JD9B-SXGG].

including "weaponeering."[176] With the information programmed into such targeting software (like estimated bomb damage outside of the aim point),[177] LAWS could at least determine that a person is within the blast zone of a weapon and not attack the target.[178] Additionally, coupling this precaution with the previous one of loitering in a specified geographic area, if the LAWS were to go undetected, it could presumably loiter for an extended period of time and continue to monitor for when an attack could be mounted. LAWS, being a machine, does not get tired or bored like a human might; it does not lose focus, but instead keeps its sensors trained on the potential object of attack.[179] Its ability to remain within the loitering zone is more reliant on fuel availability.[180]

Finally, before concluding the discussion on how LAWS will comply with proportionality, it is necessary to consider that the U.S. interpretation of LOAC is that "[t]he law of war rules on conducting attacks . . . impose obligations on persons," not on weapons.[181] "Rather, it is persons who

---

[176] JOINT CHIEFS OF STAFF, JOINT PUB. 3-60, JOINT TARGETING at B-2 (20 Sept. 2024) (This software was discussed in the 2018 version of the Joint Publication as well. JOINT CHIEFS OF STAFF, JOINT PUB. 3-60, JOINT TARGETING at B-3 (28 Sept. 2018)).

[177] Graham, *supra* note 175.

[178] *See* Press, *supra* note 152, at 1359. In this article, the LAWS is directed via its internal programming not to attack when a person is in the area. Nothing in this article articulates a capability to distinguish between civilians and combatants. Should LAWS be capable of determining that a person is within the blast zone of an attack on a military object, but that the person is a combatant and, thus, a lawful target, the attack could continue. *See* LAW OF WAR MANUAL, *supra* note 16, at § 5.5.1. Separately, the U.S. Air Force has recently contracted for the use of facial recognition software with live video feeds coming into UAVs. Sascha Brodsky, *The Air Force's Drones Can Now Recognize Faces. Uh-Oh. What Could Go Wrong?*, POPULAR MECHANICS (Feb. 24, 2023), https://www.popularmechanics.com/military/a43064899/air-force-drones-facial-recognition/ [https://perma.cc/76WZ-FUYS]. Before the UAV can analyze a face though, it must first determine that a face exists, which would imply a human's presence. *Id.* Thus, the capability to find persons, despite not knowing their status, exists. Furthermore, Future of Life Institute, another advocacy group calling on a ban on LAWS, produced a video called "Slaughterbots – if human: kill()." *Slaughterbots – if human: kill()*, FUTURE OF LIFE INST. (Nov. 30, 2021), https://futureoflife.org/video/slaughterbots-if-human-kill/ [https://perma.cc/EEL7-H3VH]. The title implies programming language whereby if something is determined to be a human, then the "slaughterbot" would kill it. *Id.* In fact, the inverse could be used in the programming of LAWS built for object-based targeting. *See* ARKIN, *supra* note 44, at 128. If a human is discovered, *do not* kill.

[179] *See* Kastan, *supra* 129, at 54 (describing the trifecta of "dull, dirty, and dangerous" missions which LAWS could take from humans in combat).

[180] *See id.*

[181] LAW OF WAR MANUAL, *supra* note 16, at § 6.5.9.3.

must comply with the law of war."[182] However, a person's choice to design and employ LAWS with the above-referenced feasible precautions is the human operator's way of complying with LOAC.[183] A precision-guided munition does not make a choice not to attack a civilian object; it attacks wherever the human operator tells it to via its aim-point parameters.[184] Similarly, the limits discussed above, imposed upon LAWS, cause them to act in a manner that ensures compliance with proportionality.

4. Distinction

Distinction "obliges parties to a conflict to distinguish principally between the armed forces and the civilian population, and between unprotected and protected objects."[185] Armed forces are not permitted to use "weapons that are of a nature to be indiscriminate."[186] This is meant to protect civilians and civilian objects in warfare.[187] As mentioned previously, this article establishes that LAWS could comply with LOAC when conducting object-based targeting; it will not discuss the rules of person-based targeting.[188]

---

[182] *Id.*
[183] Afonso Seixas-Nunes, *Autonomous Weapons Systems and the Procedural Accountability Gap*, 46 BROOK. J. INT'L L. 421, 428-29 (2021). Here, Seixas-Nunes quotes a Congressional Research Service primer which is quoting an August 2018 U.S. government white paper. *Id.* In its current edition, that primer says: "Furthermore, 'human judgment over the use of force' does not require manual human 'control' of the weapon system, as is often reported, but rather broader human involvement in decisions about how, when, where, and why the weapon will be employed." KELLEY M. SAYLER, CONG. RES. SERV., IF11150, DEFENSE PRIMER: U.S. POLICY ON LETHAL AUTONOMOUS WEAPON SYSTEMS 1 (2022).
[184] *See* NATHAN J. LUCAS, CONG. RES. SERV., IF11353, DEFENSE PRIMER: U.S. PRECISION-GUIDED MUNITIONS 1 (2022). Precision-guided munitions (PGMs) "typically use the global positioning system (GPS), laser guidance, or inertial navigation systems to improve a weapon's accuracy to reportedly less than 3 meters (approximately 10 feet)." *Id.*
[185] LAW OF WAR MANUAL, *supra* note 16, at § 2.5.
[186] Boothby, *supra* note 104, at 20.
[187] *See* LAW OF WAR MANUAL, *supra* note 16, at § 2.5.
[188] While not the point of this article, others have written about the possibility of LAWS complying with the requirements to conduct person-based targeting. *See* Schmitt, *supra* note 2.

When it comes to targeting objects, some are "categorically military objectives, [while] other objects are assessed as to whether they meet the definition of 'military objective.'"[189] The definition describes an object "which by its nature, location, purpose or use makes an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage."[190]

Categorical military objectives are where LAWS will make their money.[191] For instance, in "air-to-air missile engagements," a person is not spotting another airplane, circling it to determine whether it is friend or foe, and then maneuvering behind it for a shot.[192] "Instead, the pilot is relying on information fed from a computer, typically based on radar."[193] With that, along with other computer-fed information, the pilot then decides whether to engage the target.[194] These same inputs could all be programmed for LAWS, allowing the LAWS to understand whether it could engage the other aircraft.[195]

As of 2009, there were already "various computer analysis methods possible for matching targets to available target data."[196] By 2013, newer sensors were able to "assess the shape and size of objects, determine their speed, identify the type of propulsion being used, determine the material of which they are made, listen to the object and its environs, and intercept associated communications or other electronic emissions."[197] Other systems trained to identify objects in the environment, as opposed to specific military objectives, have reached success levels above 80 percent

---

[189] LAW OF WAR MANUAL, *supra* note 16, at § 5.6.
[190] *Id.* at § 5.6.3 (quoting PROTOCOL ON PROHIBITIONS OR RESTRICTIONS ON THE USE OF MINES, BOOBY-TRAPS AND OTHER DEVICES, as Amended on 3 May 1996 (Amended Protocol II) art. 2(6), May 3, 1996, 2048 U.N.T.S. 93).
[191] *See* Sassóli, *supra* note 40, at 327.
[192] *See* Scharre & Horowitz, *supra* note 26, at 11.
[193] *Id*. (information like "altitude, airspeed, identification friend or foe (IFF) signals and an understanding of the overall situation").
[194] *Id.* That other information includes "altitude, airspeed, identification friend or foe (IFF) signals and an understanding of the overall situation," such as whether they are in or near an area of combat. *Id.*
[195] *See id*.
[196] ARMIN KRISHNAN, KILLER ROBOTS: LEGALITY AND ETHICALITY OF AUTONOMOUS WEAPONS 56 (2009).
[197] Schmitt, *supra* note 2.

as of 2013,[198] further implying that recognition of military objects by machine learning is possible.

As discussed above, researchers have trained a system to recognize certain tanks based on camera inputs with a mean average precision of 99.2 percent.[199] At least one company has described its ability to distinguish between civilian vehicles and military vehicles.[200] By deploying LAWS only to "clear war zones and with limited geographic scope," these systems could be prepared to engage only those categorical military objectives that the LAWS is trained to recognize.[201]

5. Honor

Honor, sometimes compared to chivalry,[202] is the last of these five principles. "Honor demands a certain amount of fairness in offense and defense and a certain mutual respect between opposing military forces."[203] Relating back to the previous four principles, honor creates an obligation to abide by those principles.[204] Soldiers "must accept that the right of belligerents to adopt means of injuring the enemy is not unlimited."[205] As such, the parties must adhere to the laws of war to limit their own war-making potential.[206] In addition, "honor . . . forbids resort to means, expedients, or conduct that would constitute a breach of trust with the

[198] Tom Simonite, *A Google Glass App Knows What You're Looking At*, MIT TECH. REV. (Sept. 30, 2013), https://www.technologyreview.com/2013/09/30/176280/a-google-glass-app-knows-what-youre-looking-at/ [https://perma.cc/S863-UHYP] (this recognition can happen with "photos taken by a person wearing Glass, or [can] constantly grab images from the device's camera" while it is active).
[199] *See* Liu et al., *supra* note 163, at 15.
[200] *See* Bondar, *supra* note 163.
[201] Horowitz, *supra* note 22, at 96.
[202] *See* LAW OF WAR MANUAL, *supra* note 16, at § 2.6 n.107.
[203] *Id.* at § 2.6.
[204] *See id.*at § 2.6.2.1.
[205] *Id.*
[206] *Id.* ("Thus, *honor* may be understood to provide a foundation for obligations that help enforce and implement the law of war.").

enemy."[207] While not specific to autonomous weapons, this would include actions like using protected symbols on a weapon.[208]

However, honor is not about equality in the fight; a combatant may still bring overwhelming power against the enemy.[209] Thus, the question of whether to field LAWS against an opponent who is unable to field them himself will not be answered by the LOAC.[210] It might appear chivalrous to show up to a sword fight with a sword; but as Indiana Jones showed, there is nothing wrong with showing up to a sword fight with a gun—it usually means you'll win.[211]

The use of LAWS against an opponent who is unable to field them themself would not violate honor. Using LAWS that breach the trust, such as by being marked with the enemy's vehicle markings, would.[212] Flying a LOAC-compliant LAWS UAV into battle simply means that the pilot is digital, instead of being kept in a communications terminal back in the United States.[213] It will have to be defended against in the same manner as any other UAV in armed conflict. Of course, the issue of facing an opponent without weapons of equal capabilities is likely not to be the case in a conflict with China.[214]

Within certain parameters (like object-based targeting), LAWS can comply with LOAC.[215] Judge advocates must be able to explain these principles and their application to those responsible for building and fielding LAWS to ensure the United States stays competitive with China and other adversaries. Where situations exist for LOAC compliance to be assured, it is imperative that the United States moves out on the development and procurement of LAWS swiftly, to ensure that it has the tools necessary to face its adversaries.

---

[207] *Id.* at § 2.6.2.2.
[208] *Id.* at § 5.24. Those symbols include symbols of neutrality, those protected under the Geneva Conventions (like the Red Cross and Red Crescent), or symbols designating prisoner of war camps, to name a few. *Id.*
[209] *See* W. Hays Parks, *Air War and the Law of War*, 32 A.F. LAW REV. 1, 170 (1990).
[210] *See id.*
[211] INDIANA JONES: RAIDERS OF THE LOST ARK, Blu-ray (Lucasfilm Ltd. 1981).
[212] LAW OF WAR MANUAL, *supra* note 16, at § 2.6.3.
[213] *See MQ-9 Reaper*, AIR FORCE (Mar. 2021), https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104470/mq-9-reaper/ [https://perma.cc/HPX9-WYAM] ("[T]he crew based in continental United States executes command and control of the remainder of the mission via beyond-line-of-sight links.").
[214] *See* NATIONAL DEFENSE STRATEGY, *supra* note 6, at III.
[215] *See supra* Section III.

IV. The DoW's Future in Autonomy

The DoW is updating policies and creating offices around the idea of implementing autonomy throughout the force.[216] In preparing for the United States to utilize autonomy in weapon systems, judge advocates of the various services must become intimately familiar with the LOAC and the underlying domestic, treaty, and customary international law to be able to analogize old rules to new technology. Practitioners must not be wary of technology and must educate themselves to understand areas of technology outside of the law to better apply the law to new tech.[217] They must be capable of understanding what a technologist is telling them, while explaining international law back in a way that can be digested by a non-legal practitioner.[218]

The Strategy of the U.S. Army's Judge Advocate General's (JAG) Corps mandates that attorneys provide "principled counsel," via a "mastery of the law."[219] This mastery prepares them to apply legal knowledge and skill to the "evolution of capabilities[] and compression of decision cycles."[220] The U.S. Air Force's *JAG Corps Flight Plan* speaks to providing "professional, full-spectrum legal support, at the speed of relevance, for mission success in joint and coalition operations."[221] Autonomy in weapon systems is that evolution and is already relevant to today's DoW.[222]

---

[216] *See* Graham, *supra* note 21 ("Michael Horowitz, director of the Pentagon's Emerging Capabilities Policy Office . . . said that the updates to the directive [DoDD 3000.09], as well as the Pentagon's growing focus on autonomous weaponry and artificial intelligence as components of the future of warfare, also align with the national defense strategy issued last year."); DoDD 3000.09, *supra* note 23 (updated as of Jan. 25, 2023).

[217] See Linell A. Letendre, *Lethal Autonomous Weapon Systems: Translating Geek Speak for Lawyers*, 96 INT'L L. STUD. 274, 274-75 (2020).

[218] *See id.*

[219] *The Strategy of The Judge Advocate General's Corps 2022*, THE UNITED STATES ARMY JUDGE ADVOCATE GENERAL'S (JAG) CORPS 1-2, https://tjaglcs.army.mil/Portals/0/Resources/LEAPP/TJAG%20Corner/JAGC%20Strategy%202022.pdf?ver=N4sN8_6lKundj_QpnHg6QQ%3d%3d [https://perma.cc/AZ84-SJUT] (last visited Sep. 16, 2025) [hereinafter *Army JAGC Strategy*].

[220] *Id.*

[221] *JAG Corps Flight Plan 2023: Bridging the Strategic to the Tactical and Back,* AIR FORCE JUDGE ADVOCATE GENERAL'S CORPS, Mar. 2023, at 2 (on file with the author).

[222] *See* Losey, *supra* note 21.

These issues require deep thought and thorough analysis.[223] Analysis that cannot wait until the end of the development of a weapon, but must coincide with the designer's actions to create the weapon.[224] By engaging early in the development process, the attorney can help shape the design of the weapon in a way that ensures compliance with the law.[225] The technologist cannot design a weapon in a vacuum, hoping it complies with the law or can be word-smithed by the attorney's legal review.[226]

By the same token, an attorney cannot review a new weapon without a thorough understanding of past practice and a history of warfare.[227] Judge advocates must be ready to work in this area by preparing now to understand what the technology can and cannot do, and what the law allows or forbids. By doing so, they can be ready to provide "principled counsel" at "the speed of relevance."[228]

V. Conclusion

Lethal autonomous weapon systems are coming. Whether they are developed first by the United States[229] or adversaries like China,[230] states are working now to design and build these systems. The United States must continue to push back against an outright ban on LAWS at the GGE to the CCW, and any other international forum.[231] Articulating sound operating principles, as it has done since at least 2019, will reinforce the

---

[223] Kenneth Anderson, Daniel Reisner & Matthew Waxman, *Adapting the Law of Armed Conflict to Autonomous Weapon Systems*, 90 INT'L L. STUD. 386, 409 (2014).
[224] *Id.*
[225] *See id.*
[226] *See* Colonel Linell A. Letendre, *Lethal Autonomous Weapon Systems: Translating Legal Jargon for Engineers*, 2016 IN'L CONF. UNMANNED AIRCRAFT SYS. (ICUAS) 795, 795 (June 7-10, 2016).
[227] *See* Letendre, *supra* note 217.
[228] *Army JAGC Strategy*, *supra* note 220, at 1; *JAG Corps Flight Plan 2023*, *supra* note 221, at 2.
[229] *See* Losey, *supra* note 21.
[230] *See supra* note 93 and accompanying text.
[231] CCW, U.S. Comments on Humanitarian Benefits of LAWS, 2018, *supra* note 53, at 6 ("Rather than trying to stigmatize or ban such emerging technologies in the area of lethal autonomous weapon systems, States should encourage such innovation that furthers the objectives and purposes of the Convention.").

requirement that LAWS must comply with existing LOAC and other treaties and customary international law.[232]

Compliance with LOAC will be a requirement, whether the system is built to target persons or objects.[233] This article has not addressed the issues of person-based targeting; regardless of the ICRC's and HRW's positions, compliant LAWS for either type of target should not be ruled out at this time.[234] It is foreseeable that in the near future, LAWS that conduct object-based targeting will be built that meet a commander's standard for following the LOAC. The programming used on such systems will give the commander the ability to create limitations or precautions in an attack to ensure no more destruction than is necessary occurs. Object-recognition research has already reached a point where the capability can be measured—the question left open is how "sure" is sure enough. The DoW's Law of War Manual requires that commanders make decisions in "good faith."[235] Commanders and combatants, working with their legal advisors, will need to determine how to apply good faith to LAWS.

---

[232] *See* CCW, Final Rep., 2019, *supra* note 13.

[233] *See What is IHL*, *supra* note 16; LAW OF WAR MANUAL, *supra* note 16, at § 3.2.

[234] It is incumbent on technologists and attorneys, both, to understand the LOAC as it pertains to person-based targeting and to work on developing controls which can ensure compliance with such rules.

[235] *See* LAW OF WAR MANUAL, *supra* note 16, at § 5.3 ("Even when information is imperfect or lacking (as will frequently be the case during armed conflict), commanders and other decision-makers may direct and conduct military operations, so long as they make a good faith assessment of the information that is available to them at that time."); *see also id.* at § 2.6.2.1 ("For example, *honor* may be understood to provide the foundation for the requirement for persons to comply with the law of war in good faith.").

[THIS PAGE INTENTIONALLY LEFT BLANK]