

Lethal Autonomous Weapons and the Professional Military Ethic

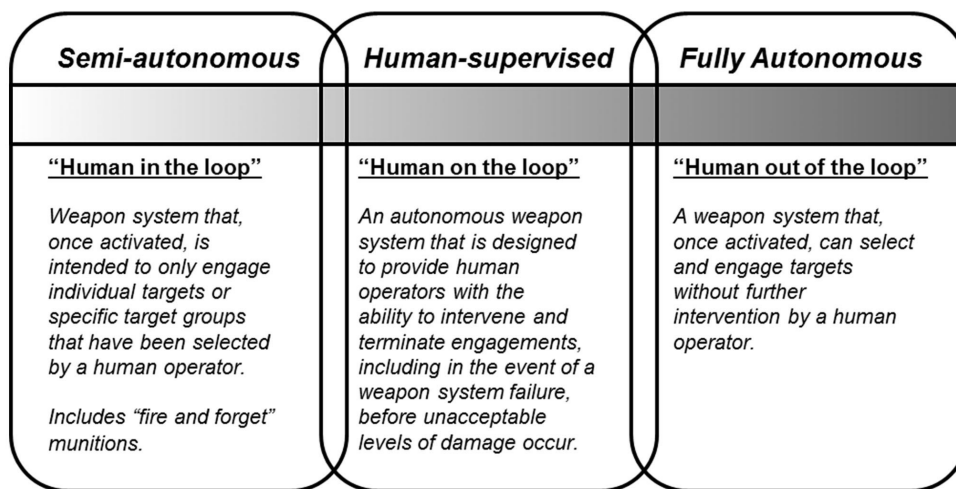
by Jonathan J. Batt

“The elemental processes of war are too uncertain, too riddled with chance and the unforeseen to be wholly, or even mostly, captured by pat formulas and engineering calculations.”¹

Since the Cold War, the United States has maintained a decisive advantage in military weapons technologies. The ability of the U.S. to leverage its economy to fund its vast defense budget has facilitated rapid developments beyond the scope of all other nation states. From its advanced nuclear arsenal to its seemingly omnipresent drone fleet, the U.S. military is the benchmark to which all other militaries are compared. Being the leader in developing new defense technologies comes with the ethical responsibility to take the lead in ensuring that these technologies comply with international norms, treaties, and the professional ethics of the service members that will be employing these weapons.

Over the last decade, a significant body of work has been established regarding the potentials and pitfalls of adapting artificial intelligence (AI) into lethal and non-lethal military technologies. Most of these arguments were made by ethicists, roboticists, lawyers, and computer engineers with an understandably limited insight into the complex operational environments in which these systems might be employed. This study attempts to build on the discourse by offering a perspective from inside the military profession through the lens of The Framework of the Army Ethic. (See Figure 2 on page 12.) Using this lens, lethal autonomous weapon systems (LAWS) will be assessed to discern the types of operations with which they are ethically compatible.

Concerns over the ethical use of new weapons are common and can be traced back to the longbow and crossbow, which drew widespread condemnation contemporaneously. During the 11th century, even the Catholic Church denounced the use of crossbows as morally reprehensible tools of war.² Prohibitions on



Note: Definitions per DoDD 3000.09, *Autonomy in Weapon Systems*.

Figure 1. DoD Autonomy Classes.³

weapons have been successfully implemented in whole or part over the last century in an effort to bring an acceptable level of morality to conflict. In recent history, conventions have been widely adopted to prohibit the use of blinding laser weapons, chemical weapons, and other types of weapons that are inherently indiscriminant or cause superfluous injury. These conventions were codified in international humanitarian law to form the basis for new international norms of armed conflict.

The Department of Defense defines an autonomous weapon as “a weapon system that, once activated, can select and engage targets without further intervention by a human operator.”⁴ As the United States continues to refine its remote and autonomous systems, it is approaching the unique ability to produce competent LAWS that require *no* human-in-the-loop to kill on the battlefield. This revelation raises numerous ethical concerns for the military as it weighs the merits and liabilities of employing LAWS rather than human-in-the-loop systems. Before these technologies come to fruition, public leaders should fully consider ethical and functional concerns, ensuring that values are driving innovation and that innovation is not diminishing our values.

It is important to note that the scope of this paper is restricted only to *fully* autonomous weapons that perform operations without human interaction, supervision, or meaningful human control. There is currently no internationally agreed upon standard for what constitutes varying levels of autonomy. This creates significant confusion in the debate, as different authors and experts often talk past one another. I assert that semi-autonomous weapons employed under meaningful human control, while distasteful to some experts, are simply the evolution of lethality in warfare. Fully autonomous systems without a human operator or supervisor, and that can develop their own targets, are a separate class of weapons systems that deserve greater scrutiny.

Discussions on ethical tactics, techniques, and procedures of warfighting are inherent to our professional non-commissioned officer and commissioned officer corps, to advise our civilian leaders on how military

<i>The Framework of the Army Ethic</i>		
	<i>Legal Foundations</i>	<i>Moral Foundations</i>
Army as Profession (Laws, values, and norms for performance of collective institution)	Legal-Institutional <ul style="list-style-type: none"> • The U.S. constitution • Titles 5, 10, 32, USC • Treaties • Status-of-forces agreements • Law of war 	Moral-Institutional <ul style="list-style-type: none"> • The Declaration of Independence • Just war tradition • Trust relationships of profession
Individual as Professional (Laws, values, and norms for performance of individual professionals)	Legal-Individual <p>Oaths:</p> <ul style="list-style-type: none"> • Enlistment • Commission • Office <p>USC – Standards of Exemplary Conduct</p> <p>UCMJ</p> <p>Rules of engagement</p> <p>Soldier’s Rules</p>	Moral-Individual <p>Universal Norms:</p> <ul style="list-style-type: none"> • Basic Rights • Golden Rule <p>Values, Creeds, and Mottos:</p> <ul style="list-style-type: none"> • “Duty, Honor, Country” • NCO Creed • Army Civilian Corps Creed • Army Values • The Soldier’s Creed, Warrior Ethos
NCO noncommissioned officer	U.S. United States	
UCMJ Uniform Code of Military Justice	USC United States Code	
The <i>Army Ethic</i> is the evolving set of laws, values, and beliefs, embedded within the Army culture of trust that motivates and guides the conduct of Army professionals bound together in common moral purpose.		

Figure 2. The Framework of the Army Ethic.⁵

forces should be employed. Army officers are guided by the Army Ethic- “the evolving set of laws, values, and beliefs, embedded within the Army culture of trust that motivates and guides the conduct of Army professionals bound together in common moral purpose.”⁶ This ethic serves as a starting point for the profession to understand its role in service.

Army officers have unique insight into this culture, which is why it is necessary for them to participate in discussions on the future of the military. These discussions cannot be left entirely to those outside of the profession, as critical context may be lost in the debate. This is not to say that military professionals should dominate the discussions, as this paper will explain, the profession and its ethic are firmly grounded in mutual trust. This foundational mutual trust requires honest, intellectual, and complete advice to civilian leaders so that they are armed with the most complete understanding of a problem before issuing guidance to the force.

The Legal-Institutional aspect of The Framework of the Army Ethic is the most uncomplicated component of this debate, as nearly all experts concede that LAWS meet the standards set forth by these foundational documents. All but the most extreme activists acknowledge that current treaties and laws do not prohibit LAWS *per se*. While it is not technically feasible with current AI capability, it is *possible* that in the future, AI performance will enable LAWS to act in compliance with the principles set forth in the Law of War: Military Necessity, Distinction, Proportionality, and Unnecessary Suffering/Humanity. The most compelling counter-argument to this point is that while some states may refine the technology to meet this threshold in the future, other states will knowingly field LAWS without this sophistication, which could result in unprecedented atrocities.

In the Legal-Individual component of the framework, the Standards of Exemplary Conduct (See below.) poses the only consideration of substance. This section specifically calls on officers “to be vigilant in inspecting the conduct of all persons who are placed under their command.” Given the inherently autonomous operations of LAWS, officers employing them would be far from vigilant as the systems would act autonomously on the battlefield. In reality, LAWS would effectively be their own commander, autonomously selecting new targets as operations evolve. Dr. Heather Roff powerfully explains this dilemma in her 2014 article, *The Strategic Robot Problem*:

In this situation, we have created not merely a weapons system, but a weapon that is a combatant and a combatant who is the commander. By fielding multiple [LAWS], moreover, we have the frightening proposition that many (or perhaps all) of them will not be able to

§ 3583 U.S. Code - Standards of Exemplary Conduct

All commanding officers and others in authority in the Army are required—

- (1) to show in themselves a good example of virtue, honor, patriotism, and subordination
- (2) to be vigilant in inspecting the conduct of all persons who are placed under their command
- (3) to guard against and suppress all dissolute and immoral practices, and to correct, according to the laws and regulations of the Army, all persons who are guilty of them
- (4) to take all necessary and proper measures, under the laws, regulations, and customs of the Army, to promote and safeguard the morale, the physical well-being, and the general welfare of the officers and enlisted persons under their command or charge

communicate with each other because of security concerns, and so interoperability becomes mere fiction. The result would be that “de-conflicting” a battle space is impossible. Manned systems will be unable to communicate with unmanned ones, and [LAWS] will be generating their own military objectives, perhaps in conflict with one another. The most serious challenge, however, is that the creation and fielding of [LAWS] undermines the command and control structure necessary for the prosecution of modern combat. As each [LAWS] becomes its own isolated commander—incommunicado from all others—the framework for establishing legitimate authority over the direction and use of violent force vanishes.⁷

This style of force employment is clearly misaligned with how the Army currently operates. Even mitigating the risk associated with this style of employment through common techniques (time, space, and altitude), still does not account for the reality that commanders would be diminished in their ability to control actions in their battlespace. While officers are charged with maintaining expertise in the ethical “integration of technology in the conduct of military operations,” LAWS are likely outside of this intended scope.⁸

Delegating authority for the employment of lethal force to a weapon system in this manner also raises the question of responsible command. If commanders employ these weapons without the ability to direct, monitor, or inspect their operations, they are investing a significant amount of trust in the programming within the system. Given that commanders will be unable to train their systems and will also be unable to effectively command and control them, it would be nearly impossible to hold a commander accountable for the conduct of the weapon. This responsibility gap may be mitigated by more morally-proactive states but certainly has significant potential for abuse by less reliable actors.

The U.S. military must seriously consider the impact of this manner of force employment with its trust relationship with the American people. Military leaders have a special responsibility, “under commission from the American people and the U.S. Government, and acting as their moral agent, officers provide overall direction to and leadership of the military in situations by exercising legal command responsibilities over Army units.”⁹ By abdicating this duty in the employment of LAWS, the Army profession is exposed to serious risk as those outside the military begin to question why we even maintain robust manned formations when we accept that LAWS can fight effectively in our place. While it is obvious to most military professionals, for vast majority of the American people that do not have a professional understanding of warfighting, this is difficult to justify.

U.S. Military Core Values			
Army	Navy & Marine Corps	Air Force	Coast Guard
Loyalty	Honor	Integrity First	Honor
Duty	Courage	Service Before Self	Respect
Respect	Commitment	Excellence in All We Do	Devotion to Duty
Selfless Service			
Honor			
Integrity			
Personal Courage			

Figure 3. U.S. Military Core Values.

The Moral-Individual component of the framework provides the final and most significant point of contention within the profession with respect to the use of LAWS. The Army Values “are inherent within the moral principles of the Army Ethic and form the basic moral building blocks of an Army Professional’s character. They help us judge what is right or wrong in any situation.”¹⁰ The service values of each branch of the military are noted in Figure 3 on page 14.

A value common to most of the services, as well as other countries, the U.S. Law of War, and international humanitarian law is honor. Honor is defined by the Army as “a matter of carrying out, acting, and living the values of respect, duty, loyalty, selfless service, integrity and personal courage.”¹¹ The Law of War manual further elaborates that “honor demands a certain amount of fairness in offense and defense and a certain mutual respect between opposing military forces... [and it] forbids resort to means, expedients, or conduct that would constitute a breach of trust with the enemy.”¹²

Employing LAWS against opposing manned formations clearly demonstrates a lack of personal courage and is patently unfair to the soldiers of the opposition as they are the only ones whose lives are at risk in the conflict. The absence of personal courage also suggests a lack of respect for the lives of the enemy combatants. This scenario is one of many that the laws of war were intended to prevent, as in this situation opponents of the United States are only encouraged to avoid confronting the U.S. military through ruses, hiding among civilians, and other methods that exploit the law.

As LAWS proliferate on the battlefield, one can only anticipate that they will be used to fill a more broad range of tasks that are considered dirty (CBRNE), dull, or dangerous to human soldiers. Casualty aversion is already a significant element in military planning, and this preference for protecting soldiers will expand with technology. Logic suggests that over time, with the availability of semi-autonomous systems and LAWS, personal courage will become an antiquated concept. Respect for the enemy will amount to mathematical calculations. Honor will take its place in history next to chivalry.

“Artificial intelligence is the future, not only for Russia, but for all humankind. It comes with colossal opportunities, but also threats that are difficult to predict. Whoever becomes the leader in this sphere will become the ruler of the world.”

—Russian President Vladimir Putin, 1 September 2017¹³

Applications for Use

One of the most cited justifications for the rapid development of LAWS is the inevitability of the technology. Despite the glaring ethical challenges with using LAWS on the battlefield, the United States must develop this technology, if only to be used defensively, or ideally, as a deterrent.

AI enabled systems such as swarm technology, when used in the offense, have the potential to inexpensively destroy even the most advanced U.S. military equipment. To defeat these threats, defensive AI technology can be deployed to protect U.S. forces from hostile automated and autonomous weapons. The U.S. already employs several semi-autonomous defensive weapons such as the MK 15—Phalanx CIWS. Future aircraft carriers or command posts may be enabled with defensive LAWS, or swarms that serve as a modern-day shield against enemy attacks and to collect intelligence. These technologies could be LAWS, but would be more appropriately used in a semi-autonomous state given their close operation to manned elements that could provide responsible command.

In the offense, LAWS could ethically be used against other robotic systems, even if this style of operations does not necessarily comport with the current U.S. system of warfare.

Conclusions & Recommendations

In previous meetings of the Group of Governmental Experts to the Convention on Certain Conventional Weapons, the majority of states present, signaled the need to ban or restrict the development of LAWS. This effort has been largely organized by the International Committee of the Red Cross and Human Rights Watch, generating significant popular support from AI experts and roboticists. These meetings, however, failed to produce any substantive agreement on definitions or pathways forward with LAWS.

“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.”

—U.S. Statement on lethal autonomous weapon systems (28 March 2018)¹⁴

In preparation for the April 2018 meeting, both the United States and the Russian Federation submitted working papers focusing on moving forward with LAWS research and development. The United States’ working paper instead focused on the potential humanitarian benefit derived from increased battlefield awareness and reduced harm to civilians without a single reference to the ethical or moral concerns that have been the greatest point of contention in previous meetings. In focusing on previously established potential benefits, the United States is losing an opportunity to lead in this critical debate on the future of warfare.

As stewards of our profession, military officers must contribute to this discussion to inform strategic leaders and help shape policy based on our values so that future opportunities are not also missed. To address this, I propose five recommendations:

- (1) The United States should codify a framework for understanding autonomy in weapon systems. This framework should be developed so that fully autonomous systems are in a class on their own, separate from semi-autonomous weapons that often cloud the debate.
- (2) Given that offensive operations against humans using LAWS do not align with the values of the military and has significant second and third-order negative outcomes, they should be formally banned from use in offensive operations. Only weapons under meaningful human control should be offensively employed on the battlefield.
- (3) The United States should continue to research advanced AI technologies to field defensive LAWS, semi-autonomous weapons, and to conduct counter-autonomous operations.
- (4) Establish working groups in each service to further explore ethical challenges or opportunities. These working groups can also use their understanding to begin establishing the training, doctrine, and tactics, techniques, and procedures that the Secretary of Defense has required prior to fielding.¹⁵
- (5) Add “Ethical Control” to the Army Values to reinforce the importance of how we ethically employ our Soldiers and autonomous systems.

Ethical Control

Know that how we fight matters; exercising discipline in the application of landpower is vital to our success. Ethical control requires a high degree of professional competence and an understanding of the unparalleled capabilities our manned and robotic forces bring to any fight. Soldiers entrusted with these capabilities must use them only within the limits of our doctrine, service values, and the Army Ethic. Ethical control is the underlying principle that separates honorable from illegitimate use of force on the battlefield, allowing us to find moral solutions to diverse problems.

End Notes

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- 3 Jeffrey Caton. *Autonomous Weapon Systems: A Brief Survey of Developmental, Operational, Legal, and Ethical Issues*. (Carlisle, PA: Army War College Press, 2015), 3.
- 4 Department of Defense, DoDD 3000.09: *Autonomy in Weapon Systems*. (Washington, D.C.: U.S. Government, 2012). 1.
- 5 Department of the Army, ADRP 1: *The Army Profession*. (Washington, D.C.: U.S. Government, 2015). 2-3.
- 6 *Ibid.*, 1-2.
- 7 Heather M. Roff, "The Strategic Robot Problem: Lethal Autonomous Weapons in War," *Journal of Military Ethics*, 13:3 (2014), 220.
- 8 Department of the Army, ADRP 1, 5-1.
- 9 Dan Snider, "Officership: The Professional Practice," *Military Review*, January-February, 2003.
- 10 Department of the Army, ADRP 1,B-5.
- 11 *Ibid.*
- 12 Department of Defense, *Law of War Manual*. Washington, D.C.: U.S. Government, 2016). 65-66.
- 13 Eric Mack, "Elon Musk: Artificial Intelligence May Spark World War III." last modified September 4, 2017, accessed April 12, 2018, <https://www.cnet.com/news/elon-musk-artificial-intelligence-world-war-iii-russia-china>.
- 14 United States of America. *Humanitarian Benefits of Emerging Technologies in the Area of Lethal Autonomous Weapon Systems*. (28 March, 2018), 6.
- 15 Department of Defense, DoDD 3000.09: *Autonomy in Weapon Systems*. 7-8.