Metal Minds and Machine Soldiers: Warfare Reimagined Beyond the Human Edge

Colonel Vikas Yadav (Retd)[@]

Abstract

The landscape of modern warfare is undergoing a profound transformation as witnessed recently through the integration of advanced technologies, most notably Artificial Intelligence (AI)-driven drones and autonomous weapons. AI-enabled drones possess the capability to perform surveillance, execute strike missions, and undertake decision-making with minimal human intervention, while the deployment of autonomous weapons has generated critical debates concerning issues of control, accountability, and ethics. Despite the promise of enhanced operational effectiveness, these technologies present formidable challenges, including cybersecurity vulnerabilities, risks of malfunction, the potential proliferation to non-state actors, and the diminishing role of human oversight in lethal engagements. Moreover, the intensifying global competition for technological superiority threatens to exacerbate instability and accelerate an arms race. Addressing these concerns necessitates a careful balance between innovation and humanitarian imperatives, supported by robust international regulations, clearly defined doctrines, and ethical frameworks to govern the responsible employment of AI-driven drones and autonomous weapons in future warfare.

[@]**Colonel Vikas Yadav (Retd)** is an alumnus of the Indian Military Academy. He was commissioned into the 4th Battalion, RAJPUTANA RIFLES in Jun 2004. He has served extensively in counter-insurgency operations in Assam, Manipur, Nagaland, and Jammu and Kashmir, and in high-altitude areas, including the Gulmarg Sector and Siachen Glacier. His key appointments include Weapon Training Officer, General Staff Officer-I at an infantry brigade in the Western Sector and Company Commander under United Nations Organization Stabilization Mission in the Democratic Republic of Congo.

Journal of the United Service Institution of India, Vol. CLV, No. 642, October-December 2025.

Introduction

"*The will is a beast of burden. If God mounts it, it wishes and goes as God wills; if Satan mounts it, it wishes and goes as Satan wills. Nor can it choose its rider…. the rider contends for its possession*" [1]

- Martin Luther

As the world steps into the era of drones, Artificial Intelligence (AI), and autonomous weapons, the warfare too evolves into an AI-first domain.[2] In just a few months, three military operations[3] reshaped the dynamics of modern warfare—Operation Spider Web, Operation Rising Lion, and Operation Sindoor—employing autonomous drones and weapons with AI. India's Operation Sindoor[4] marked a defining moment when India and Pakistan, two nuclear-armed adversaries, crossed the threshold into autonomous warfare, led by intelligent drones at the forefront—high-tech Harops and Herons—capable of loitering, manoeuvring, and autonomously selecting targets with precision altering fundamental Rules of Engagement (ROE) and embracing a 'New Normal' of unmanned airborne deterrence. The conflict proved right the various themes[5] of a futuristic war, which will be fought in moral and cognitive domains, high technology-short duration, not contained in time and space, difficult to find enemy, and finally blurred boundaries in war and peace, civil and military, order and chaos. Most importantly, the conflict being in moral and cognitive domain, any military action was considered as a form of communication as psychological and information operations became dominant, especially for India to retain control of escalation. As technology continues to advance every single minute, the role of AI driven drones will expand further with the development of swarming drones (increased autonomy, payload capacity, and range) and autonomous weapons with autonomous decision-making algorithms resulting in enhanced combat capabilities in unmanned warfare. These will reshape the strategic, operational, and tactical landscape, which necessitates an in-depth analysis of the capabilities, transformative powers, opportunities, and challenges—these elements offer in the futuristic warfare using metal, minds, and machine, which will be beyond the human edge.

The Machine Soldiers: Rise of Autonomous Warfare

The drones today have rapidly transformed into autonomous platforms capable of carrying out sophisticated, pre-programmed missions in combat zones with remarkable precision. Yet their current autonomy remains incomplete, as many systems still depend on fixed instructions and struggle to respond to sudden or unpredictable changes in the battlefield environment. The integration of advanced coding, adaptive firmware, and AI is now pushing these systems toward true autonomy-enabling drones to interpret their surroundings, make independent in-flight decisions, and adjust to dynamic conditions with minimal or no human intervention. Such advances mark a broader shift toward autonomous warfare, where control over these technologies—and the data they generate—will play a decisive role in shaping future military power and governance. This evolution is unfolding within the wider context of the Fourth Industrial Revolution, driven by breakthroughs in AI, quantum computing, machine learning, nanotechnology, genetic engineering, robotics, and interconnected cyber-physical systems such as the Internet of Things (IoT). With AI at the centre of this transformation, the interplay between emerging military technologies and evolving operational strategies underscores the urgent need to navigate the ethical, strategic, and geopolitical complexities of an increasingly autonomous battlespace.

The emergence of autonomous warfare represents a profound transformation in contemporary conflict. AI-enabled drones, loitering munitions, and automated defence systems are now capable of independently identifying, tracking, and engaging targets, thereby, increasing operational speed and precision. These technologies reduce risks to military personnel and enable forces to function effectively in contested environments where communication links may be disrupted. Yet their adoption raises significant concerns related to accountability, ethical judgement, and the protection of civilians. As nations expand their investment in autonomous weapons, the potential for rapid escalation and inadvertent harm intensifies. The proliferation of low-cost, AI-driven systems is reshaping warfare into a faster and more unpredictable arena.

Artificial Intelligence, Drones, and Autonomous Weapons: The Technology Life Cycle[6] Curve

Every technology undergoes a life cycle that includes four phases (refer to Figure 1). The introductory phase involves research and development of an idea, followed by prototyping and testing; technologies such as quantum computing and directed-energy weapons fall into this category. The ascent or launch phase occurs when new technologies become widely available and gain traction—examples include drones, AI, autonomous weapon systems, blockchain and big data analytics, robotics, and machine learning. The maturity phase begins when technologies become stable and ready for widespread use, such as cloud computing, nanotechnology, genetic engineering, the internet, and cyberspace, including cloud platforms for IoT. Finally, the decline phase represents obsolete technologies that are no longer effective or in use, such as 3G technology.

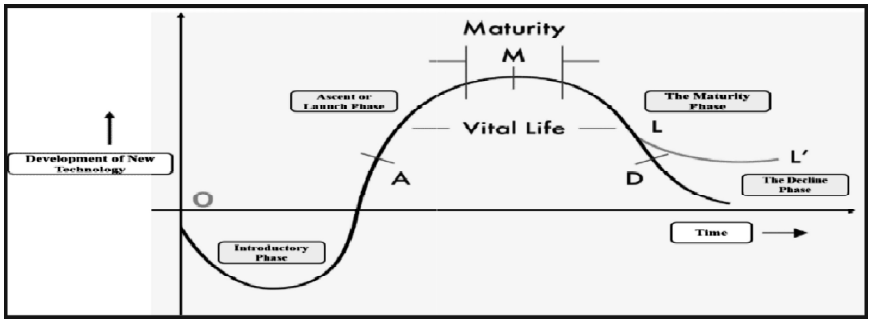

Figure 1: The Technology Life Cycle Curve

Source: dPrism[7]

AI, drones, and autonomous weapons being in ascent or launch phase form part of 'Collingridge Dilemma'[8], named after David Collingridge, who described the mismatch between the fast pace of technological progress and the much slower response of regulation. It indicates that initially when a technology (AI, drones, and autonomous weapons) is evolving, control is more, however, knowledge and understanding is less. As the time elapses, knowledge increases, however, control becomes far difficult (refer to Figure 2). However, AI's position in the ascent phase has several key implications as mentioned below:

- **The Regulatory Norms**. The governance decisions made now will shape the future safety, transparency, and accountability of AI-driven autonomous systems. Delaying action risks the technology, outpacing the capacity to regulate it.

- **Design Choices Today Lock in Future Pathways**. Standards related to data governance, system interoperability, and human oversight made during the ascent phase will determine how autonomous systems behave in future conflict scenarios.

- **Uncertainties must be Managed, not Ignored**. The knowledge being limited, ethical foresight and responsible experimentation are essential to anticipate risks such as unintended escalation, loss of human control, or algorithmic bias in military decision cycles.

- **Need for Adaptive Oversight Mechanisms**. The rapid pace of AI innovation requires flexible governance structures that can evolve alongside the technology, preventing the loss of control that Collingridge warns about as systems mature.

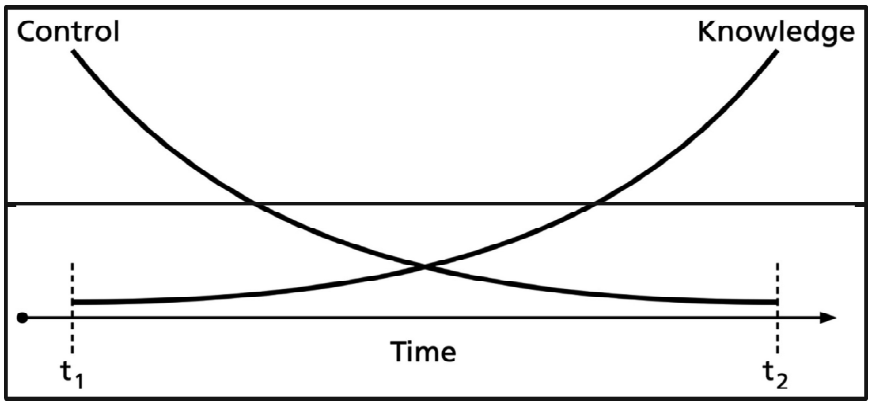

Figure 2: The Collingridge Dilemma
Source: D Collingridge[9]

Autonomous Dominance: Metal Minds in Combat

Integrating Drones and AI in Modern Warfare. The AI-powered drones today have redefined the landscape of futuristic war by opening new possibilities and enhancing capabilities of these

unmanned aerial vehicles. AI-powered drones are the new cavalry of the digital age—swift, silent, and deadly. From small quadcopters to massive unmanned aerial vehicles, these can now identify, track, and destroy targets independently. Autonomous weapons like loitering munitions or 'Kamikaze Drones' hover over conflict zones, waiting to strike with precision. Autonomy in weapon systems is spread across multiple functions, creating an autonomy spectrum. The transition from remote-controlled tools to self-governing machines marks a revolutionary shift. The AI algorithms have resulted in greater autonomy, intelligence, and efficiency, allowing them to perform the tasks impossible for a human being. The integration of AI and drones[10] can take place in the following manner:

- **Mobility**. The integration of AI will revolutionise mobility capabilities, resulting in autonomous navigation and obstacle avoidance. AI algorithms process data obtained from various sensors onboard to comprehend surroundings and navigate through obstacles by adjusting flight paths.

- **Recce, Surveillance, and Targeting**. The AI powered computer vision algorithms can detect and track objects of interest with speed and accuracy. These can identify potential targets with accuracy and make intelligent decisions to neutralise them with precision strike minimising collateral damage.

- **Swarm Intelligence**. AI enhances capabilities of swarm drones and enables them to work as a team. AI-based algorithms enable swarm drones to share data with one another through multiple coordination models. Central coordination involves all drones being controlled by a single central system. Under hierarchical coordination, the swarm is divided into squads and teams that can be directed individually or as a group. Coordination by consensus relies on drones communicating among themselves to arrive at collective decisions. Emergent coordination is the most complex form, where drones dynamically react to one another in either friendly or hostile ways (refer to Figure 3).

- **Real-Time Monitoring and Decision Making**. The AI-enabled computer-vision system provides the operator with real-time situational awareness and can also activate

automated decision-making processes based on predefined algorithms.

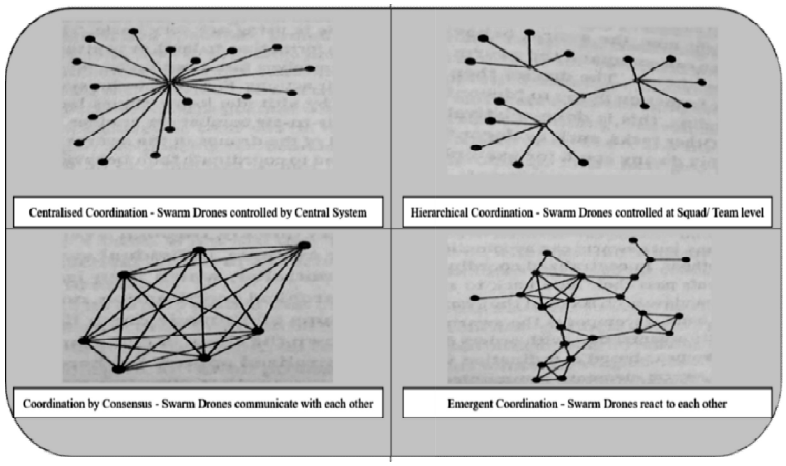

Figure 3: Swarm Drones and AI-based Control Models
Source: Paul Scharre[11]

The AI and Unmanned[12] **Weapons**. AI is becoming the brain behind modern weapon systems, which includes various types of sensors, decision making elements, and munition. The lethal[13] autonomous weapon system may be on a single platform or may be distributed across multiple physical platforms. The automation[14] in weapon systems is used to search, identify, track, prioritise, time the attack, launch munition, destroy, and re-engage, if required. The weapon systems will be semi-autonomous with a 'Human-in-the-loop' framework, wherein the automation searches for, identifies, and tracks targets, but a human operator makes the final decision to engage. Moving a step further, supervised autonomous weapon system human-on-the-loop, once activated, will search, detect, and decide to engage targets on their own, but a human can intervene, if necessary. These weapon systems provide edge when speed of engagements could overwhelm human operators. Fully autonomous weapon system or 'Human-out-of-the-loop' can search for, decide to engage, and engage targets on their own and no human can intervene. Summarily, it is the freedom provided that makes a system autonomous and not the intelligence. The AI-powered drones and autonomous weapons will impact strategic, operational, and tactical levels of battlefield. which will force soldiers to plan a battle construct via various means to

navigate through the challenges[15] posed by these. The same has been depicted in Figure 4 and forms the basis for further discussion and research.

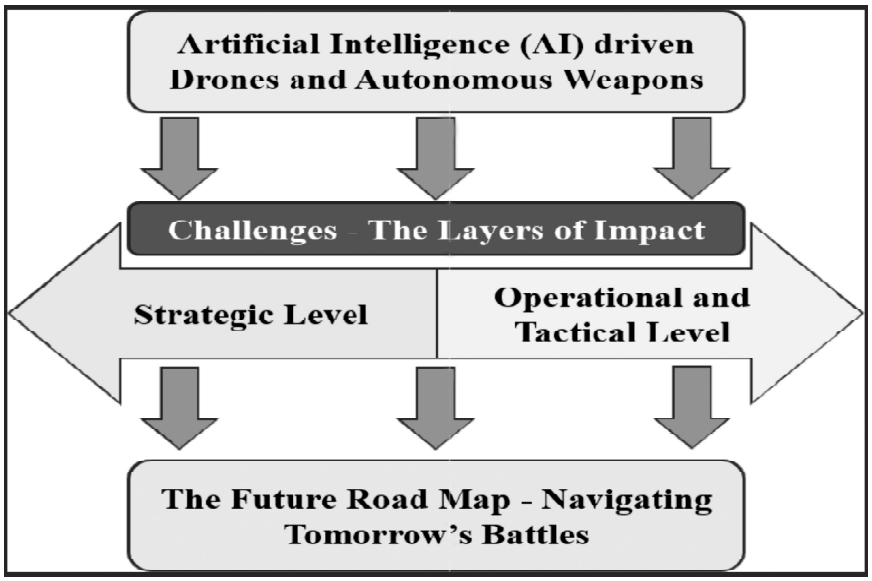

Figure 4: Flow Chart Depicting Effects of AI-driven Drones and Autonomous Weapons

Source: Compiled by the author

Impact at Strategic Level

The strategic impact of AI drones and autonomous weapons is revolutionary, not evolutionary. These will compress decision cycles, reshape global power hierarchies, redefine deterrence, and challenge the logic of conventional and nuclear strategy.

- **Shift in Military Doctrines**. The traditional force-on-force doctrines will shift from massed formations to networked, dispersed, and high-tech units exploiting AI-centric capabilities like drone swarms and AI-enhanced command, control, communications, computers, intelligence, surveillance, and reconnaissance. Same will force the militaries to redesign their strategy, training, and operational planning from the top down.

- **Deterrence and Escalation Dynamics**. Autonomous weapons with pre-delegated strike authority or autonomous counterstrike capabilities could lead to faster and unpredictable escalations. Nations possessing AI drones and weapons capable of instant retaliation or disabling strikes will gain new forms of strategic deterrence. This may destabilise nuclear deterrence[16], introduce accidental wars, or shift the balance in favour of pre-emptive strategies.

- **Power Asymmetry**. Technologically advanced states will widen the gap over conventional or less tech-savvy militaries. Non-state actors or smaller states might use cheap, intelligent drones to disrupt large-scale forces, creating asymmetric strategic threats.

- **Persistent Surveillance and Strategic Transparency**. AI drones can provide continuous surveillance of strategic assets—missile sites, bases, or fleets. This erodes strategic ambiguity, potentially making surprise offensives or hidden mobilisations more difficult. This will emphasise importance of secrecy, mobility, and deception in strategic operations.

- **Human-out-of-the-Loop Warfare**. The development of fully autonomous systems to respond without human input will challenge the core principle of human judgment in use-of-force decisions. This will raise risks of algorithmic escalation, unaccountable warfare, and strategic decision-making at machine speed—beyond diplomacy's ability to intervene.

- **International Arms Race**. Strategic competition will shift from nuclear warheads to algorithms, semiconductors, and AI arms race, resulting in enhanced geopolitical competition between major powers. This may create new alliances or rivalries based on tech dependencies.

- **Legal and Ethical Aspects**. Autonomous weapons systems pose serious challenges to International Humanitarian Law (IHL), particularly in terms of accountability. When an autonomous system commits a targeting error or causes unlawful harm, assigning responsibility becomes unclear, undermining the enforcement of war crimes and weakening

established legal norms. These systems also risk infringing fundamental IHL principles:

- **Distinction**. AI may struggle to reliably differentiate between combatants and civilians in complex environments, increasing the risk of wrongful targeting.
- **Proportionality**. Autonomous systems cannot fully assess nuanced proportionality judgments, potentially leading to excessive or unforeseen civilian harm.
- **Precaution**. Reduced human oversight may limit the ability to take feasible precautions to minimise collateral damage.
- **Martens Clause**. Deploying AI weapons without global norms may violate principles of humanity and public conscience, especially in ethically ambiguous situations.

- **Constant Conflict below Threshold of War**. AI drones enable grey-zone operations—constant low-intensity conflict, subversion, espionage, or sabotage without formal war declaration. Persistent low-cost drone operations blur the line between war and peace, requiring new strategic frameworks to manage continuous confrontation without open war.

- **New Strategic Domains: Cognitive and Cyber Warfare**. AI weapons will dominate information warfare—manipulating public opinion, generating fake content, and conducting psychological operations. Strategic dominance will depend not just on battlefield strength, but on digital sovereignty, narrative control, and information resilience.

Impact at Operational and Tactical Level

AI drones and autonomous weapons will reshape the operational and tactical landscape of warfare by introducing unprecedented speed, precision, and intelligence. The future tactical doctrine will revolve around human-AI teaming, swarm tactics, counter-AI capabilities, and real-time battlefield autonomy management. In the recent Russia-Ukraine conflict, Kiev deployed AI-enabled drones that can navigate, identify targets, and even continue missions when communication is lost. For example, Saker Scout quadcopters reportedly use AI to recognise terrain and targets,

improving both navigation and strike accuracy. During Operation Spiderweb in mid-2025, Ukraine smuggled dozens of small drones into Russian territory via cargo trucks, and when they lost remote control signals, AI systems reportedly took over to guide them to targets.[17] Some of these drones used visual recognition algorithms (powered by AI) to identify aircraft on Russian airfields and strike them. The envisaged challenges are enumerated below:

- **Enhanced Situational Awareness**. AI-driven drones including swarm drones can autonomously study enormous zones, recognise enemy locations, and communicate instantaneous intelligence. Tactical edge AI enables on-board processing, reducing latency and dependence on human operators or remote data links. Commanders can make faster and better-informed decisions, gaining a tactical advantage in dynamic combat scenarios.

- **Precision Strikes**. AI-enabled weapons can identify and engage specific targets (vehicles, radars, or even individuals) with high accuracy. Systems like loitering munitions (e.g., AI-guided Harops) can circle an area and strike only when the target appears. Operations become more surgical, reducing collateral damage and increasing effectiveness in urban and hybrid warfare.

- **Speed and Automation of Tactical Decision-Making**. AI allows faster observe-orient-decide-act loops than human counterparts. Autonomous weapons can respond to threats or targets in milliseconds, outpacing human reaction times. Speed creates tactical shock, overwhelming slower opponents and potentially neutralising threats before they can act.

- **Force Multiplication and Asymmetric Superiority**. Small units equipped with drones and autonomous systems can punch above their weight, holding ground or attacking more effectively. AI-driven unmanned systems enable smaller, faster, more mobile teams to dominate larger, less technologically equipped forces.

- **Disruption of Enemy Command, Control, and Communications**. AI drones can jam, spoof, or destroy enemy communication nodes autonomously. AI-enabled offensive cyber capabilities can paralyse enemy networks in

real time and may disrupt enemy's coordination at the tactical level, causing disarray and confusion during engagements.

- **Risk Reduction**. Drones can be deployed for high-risk missions such as clearing minefields, reconnaissance, and room intervention, etc. Autonomous systems can act as first contact or decoys in engagements, reduce own casualties, and increase the tactical sustainability of forces in prolonged operations.

- **Obstinate Surveillance and Area Denial**. AI drones can maintain 24/7 overwatch on key tactical points or enemy movement corridors. Autonomous loitering drones can enforce no-go zones, making terrain tactically unusable for the enemy.

- **Tactical Vulnerabilities and Risks**. AI-enabled systems are prone to jamming, spoofing, or hacking. Misidentification or software flaws could lead to fratricide or unintended escalation. Ethical issues arise if decisions to engage are made entirely by machines. This creates new risks of miscalculation and the need for robust counter-autonomy strategies.

Navigating Tomorrow's Battles: AI-Driven Drones and Autonomous Weapons

To harness the benefits of AI-driven drones and autonomous weapons, a multifaceted approach is required and ethical considerations—creating framework for accountability and transparency—are key considerations to navigate the double-edged sword of AI. The development of AI drones and AI- driven autonomous weapons is inevitable, which necessitates the Indian Armed Forces to introspect and adapt to challenges of futuristic battle field dominated with AI-powered drones and autonomous weapons. This can be addressed by a three-tiered multifaceted approach, which will make one understand and survive through the chaos.

Tier I: The Development, Doctrine, Defence or Offensive, and Diplomacy Model.[18] Based on the concept of 'Whole-of-Nation Approach' The Indian Armed Forces in coordination with the civil agencies, must invest in research and development to 'Develop' safe, reliable, fail safe, and accountable AI systems. The formulation of 'Doctrine' including

strategic planning, setting deployment ceilings on AI-enabled lethal systems, mandating mission-specific authorisation before AI weapon activation by incorporating AI warfare doctrines into national security strategies, and policy framework establishing clear national policies and ROE for AI weapons will prevent collateral damage and will control the escalatory matrix. At the same time, it is necessary to develop the 'Defensive or Offensive' capabilities by exploiting anti-drone systems, Electronic Warfare (EW), restricting autonomous operations in civilian-populated areas, unless under strict human control and AI countermeasure capabilities. The 'Diplomacy'[19] will include creating global treaties to prevent an AI arms race.[20] Escalation including sharing non-sensitive AI safety protocols with allies, formalising a convention on use of AI drones and AI-driven autonomous weapons, banning fully autonomous 'Kill without Consent' weapons globally and defining permissible combat environments.

Tier II: Adopt the Security, Adaptability, Fairness, and Ethics Approach.[21] The defence research agencies must work to strengthen security including cybersecurity to develop counter-AI defences, fail-safe controls, and audits to keep human in or on the loop. Enhanced cybersecurity to protect AI drones from hacking or data manipulation, building anti-drone and AI jamming systems to neutralise hostile swarms, enhancing EW capabilities against autonomous threats, establishing AI reliability benchmarks for all deployed systems, and researching AI versus AI counter-offensive strategies is essential. The 'Adaptability' to new changes must be fast and continuously upgrading AI systems will help to tackle new threats effectively. The adaptive AI models capable of handling unpredictable combat situations must be researched and developed. The nations must come together and ensure 'Fairness' enforcing collateral damage thresholds in targeting protocols, post-operation accountability[22] reporting for every autonomous mission, standardising kill-switch protocols across nations for emergency deactivation, and set boundaries to govern deployment and engagement rules. Last but not the least, adhering to the 'Ethical' behaviour is necessary by keeping human oversight in lethal decision-making, protect civilians, and preventing collateral damage. The policies must

be IHL compliance into AI algorithms to develop clear national and international regulations for AI-based drones and weapons usage.

Tier III: The New Era ROE. It is important to formulate the universal ROE while employing the AI powered drones and autonomous weapons. These must address civilian protection and collateral damage concerns in AI warfare. Pre-mission rules must include human review and approval of AI mission parameters, in-mission rules must allow conditional autonomy, with live human override, and post-mission rules must record mandatory audit logs and accountability reports. The humanitarian safeguards must be developed so that AI must abort missions if target identification confidence drops below a set threshold. Wargaming and simulations to anticipate future scenarios must be conducted to exercise the same. To ensure transparency, there should be public disclosure of AI ROE framework to assure compliance with global norms. The ROE must be flexible and must evolve with latest AI trends and technology.[23] The human-machine teaming must evolve simultaneously with ROE, which will include maintaining human control or oversight in critical decision-making (human-in-the-loop) and training of soldiers for AI-assisted operations and counter-AI tactics, techniques, and procedures.

Conclusion

The militarised AI-driven drones and autonomous weapons undoubtedly poses challenges in several respects. These are advantageous in shielding soldiers and precision strikes, minimising collateral damage to civilian and civilian assets especially in highly uncertain and dangerous environment. The challenges include security risks on account of its wide accessibility especially to unscrupulous countries and the non-state actors. This technological competition that has turned into an arms race amidst growing geopolitical tensions has created a dangerous global context. A strategic framework acceptable to all nations needs to be chalked out to extract maximum benefits from such futuristic developments.

Endnotes

[1] Dr Martin Luther, *The Bondage of the Will*, translation by Henry Atherton, https://www.grace-ebooks.com/library/Martin%20Luther/ML_Bondage_Of_The_Will.pdf

[2] Bindra Jaspreet, "AI warfare is here: How intelligent drones Harop and Heron fronted India's Operation Sindoor", *The Economic Times*, May 17 2025, accessed 19 Jul 2025, https://economictimes.indiatimes.com/news/defence/ai-warfare-is-here-how-intelligent-drones-harop-and-heron-fronted-India's-operation- sindoor/articleshow/121239839.cms

[3] Bhagyashree Sengupta, "From code to combat: AI-driven drones rewrite battle rules from Op Spider Web to Operation Sindoor", *FirstPost,* 04 Aug 2025, accessed 18 Aug 2025, https://www.firstpost.com/world/ukraine-drones-operation-sindoor-russia-ai-driven-drones-israel-mossad-rising-lion-iran-spider-web-war-fpv-13917413.html

[4] Rahul Bedi, "Autonomous warfare in Operation Sindoor", *The Hindu*, 30 May 2025, accessed 19 Jul 2025, https://www.thehindu.com/news/national/autonomous-warfare-in-operation-sindoor/article69633124.ece

[5] Freedman Lawrence, *Strategy - A History*, (London: Oxford University Press), (2015), pp 226-227.

[6] Ray Kurzweil, *The Age of Spiritual Machines*, (New York: Penguin Books), 2000, p 19.

[7] Mike Mills, "Technology Lifecycle Management: A CEO Roadmap", *Strategic Consulting*, 19 Oct 2022, accessed 19 Aug 2025, https://dprism.com/insights/what-istechnology-lifecycle-management/

[8] Andreas Heinz Westhues, "The Militarization of Artificial Intelligence and the Autonomous Weapons", *UNISCI Journal*, No 67, Jan 2025, accessed 18 Aug 2025, https://www.unisci.es/wp-content/uploads/2025/01/UNISCIDP67-4HEINZ.pdf

[9] D Collingridge, *The social control of technology*, (Frances Pinter: St. Martin's Press), 1980.

[10] AK Singh and Narender Kumar, *Battle Ready for the 21st Century*, (New Delhi: CLAWS), 2021, pp 227-229.

[11] Paul Scharre, *Army of None – Autonomous weapons and the future of war*, (USA: Norton Publishers), 2018, p 20.

[12] Ibid.

[13] Atul Pant, "Future Warfare and Artificial Intelligence", *IDSA Occasional Paper* No 49, Manohar Parrikar Institute for Defence Studies and Analyses, Aug 2018, accessed 14 Aug 2025, https://idsa.in/system/files/opaper/op-49-future-warfare-and-artificial-intelligence.pdf

[14] Rajeev Sabherwal, *Disrupt or Get Disrupted*, (New Delhi: CLAWS), 2024, pp 29-37.

[15] Sanur Sharma, "AI and National Security: Major Power Perspectives and Challenges", *Issue Brief*, Manohar Parrikar Institute for Defence Studies and Analyses, 12 Sep 2022, accessed 12 Aug 2025, https://www.idsa.in/system/files/issuebrief/ib-AI-and-National-Security-ssharma-120922.pdf

[16] Henry Kissinger, Eric Schmidt, and Daniel Huttenlocher, *The Age of AI*, (UK: John Murray Publishers), 2022, pp 135-146.

[17] Katza Bego, "Ukraine's Operation Spider's Web is a game-changer for modern drone warfare. NATO should pay attention", *Chatham House*, 17 Jul 2025, accessed 15 Nov 2025, https://www.chathamhouse.org/2025/06/ukraines-operation-spiders-web-game-changer-modern-drone-warfare-nato-should-pay-attention

[18] Mustafa Suleyman, *The Coming Wave - AI, Power and The Twenty First Century's Greatest Dilemma*, (UK: Penguin Random House Publishers), 2023, pp 239-279.

[19] Rahul Panwar, "PM Modi at AI Summit 2025: Shaping India's AI Vision for the Future", *IDSA Comments*, Manohar Parrikar Institute for Defence Studies and Analyses, 12 Mar 2025, accessed 07 Aug 2025, https://www.idsa.in/publisher/comments/pm-modi-at-ai-summit-2025-shaping-indias-ai-vision-for-the-future

[20] Munish Sharma, "The Global Race for Artificial Intelligence: Weighing Benefits and Risks", *Issue Brief*, Manohar Parrikar Institute for Defence Studies and Analyses, 23 Feb 2018, accessed 15 Aug 2025, https://idsa.in/system/files/issuebrief/ib-artificial-intelligence-msharma.pdf

[21] Ibid.

[22] RS Panwar, "Artificial Intelligence in Military Operations: Technology, Ethics and the Indian Perspective", *IDSA Comments*, Manohar Parrikar Institute for Defence Studies and Analyses, 31 Jan 2018, accessed 10 Aug 2025, https://www.idsa.in/publisher/comments/artificial-intelligence-in-military-operations-technology-ethics-and-the-indian-perspective

[23] Ibid.