

CHAPTER 20

**ARTIFICIAL INTELLIGENCE AS A STRATEGIC FORCE IN
MODERN WARFARE¹**

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Abstract

Artificial Intelligence is rapidly transforming the nature of modern warfare, emerging as a decisive force multiplier on the battlefield. From autonomous drones and preceptive analytics to cyber defence and decision support system, AI technologies are reshaping military strategy, operational efficiency and the ethics of combat. This article explores how AI is being integrated into defence infrastructure worldwide, highlighting its potential to enhance precision, reduce human casualties and accelerate decision making. At the same time, it examines the risks of algorithmic bias, loss of human oversight and the escalation of autonomous conflict. By analyzing both the opportunities and challenges, the discussions underscore AI's dual role as a revolutionary tool of defence and a disruptive element that raises urgent questions about accountability, legality, and the future of global security. It highlights the gaps in the current legal frameworks, particularly regarding responsibility for autonomous actions, attribution of liability, and compliance with human rights obligations. By analyzing treaties, customary law, and emerging policy debates, the article argues for the urgent need to adapt international legal norms to address the disruptive potential of AI in warfare.

Keywords

Artificial intelligence, Autonomous Weapons Systems, Conflict, Ethics, Peace, Technologies, Warfare.

1. INTRODUCTION

The global landscape appears to be nearing a critical juncture, characterized by the convergence of two significant trends. At a pivotal juncture in history, as the post-World War II and post-Cold War international frameworks are disintegrating in the face of divergent world order perspectives and revitalized geopolitical tensions, the globe is concurrently experiencing the nascent phases of an extraordinary technological evolution. This era is poised for significant transformation, marking the second and notably more disruptive phase of the digital revolution that commenced with the advent of the Internet

in the 1990s. (A. Manning 2020) Historically, technological advancements tend to outpace the development of corresponding institutions, regulations, and societal norms. (A. Manning 2020) The significant scale of transformation occurring amidst a backdrop of global institutional instability and disarray suggests a notably perilous void in international governance, with implications for economies, societies, and the trajectory of conflict.

In the forthcoming two decades, we can anticipate a significantly greater degree of technology driven transformation compared to the initial revolution centered around information and communications technology, which will yield far-reaching social, economic, and geopolitical consequences. This emerging phenomenon represents a confluence of various technologies, showcasing a digital integration of artificial intelligence, big data through cloud computing, robotics, biotechnology, three-dimensional printing, advanced manufacturing techniques, innovative materials, fifth-generation connectivity enhancing the Internet of things, nanoengineering and nanomanufacturing, and, on the horizon, the advent of quantum computing. The ongoing convergence of digital and physical economies, often referred to as “online-to-offline” or O2O, is reshaping various sectors including business models, transportation, healthcare, finance, manufacturing, agriculture, warfare, and fundamentally altering the essence of work.

2. ARTIFICIAL INTELLIGENCE IN CONTEMPORARY WARFARE

Since the 1991 Persian Gulf War, there has been intense debate among policymakers and academics regarding the extent to which emerging technologies are bringing about a transformation in military operations and making the quest for information dominance a critical factor in future conflicts. (Payne,2018) Artificial intelligence has emerged in the realm of national security with a rapidity and fervor that has astonished even the most seasoned analysts of the policy dialogue. (Zachary,2019) The elements contributing to this surge of interest encompass the view of AI as a groundbreaking technology, comparable to the advent of fire, electricity, or nuclear weapons. Additionally, the swift integration of emerging AI-driven technologies across various sectors of the U.S. economy frequently yields transformative outcomes. (Zachary,2019). The United States currently stands as the preeminent force in the geopolitical arena shaped by artificial intelligence, whereas China is positioning itself as a formidable contender. (Zachary, 2019) Russia has not yet succeeded in positioning itself among the leading nations in the fields of artificial intelligence, autonomy, and robotics. Nevertheless, the administration under Putin places significant emphasis on acquiring expertise, as the Kremlin views artificial intelligence as the central element in the forthcoming competition among global powers. (Paul, 2019)

The integration of AI technologies into military operations is becoming more pronounced, encompassing a variety of applications from autonomous weapons systems to advanced surveillance and reconnaissance tools. These

systems possess the capability to identify and engage targets autonomously, devoid of human oversight. (Paul,2019) Notable instances encompass the Israeli Harpy drone alongside the U.S. Navy's Sea Hunter. The implementation of AWS could significantly improve operational efficiency on the battlefield while simultaneously minimizing human casualties. (Zeineddine,2024) Nevertheless, it presents considerable dangers, such as the potential for malfunction, unintended escalation, and ethical dilemmas surrounding the delegation of life-and-death decisions to machines. AWS can operate at speeds and with precision that far exceeds human capabilities, potentially transforming the nature of warfare. AI enhances capabilities in data analysis, pattern recognition, and decision-making. (Zeineddine,2024) For instance, AI-driven drones and satellites can process vast amounts of data to identify potential threats. These technologies improve situational awareness and operational effectiveness, but they also raise privacy concerns and the potential for misuse in targeting decisions. AI-driven surveillance systems can monitor large areas continuously, providing valuable intelligence for military operations. The use of AI for surveillance raises ethical and legal issues, particularly concerning privacy rights and the potential for abuse. The integration of AI in reconnaissance also necessitates robust oversight to ensure compliance with IHL. (Zeineddine,2024)

3. AI AND DRONES IN MODERN WARFARE

AI and drones converge as pivotal elements in contemporary military engagements, facilitating autonomous operations that redefine tactical advantage. Essential aspects encompass the improvement of real-time intelligence via onboard artificial intelligence that processes extensive sensor data for the purpose of threat detection. The coordination of swarms enables numerous drones to carry out synchronized assaults, thereby surpassing defences without the necessity of human operators. (Chivers,2025) The application of machine vision for precision targeting effectively reduces collateral damage and enhances strike accuracy, particularly in environments characterized by contention. Adaptive autonomy enables drones to circumvent jamming and dynamically alter their routes, thereby maintaining operational effectiveness in electronic warfare contexts. (Mukherjee, 2025)

The emergence of these technologies transforms the paradigms of warfare, yet simultaneously presents challenges related to escalation vulnerabilities and ethical considerations. (Mukherjee, 2025) The widespread availability of affordable AI drones facilitates the democratization of lethal capabilities, empowering non-state actors to confront state military forces. (Kugler, 2026) The reliance on artificial intelligence presents potential vulnerabilities, including algorithmic malfunctions or security breaches, which could interrupt command structures during critical operations. Regulatory gaps remain evident, as the evolution of drone autonomy outpaces the development of international legal frameworks. (Kugler,2026) The development of countermeasures such as

directed energy weapons is advancing, leading to an escalating arms race in the realm of anti-drone artificial intelligence defences. Ultimately, the importance of oversight cannot be overstated, as it serves to mitigate unintended escalations in battlefields increasingly dominated by drones.

4. BRIDGING LEGAL GAPS: ADAPTING INTERNATIONAL NORMS TO AI-DRIVEN AUTONOMOUS WARFARE

The existing international legal frameworks expose significant deficiencies in the regulation of AI-driven autonomous actions in warfare, especially concerning the attribution of responsibility and adherence to human rights standards. Through a thorough analysis of pivotal treaties, customary international law, and ongoing policy discussions, several critical points highlight the pressing necessity to modify existing norms in response to the disruptive nature of artificial intelligence.

4.1. Gaps in Responsibility for Autonomous Actions

The current frameworks, such as the Geneva Conventions and Additional Protocol I, presuppose the involvement of human agents in the decision-making process. However, the introduction of laws governing lethal autonomous weapons systems introduces non-human intermediaries that fundamentally alter this established model. Attribution within the realm of international criminal law encounters significant challenges, as legal frameworks often identify targets autonomously, thereby establishing a direct link between human intent and the resultant harm.

The existing customary rules regarding command responsibility do not adequately address the oversight of decisions made by Opaque AI, resulting in responsibility gaps that leave no individual fully accountable. The UN General Assembly Resolution 79/239 recognizes the relevance of international humanitarian law to the lifecycle of artificial intelligence; however, it falls short in providing mechanisms for the enforcement of violations committed by autonomous systems. (Zamani,2025) Policy debates underscore the way the offshoring of decisions by AI circumvents conventional accountability, necessitating the development of novel conceptions of distributive responsibility. (Zamani,2025)

4.2. Challenges in the Attribution of Liability

Article 36 of Additional Protocol I mandates legal reviews of new weapons; however, it falls short in addressing the opaque processes and unpredictability associated with artificial intelligence, thereby obstructing compliance assessments prior to deployment. (Kwik, 2023) The principles of customary international humanitarian law, such as distinction and proportionality, rely on the capacity for verifiable human judgment, a quality that AI prediction models fundamentally do not possess. The distribution of liability among programmers, commanders, and machines introduces complexities in prosecutions, as no individual actor possesses control over the ultimate outcomes. (Kwik, 2023)

Current discussions advocate for the establishment of a treaty that would align with the AI framework under the Vienna Convention, aimed at facilitating verifiable commitments; however, it is important to note that no binding mechanisms are currently in place. Human Rights Watch highlights the challenges associated with operational liability stemming from the opaque nature of AI decision-making, which continues to foster a climate of impunity.

4.3. Adherence to Human Rights Responsibilities

The Martens clause within International Humanitarian Law emphasizes principles of humanity to address existing gaps; however, the application of AI surveillance and targeting frequently undermines the rights to non-discrimination and remedy. The Human Rights Committee highlights the potential risks of arbitrary deprivation posed by autonomous systems; however, there are currently no explicit prohibitions that compel states to act. Obligations rooted in custom to uphold and guarantee adherence. Considering Article 1 of the Geneva Convention, there exists a significant concern regarding the rapid advancement and lack of transparency associated with artificial intelligence. (Davit, 2024) Policy forums such as discussions at the United Nations advocate for the necessity of maintaining human oversight; however, the fragmented nature of the resolutions often renders them ineffective. (Davit,2024) The entitlements to seek redress following harm caused by artificial intelligence are largely theoretical in nature, particularly in the absence of enforceable legal frameworks, as highlighted in analyses by the International Committee of the Red Cross.

5. CHALLENGES OF AI

Artificial intelligence functions as a pivotal element in contemporary military operations, facilitating real time data processing, predictive analytics, and the deployment of autonomous systems that significantly improve decision making and operational effectiveness. It revolutionizes combat zones through the implementation of intelligence surveillance reconnaissance, drone operations, and command systems. Nonetheless, its implementation presents considerable ethical, technical, and humanitarian dilemmas.

- (a) *The Erosion of Human Oversight in Autonomous Systems:* The deployment of autonomous AI weapons undermines human oversight, potentially leading to accidental escalations and unintended lethal engagements in unpredictable combat environments. (Klaus,2024) The erosion of control raises significant concerns regarding adherence to international humanitarian law, as automated systems are incapable of making nuanced judgments necessary to differentiate between combatants and civilians. The diminishment of human agency raises significant ethical considerations, replacing genuine empathy with mechanistic algorithmic processes.
- (b) *Algorithms Bias:* The presence of historical biases within training data sets leads to the erroneous classification of civilians as combatants by AI systems, thereby reinforcing discriminatory targeting practices in

various conflict zones. Data that is either incomplete or biased does not adequately reflect the cultural and environmental subtleties, resulting in inaccurate evaluations of threats during operations. (Alvarez, 2024) The excessive dependence on flawed models exacerbates minor inaccuracies, resulting in extensive civilian casualties and undermining international legitimacy. Adversarial manipulations take advantage of these biases to mislead systems, transforming AI into a conduit for the dissemination of misinformation in conflict scenarios. The absence of varied input sources reinforces systemic inequalities, rendering AI unreliable in asymmetric conflicts involving non-Western adversaries. (Alvarez, 2024)

- (c) ***Unpredictability and Opacity:*** Opaque algorithms obscure the routes of decision-making, making it unfeasible to conduct proportionality evaluations in accordance with the law of armed conflict. (Simmons,2025) Hallucinations create imaginary threats in unfamiliar settings, leading to unnecessary escalations. The susceptibility to adversarial inputs results in unacknowledged failures that occur without any discernible alerts. The proliferation of errors within multi-agent AI swarms significantly undermines diagnostic capabilities in times of disorder. (Gilbert,2025) The intrinsic unpredictability undermines the possibility of preemptive testing, thereby contravening fundamental transparency obligations in the realm of military accountability. (Gilbert,2025)
- (d) ***Risks of Escalation:*** The deployment of AI-driven drone swarms triggers a series of responses that exceed the capacity for human de-escalation, leading to unpredictable outcomes. (Csernaton, 2024) Inter-domain cyber-AI tensions give rise to immediate multi-front conflicts that exceed the bounds of strategic foresight. (Atkinson,2024) Inaccurate predictive analytics misinterpret signals from adversaries, leading to a cascade of preemptive strike scenarios. The disparities in velocity elicit instinctive and immediate responses in competitive peer rivalries characterized by high stakes. (Atkinson,2024) The reduction of human signaling channels obstructs diplomatic avenues in the context of escalating hostilities.
- (e) ***Deficiencies in Accountability:*** The dispersal of responsibility among developers, commanders, and algorithms complicates the attribution of culpability in instances of war crimes. (Hill, 2024) Technical failures often escape legal examination because of the opaque nature of error attribution. (Hill, 2024) State immunities protect systemic AI failures from external accountability. (Trabucco,2025) The disjointed structures of authority in hybrid operations complicate avenues for prosecution. Civilians suffer from unresolved injuries due to systemic deficiencies in AI, which continue to foster cycles of impunity.

6. RECOMMENDATIONS

To mitigate the absence of human oversight, it is imperative that military

organisations implement stringent mandates ensuring that human involvement remains integral in all lethal autonomous systems. Thorough training programs should equip operators with the skills to identify and counteract automation bias, particularly using simulated high-pressure situations. International treaties prohibiting fully autonomous weapons would create a normative framework, accompanied by verification mechanisms to ensure adherence. Redundant verification layers, such as secondary human reviewers, mitigate the risk of single point failures in extended engagements. Programs designed for skill maintenance effectively combat atrophy by systematically rotating personnel through manual command exercises on a regular basis.

Proposals for mitigating algorithmic bias in military AI systems emphasize the necessity of stringent pre deployment procedures to guarantee fair results. It is imperative that independent entities conduct mandatory audits of training datasets to ensure a comprehensive verification of diversity encompassing various ethnicities, environments, and conflict scenarios. Standardized global benchmarks for data provenance necessitate that developers transparently disclose their sourcing and scrubbing methodologies. (Jimena,2024) Real-time bias detection algorithms, embedded within operational AI systems, initiate automatic pauses in response to anomalous patterns of discrimination. Ultimately, liability frameworks hold vendors accountable for established biases, thereby encouraging proactive mitigation throughout the AI lifecycle.

Addressing the issues of opacity and unpredictability necessitates the compulsory implementation of explainable AI frameworks that include traceable decision-making processes. (Edle,2025) Prior to conducting field tests, it is essential to implement stress tests that address adversarial perturbations and edge cases, thereby ensuring the model's robustness in accordance with established protocols. Validation frameworks that promote open access facilitate peer review among collaborators, enhancing collective advancements in interpretability. The continuous logging of all inferences facilitates thorough post-incident forensic examination, thereby ensuring accountability for any hallucinations or cascading effects that may arise. Independent certification bodies monitor adherence to standards, rescinding approvals for systems lacking transparency.

Global standards must include algorithmic circuit breakers that need deliberate pauses prior to irreversible activities, such as swarm deployments, to mitigate escalation risks. Peer competitor's bilateral early warning systems exchange AI intent signals, which lessens spirals of incorrect computations. (Klaus,2024) Non-kinetic reactions are given priority by de-escalation algorithms designed for restraint in environments with uncertain dangers. AI processing speed limits in nuclear command and control maintain windows for human involvement. Rebuilding signalling pathways, confirming non-aggressive AI postures, and doing joint exercises are examples of confidence-boosting techniques. (Klaus, 2024)

Explicit legal principles that transfer culpability from developers to end users in war crimes courts are necessary to close accountability gaps. Every AI influenced choice for attribution has thorough audit records, is tamper-proof, and is acceptable in court. (Claudia 2025) Command accountability for hybrid human-AI activities is defined by international norms that pierce state immunity for grave errors. Verified civilian damages are promptly remedied by dedicated compensation funds funded by AI weaponry donors. Systemic AI atrocities are prosecuted via Universal Jurisdiction processes, which prevent impunity by setting precedent.

7. CONCLUSION

Artificial Intelligence undeniably enhances contemporary warfare as a strategic asset, increasing the speed of decision-making and the precision of operations across various battlefields. Nevertheless, ongoing issues such as algorithmic bias, lack of transparency, and the potential for escalation reveal weaknesses that compromise its dependability. The examination of legal frameworks uncovers significant deficiencies in the attribution of responsibility and adherence to human rights, particularly as treaties presuppose human agency that is lacking in autonomous systems. The complexities of customary international law are increasingly challenged by the unpredictable nature of artificial intelligence, necessitating immediate normative adjustments through the establishment of new protocols and prohibitions on complete autonomy. It is imperative for those in positions of authority to emphasize the importance of human oversight and the establishment of international verification frameworks to ensure the responsible utilization of artificial intelligence's capabilities. The inability to reconcile these disparities threatens to undermine the principles of *jus in bello*, thereby fostering a culture of impunity in a time characterized by conflict driven by machines.

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