

AI in Decision-Making and Command Systems

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Abstract

Artificial intelligence (AI) has significantly enhanced the decision-making and command systems used in modern warfare, providing military leaders with tools that can process vast amounts of data and make real-time decisions with unprecedented speed and accuracy. By integrating AI into military command and control (C2) systems, armed forces can rapidly assess battlefield conditions, predict enemy movements, and develop strategic responses without relying solely on human cognition, which is often limited by time and cognitive bias. AI systems can analyze intelligence from various sources satellite imagery, sensor data, reconnaissance drones, and human reports to provide military commanders with a comprehensive, up-to-date operational picture.¹ This ability to automate and optimize decision-making processes not only enhances battlefield efficiency but also provides military forces with a decisive advantage in rapidly changing combat environments, where every second counts.

Keywords: Artificial intelligence (AI), Military Command and Control (C2) Systems, Battlefield, Human Cognition

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Artificial intelligence (AI) has significantly enhanced the decision-making and command systems used in modern warfare, providing military leaders with tools that can process vast amounts of data and make real-time decisions with unprecedented speed and accuracy. By integrating AI into military command and control (C2) systems, armed forces can rapidly assess battlefield conditions, predict enemy movements, and develop strategic responses without relying solely on human cognition, which is often limited by time and cognitive bias. AI systems can analyze intelligence from various sources satellite imagery, sensor data, reconnaissance drones, and human reports to provide military commanders with a comprehensive, up-to-date operational picture.² This ability to automate and optimize decision-making processes not only enhances battlefield efficiency but also provides military forces with a decisive advantage in rapidly changing combat environments, where every second counts. One of the key advantages of AI-driven decision-making systems is their ability to integrate and analyze large, heterogeneous data sets in real-time. Military operations

¹ Wong, K. (2021). AI in warfare: The implications of autonomous weapons systems on international security . *International Affairs Review* , 38(5), 120-138.

² Wong, K. (2021). AI in warfare: The implications of autonomous weapons systems on international security . *International Affairs Review* , 38(5), 120-138.

often involve the simultaneous processing of multiple streams of information, ranging from logistical data to operational intelligence and sensor feeds. AI systems can synthesize these complex data sources and provide actionable insights, enabling commanders to make informed decisions faster than traditional manual processes. For example, AI algorithms can track the movement of enemy forces, predict future actions based on historical patterns, and suggest optimal responses, such as where to allocate troops or when to launch a strike. These AI-enhanced systems allow for more precise, data-driven decision-making, reducing the likelihood of human error and increasing the speed at which military actions are taken.³ As military forces increasingly depend on these AI systems, the role of human decision-makers may shift from operational management to overseeing AI recommendations, guiding strategic decisions, and ensuring compliance with ethical and legal standards.

Data-Driven Strategic Planning

In the context of modern warfare, artificial intelligence (AI) has revolutionized strategic planning by enabling data-driven approaches that significantly enhance military decision-making processes. Traditionally, military strategy was developed based on human intelligence, field reports, and historical precedents, but AI has now enabled the collection, analysis, and interpretation of vast amounts of real-time data, allowing military planners to make more informed and precise decisions. AI systems can process data from diverse sources such as satellite imagery, sensor networks, drone feeds, social media, and intercepted communications, providing military leaders with a comprehensive and timely picture of the operational environment.⁴ The integration of AI into strategic planning allows for dynamic adjustments to be made during operations, enhancing adaptability and responsiveness in rapidly changing conflict scenarios. By using predictive modeling, AI can forecast potential outcomes of various strategies, enabling military forces to proactively address emerging threats and opportunities.

AI-powered data analytics also enhances the accuracy and speed of military intelligence, which is crucial for effective strategic planning. Machine learning algorithms are capable of analyzing large datasets to detect patterns and trends that would be impossible for human analysts to uncover manually. For example, AI can identify emerging security threats, track troop movements, and anticipate enemy actions based on historical data and behavioral analysis. This ability to quickly synthesize and interpret data allows military planners to develop strategies that are based not only on current intelligence but also on predictive insights about future developments. AI also plays a key role in identifying optimal courses of action in complex, multifaceted military environments. By simulating different scenarios and analyzing potential risks and rewards, AI systems help commanders choose the best course of action to achieve strategic objectives, while minimizing potential costs or collateral damage.⁵ This level of precision is particularly valuable in high-stakes, time-sensitive military operations, where quick decision-making can be the difference between success and failure.

Machine Learning for Battlefield Insights

Machine learning (ML), a subset of artificial intelligence (AI), has become an essential tool for gaining battlefield insights and providing real-time intelligence in modern warfare. By using machine learning algorithms to analyze massive datasets, militaries can extract valuable

³ Zalman, A. (2019). The ethics of autonomy in warfare: Why AI weapons raise profound moral concerns . *International Review of the Red Cross* , 101(913), 57-72.

⁴ Zeng, L., & Bi, L. (2020). Challenges in the use of AI in military operations and strategic decision-making . *Chinese Journal of Military Science* , 24(2), 83-98.

⁵ Zellner, J. (2021). The international arms race in AI: Implications for global security . *AI & Security Journal* , 5(1), 10-24.

information that enhances strategic decision-making, operational planning, and tactical execution. ML systems can process a variety of data inputs, such as satellite imagery, sensor networks, communications intercepts, and drone surveillance feeds, enabling military forces to develop a comprehensive understanding of the battlefield environment. This enhanced data processing capability allows for the identification of emerging threats, patterns in enemy movements, and potential vulnerabilities in real-time, giving commanders an edge in both conventional and asymmetric warfare.⁶ As warfare becomes more data-driven, machine learning offers the potential to accelerate decision-making, improving the speed and accuracy of military operations. In addition to enhancing predictive capabilities, machine learning can optimize real-time battlefield insights by analyzing and interpreting data faster and more accurately than human operators. For example, ML algorithms can autonomously analyze data from unmanned aerial vehicles (UAVs) or other surveillance platforms to identify and classify enemy vehicles, equipment, or personnel. These systems can operate in real-time, providing military commanders with immediate, actionable intelligence that informs tactical decisions on the ground. The use of machine learning in this context reduces the burden on human analysts, allowing them to focus on higher-level strategic thinking rather than being bogged down by routine data analysis. Furthermore, ML algorithms can continually improve through training on new data, enhancing their accuracy and adaptability to different operational environments. This capability allows military forces to gain a more nuanced understanding of the battlefield and respond to changing circumstances with greater agility.⁷

Strategic and Tactical Implications of AI in Warfare

The integration of artificial intelligence (AI) into modern warfare has profound strategic and tactical implications, reshaping how military operations are planned, executed, and evaluated. On a strategic level, AI offers military forces the ability to significantly enhance their decision-making capabilities, providing a more data-driven and predictive approach to conflict management. AI systems can process vast amounts of data from multiple sources, such as satellite imagery, intelligence reports, and reconnaissance data, allowing military planners to anticipate enemy movements, predict future threats, and adjust their strategies accordingly. The use of AI in strategic planning allows for faster responses, improved resource allocation, and a more effective deterrence posture against adversaries. By providing real-time insights and forecasting potential developments, AI reduces the uncertainty that often accompanies military decision-making, offering a strategic edge in both conventional and asymmetric warfare scenarios.⁸ However, this increased reliance on AI also creates new vulnerabilities, as adversaries may attempt to exploit weaknesses in AI-driven systems, potentially undermining the strategic advantages it provides. On the tactical level, AI has the potential to revolutionize battlefield operations by enhancing precision, reducing human error, and enabling real-time decision-making in fast-paced combat situations. Autonomous systems powered by AI, such as drones, unmanned ground vehicles (UGVs), and robotic combat units, are capable of carrying out tactical operations with a level of efficiency and effectiveness that would be difficult for human forces to achieve. These AI-driven assets can operate autonomously or in coordination with human soldiers to perform tasks such as surveillance, target identification, and precision strikes. By automating certain tasks, AI reduces

⁶ Krishnan, A. (2016). Killer robots and the ethics of autonomous weapons . *Journal of Ethics and Technology* , 20(2), 23-41.

⁷ Ladd, D. (2018). AI and international security: A review of military implications . *Strategic Review for Southern Africa* , 39(2), 56-74.

⁸ Binnendijk, H., & Libicki, M. C. (2021). AI technologies and the future of military power . Georgetown University Press .

the cognitive load on human soldiers, allowing them to focus on higher-level decision-making and strategic considerations. For instance, AI can autonomously identify enemy combatants, assess threats, and launch attacks based on predetermined rules of engagement, minimizing the risk of human error and collateral damage (Lin, Abney, & Bekey, 2012). While AI in tactical operations offers significant advantages in terms of speed and precision, it also raises concerns about accountability, especially in scenarios where autonomous systems are responsible for lethal actions.

Enhancing Combat Efficiency and Precision

The integration of artificial intelligence (AI) into modern warfare has revolutionized combat efficiency and precision, fundamentally changing the dynamics of military operations. AI's ability to process vast amounts of data in real time enables military forces to enhance situational awareness and make more informed, precise decisions on the battlefield. By leveraging AI technologies such as machine learning, computer vision, and predictive analytics, military commanders can better identify threats, assess risks, and execute operations with a level of accuracy that significantly reduces the likelihood of collateral damage. For instance, AI-powered systems can analyze surveillance data from unmanned aerial vehicles (UAVs) or satellite imagery to identify enemy positions or targets with greater precision than human operators could achieve. This ability to autonomously detect and categorize threats in complex and dynamic environments directly translates into improved combat effectiveness and minimized civilian casualties.⁹ The increased precision provided by AI systems reduces the uncertainty that often accompanies military operations, enabling more strategic decision-making and a more efficient use of resources. AI-driven systems also improve combat efficiency by automating routine and time-consuming tasks, thus freeing up human personnel to focus on higher-level strategic decisions. Autonomous systems, including drones, robotic ground vehicles, and automated defense systems, can perform tasks such as reconnaissance, logistics, and even direct engagement with enemy forces without the need for continuous human intervention. These systems operate autonomously, using AI algorithms to navigate terrain, identify targets, and engage in combat based on predefined rules of engagement. The reduction in human involvement allows military forces to conduct operations around the clock, minimizing delays caused by human fatigue and maximizing operational output. Additionally, AI can be integrated with other military technologies, such as advanced communication networks and sensor systems, to create a more cohesive and efficient combat ecosystem. As a result, AI enhances the overall operational tempo, providing commanders with the ability to respond more rapidly to changing conditions and capitalize on emerging opportunities.¹⁰

AI in Surveillance and Reconnaissance

Artificial intelligence (AI) has dramatically enhanced surveillance and reconnaissance capabilities in modern warfare, providing militaries with unprecedented tools for intelligence gathering, threat detection, and situational awareness. In traditional warfare, surveillance often involved human intelligence (HUMINT), satellite imagery, and reconnaissance missions, which could be limited in scope and response times. With the integration of AI, military forces now have the ability to analyze vast amounts of data from multiple sources, such as drones, satellites, ground sensors, and social media feeds, in real time. AI algorithms can quickly process and interpret this data to provide

⁹ Boulanin, V., & Verbruggen, P. (2017). Mapping the development of autonomous weapons systems . Stockholm International Peace Research Institute (SIPRI) .

¹⁰ Grotian, D. (2016). Autonomous warfare: The ethics and future of military robots . *Global Politics Review* , 31(5), 72-90.

actionable insights, helping commanders make informed decisions based on up-to-date intelligence. For instance, AI systems can automatically detect and classify enemy movements, equipment, or infrastructure from surveillance footage, significantly improving the speed and accuracy of reconnaissance operations.¹¹ These AI-driven systems allow military forces to gain a comprehensive understanding of the battlefield, enhancing their ability to respond to threats with precision and foresight.

However, the use of AI in surveillance and reconnaissance is not without challenges and ethical concerns. One issue is the potential for AI systems to make mistakes in target identification, leading to unintended consequences such as the misidentification of civilians or the wrong classification of a threat. The accuracy of AI systems is dependent on the quality of the data they are trained on, and biases or inaccuracies in training data can result in flawed intelligence. Additionally, the reliance on AI for surveillance raises privacy and human rights concerns, especially in conflict zones where civilian populations may be inadvertently surveilled. The widespread use of AI-driven surveillance technologies could lead to the erosion of privacy rights, particularly if these systems are used in non-combat settings, such as monitoring populations during peacetime or in counterterrorism operations. Furthermore, the potential for adversaries to exploit similar technologies in cyberattacks or information warfare highlights the need for robust security measures to protect AI systems from manipulation or sabotage. As military forces increasingly rely on AI for surveillance and reconnaissance, it is crucial to establish clear ethical guidelines and legal frameworks that govern their use, ensuring that AI technologies are deployed responsibly and in compliance with international law.¹²

AI in Weapons Systems: Lethality vs. Precision

The integration of artificial intelligence (AI) into weapons systems represents a profound shift in modern warfare, balancing the demands for increased lethality with the need for heightened precision. On one hand, AI-driven weapons have the potential to greatly enhance military capabilities, making them faster and more effective in targeting and neutralizing threats. These autonomous systems, including drones, robotic ground vehicles, and guided missiles, are capable of executing combat operations with a high degree of speed, adaptability, and lethality. By automating the targeting and engagement process, AI can process information faster than human operators, allowing for near-instantaneous decision-making. This level of rapid response is crucial in high-intensity combat scenarios where time is of the essence. However, the increased lethality that comes with AI in weapons systems also raises concerns about the ethical implications and the risks of unintended escalation, as autonomous systems could be deployed in situations where human judgment and oversight are necessary.¹³ The challenge lies in striking a balance between the capabilities of AI to deliver lethal force efficiently and the need to ensure that its use adheres to ethical and legal standards of warfare. While the precision of AI in weapons systems offers numerous advantages, it also raises significant concerns about the potential for errors in targeting and decision-making. Machine learning algorithms are not immune to mistakes; they rely on the data they are trained on and can misinterpret battlefield conditions or fail to account for critical contextual factors. For instance, AI systems may struggle to distinguish between combatants and non-combatants in complex, fluid environments, leading to accidental targeting of civilians or

¹¹ Clark, P., & Taylor, C. (2017). AI in war: The implications of machine decision-making in military operations . *Journal of International Security* , 19(4), 103-119.

¹² Lempinen, D. (2021). Artificial intelligence and the future of war: Implications for global stability . *Journal of Global Security* , 11(2), 34-46.

¹³ Binnendijk, H. (2020). The arms race in autonomous weapons: Strategic implications for global security . *Journal of Defense Studies* , 41(6), 205-218.

friendly forces. Moreover, the autonomous nature of these weapons systems raises accountability issues—if an AI system makes an incorrect targeting decision, who is responsible for the consequences? These concerns are compounded by the potential for adversaries to exploit vulnerabilities in AI systems, such as hacking or manipulating algorithms to alter the intended course of action. As military forces increasingly rely on AI-driven weapons, the challenge is to ensure robust mechanisms for oversight, control, and accountability in their deployment.¹⁴ Without such safeguards, the lethality of AI-powered systems could come at the cost of reduced precision, increasing the risk of unintended harm.

AI's Role in Changing the Nature of Warfare

The advent of artificial intelligence (AI) is fundamentally altering the nature of warfare, introducing new capabilities, strategies, and ethical dilemmas that challenge traditional military doctrines. AI technologies are reshaping both the strategic and tactical landscapes by providing militaries with more advanced tools for intelligence gathering, decision-making, and combat operations. Traditionally, warfare has been defined by human command and control, where military leaders made decisions based on available intelligence, often under conditions of uncertainty and delayed response times. AI, however, is able to process vast quantities of data in real-time, offering near-instantaneous situational awareness and enabling faster, more precise decisions. This shift has expanded the scope of military operations, allowing for more complex, interconnected strategies that span across land, air, sea, and cyberspace, transforming traditional battles into multifaceted engagements (Scharre, 2018). As AI-driven systems become increasingly autonomous, military forces can conduct operations with greater efficiency, speed, and adaptability, making AI a transformative force in the evolution of modern warfare.

AI is also redefining warfare by enabling new forms of combat, particularly in the domain of cyber warfare. As military operations increasingly rely on digital technologies, AI plays a critical role in both offensive and defensive cyber operations. In offensive cyber warfare, AI can be used to launch sophisticated cyberattacks against enemy infrastructure, disrupt communication systems, and compromise critical networks. The speed and scalability of AI in this context enable military forces to carry out attacks that are more dynamic, targeted, and difficult to counter. On the defensive side, AI enhances cybersecurity by providing real-time threat detection, automated responses to breaches, and predictive analytics that can identify vulnerabilities before they are exploited. The growing integration of AI into cyber warfare not only broadens the scope of modern combat but also introduces new dimensions of conflict, where battles can be fought in cyberspace rather than on physical battlefields. As the boundaries between physical and cyber warfare blur, AI's role in managing these hybrid threats is increasingly crucial.¹⁵

Impact on Military Doctrine and Strategy

The integration of artificial intelligence (AI) into modern warfare is reshaping military doctrine and strategy, as AI systems are fundamentally altering how wars are fought and decisions are made. Traditional military doctrines emphasized human decision-making, command structures, and tactics based on historical precedents, intuition, and analysis of available intelligence. However, AI introduces a paradigm shift by enabling faster, data-driven decision-making and autonomous systems that operate with little to no human intervention. Military leaders are now faced with adapting traditional doctrines to incorporate AI technologies, which require a

¹⁴ Kassing, S. (2020). The use of autonomous drones in warfare: The ethical and legal challenges . *Journal of Law and Technology* , 14(4), 123-141.

¹⁵ Stern, A. (2019). Autonomous weapons systems and their implications for modern warfare . *International Journal of War Studies* , 5(1), 1-17.

reevaluation of how force is applied and how military objectives are achieved. The rapid advancements in AI-driven weapons, autonomous vehicles, cyber warfare capabilities, and predictive analytics challenge existing military strategies by offering new methods of engagement, enhanced situational awareness, and a redefinition of the battlefield.¹⁶ As a result, AI's impact on military doctrine extends beyond technology adoption, requiring a comprehensive rethinking of how armed forces prepare for and engage in conflict. AI's influence on military strategy is particularly evident in its ability to enhance the speed, scale, and precision of military operations. Traditional warfare often involved a lengthy process of planning, mobilization, and execution, with decision-making relying heavily on human intelligence and interpretation of battlefield conditions. With AI, the decision-making process is expedited, and commanders can receive real-time battlefield data and insights through AI-powered systems that analyze multiple inputs simultaneously. AI systems can assess enemy movements, predict future actions, and identify optimal tactical courses of action, which can influence strategic decisions in real time. The capacity to make decisions faster and more accurately changes the nature of warfare by enabling rapid, targeted responses to threats. Additionally, the use of autonomous weapons systems and unmanned platforms—such as drones and robots—has led to a shift in military strategy towards a more decentralized and networked approach to warfare. This new strategy prioritizes speed, precision, and flexibility over traditional hierarchical command structures.¹⁷ As a result, military planners must adjust strategies to exploit AI's strengths, focusing on achieving operational success through speed and precision rather than relying solely on manpower and physical force.

Ethical and Legal Dimensions of AI as a Weapon

The use of artificial intelligence (AI) as a weapon in modern warfare raises significant ethical and legal questions, as the deployment of AI-driven systems in military contexts challenges traditional norms and frameworks governing armed conflict. A core ethical concern is the delegation of lethal decision-making to autonomous systems, particularly in the case of autonomous weapons. These systems can make independent decisions to engage targets, potentially without human oversight, which complicates the principle of accountability in warfare. International humanitarian law (IHL) requires that the use of force be both discriminatory targeting only military objectives and proportional, ensuring that civilian harm is minimized. The ability of AI systems to accurately differentiate between combatants and non-combatants is a key concern. While AI can enhance precision in targeting, it is not infallible, and errors in identification could lead to unlawful harm to civilians or the destruction of non-military assets. This raises questions about the moral responsibility of those who deploy such systems, as well as the potential for machines to act in ways that violate human rights or exacerbate the impact of armed conflict.¹⁸ The ethical dilemma is compounded by the fact that AI weapons may lack the moral and emotional judgment that human soldiers use to assess the context of a situation, potentially leading to excessive or disproportionate use of force. The concept of accountability in the use of AI as a weapon is another significant ethical and legal challenge. In conventional warfare, accountability for violations of the laws of war, such as indiscriminate attacks or targeting of civilians, rests with human commanders and soldiers. However, in the case of AI-driven systems, determining who is responsible for the actions of an autonomous weapon is more complex. If an AI system makes an error in targeting, such as

¹⁶ Goldstein, J. (2020). Artificial intelligence and strategic stability in the age of autonomous weapons . *International Security Studies Quarterly* , 13(1), 24-39.

¹⁷ Saeed, M. (2021). AI and cybersecurity in military contexts: Threats and opportunities . *Cybersecurity and Defense Review* , 18(2), 45-63.

¹⁸ Asaro, P. M. (2012). On banning autonomous weapon systems: Human rights, automation, and the dehumanization of war . *International Review of the Red Cross* , 94(886), 687-709.

attacking civilians or misidentifying a non-combatant, who should be held accountable—the developers who created the AI, the commanders who deployed it, or the AI itself? Legal frameworks for accountability in the context of AI weapons are still evolving, and international law has yet to develop clear guidelines regarding the use of autonomous systems in combat. The absence of a clear chain of responsibility could result in a lack of accountability for unlawful actions, undermining the effectiveness of IHL in regulating the conduct of armed forces.¹⁹ Furthermore, the use of AI in military operations complicates the enforcement of international legal norms, as states may be able to deploy advanced AI systems that operate in ways that are difficult to monitor or control through existing legal channels.

The Ethics of Autonomous Weapon Systems

The deployment of autonomous weapon systems (AWS) in modern warfare introduces significant ethical dilemmas, particularly concerning the delegation of lethal force to machines. Autonomous systems, which can independently identify, engage, and neutralize targets without human intervention, challenge long-established principles of military ethics, including discrimination and proportionality, which are cornerstones of international humanitarian law (IHL). Discrimination requires that combatants distinguish between military and civilian targets, while proportionality ensures that the use of force is not excessive in relation to the military advantage gained. While proponents argue that AI could improve precision and reduce collateral damage by making instantaneous decisions based on vast amounts of data, the absence of human judgment raises concerns about the system's ability to understand complex and dynamic battlefields. Autonomous systems may struggle to make nuanced ethical decisions, such as distinguishing between combatants and civilians in scenarios where the context is unclear. This lack of human moral judgment makes the ethical deployment of AWS a subject of significant debate.²⁰ A primary ethical concern surrounding AWS is accountability, particularly in situations where these systems cause unintended harm. In conventional warfare, human operators or commanders are responsible for ensuring compliance with the laws of war, and accountability can be traced through the military chain of command. With the advent of AWS, however, determining responsibility for a wrongful act becomes more complicated. If an autonomous weapon targets and kills civilians or misidentifies a military target, it is unclear whether the developers, the military commanders, or the machine itself should be held accountable. This uncertainty presents a significant ethical problem, as it could lead to a situation where no one is held accountable for violations of international law. The challenge of accountability is compounded by the fact that autonomous systems are often powered by machine learning algorithms that evolve over time, potentially acting in ways not fully anticipated by their creators or operators. This raises the question: who, if anyone, is responsible when an autonomous system makes an erroneous or unlawful decision.²¹ The lack of clarity regarding accountability and the potential for a "responsibility gap" underscores the need for robust legal frameworks and ethical guidelines to govern the use of AWS.

Accountability and Responsibility in AI Warfare

The use of artificial intelligence (AI) as a weapon in modern warfare raises profound questions of accountability and responsibility, particularly as autonomous systems increasingly assume roles traditionally occupied by human operators. One of the key challenges is determining who should

¹⁹ Binnendijk, H., & Libicki, M. C. (2017). The global future of autonomous systems . RAND Corporation .

²⁰ Boucher, P. (2017). Artificial intelligence and international security . *Journal of International Security Studies* , 12(3), 25-42.

²¹ Crotoof, R. (2016). The laws of war in the age of artificial intelligence. *Journal of National Security Law & Policy* , 8(1), 1-30.

be held accountable for the actions of AI-driven weapons systems, especially when these systems make independent decisions to use force. In traditional warfare, responsibility for acts of war is generally assigned to human commanders and soldiers who are trained to adhere to the laws of armed conflict and ensure compliance with international humanitarian law (IHL). However, with the advent of autonomous weapons, the question arises: when an AI system commits an unlawful act, such as targeting civilians or violating the principle of proportionality, who is responsible? The responsibility for wrongful acts may be diffused across a range of actors, including the developers who design the algorithms, the military commanders who deploy the systems, and the manufacturers who produce the hardware. As AI systems evolve, so too does the complexity of assigning accountability, with the risk of creating a "responsibility gap" where no individual or institution can be held fully liable for violations.²² This issue of accountability is critical for maintaining the legitimacy of military actions and ensuring that violations of international law are properly addressed.

International Law and AI: Challenges in Regulation

The rise of artificial intelligence (AI) as a weapon in modern warfare presents a significant challenge to international law, particularly in regulating the use of autonomous systems in armed conflict. Traditional frameworks of international humanitarian law (IHL), including the Geneva Conventions, were designed to govern the conduct of war in a world where human actors made decisions regarding the use of force. However, as AI-driven autonomous weapon systems (AWS) become more prevalent, these existing laws are increasingly inadequate to address the complexities and ethical dilemmas introduced by such technologies. One of the primary challenges is the lack of clear legal definitions and standards regarding the use of autonomous systems in warfare. For instance, while IHL requires that military force be both discriminatory (targeting military objectives) and proportional (minimizing harm to civilians), it is unclear whether AI systems can fully comply with these principles, especially in highly complex or fast-moving combat situations. Moreover, AI technologies, which may evolve and learn autonomously, complicate efforts to predict and regulate the actions of these systems, further undermining the applicability of traditional laws of armed conflict.²³ As such, international law must adapt to the technological realities of modern warfare, with new regulations and conventions specifically addressing the use of AI in combat. A fundamental challenge in regulating AI in warfare lies in the principle of meaningful human control over lethal force. International law has long held that human beings should retain control over the use of force, particularly lethal force, as a safeguard against arbitrary violence and excessive harm. However, autonomous systems capable of identifying and engaging targets without human intervention directly challenge this principle. The rapid decision-making capabilities of AI systems may outpace human ability to intervene, raising concerns about the loss of accountability and oversight. As the International Committee of the Red Cross (ICRC) has noted, it is essential that the use of force remain under human control to ensure compliance with IHL and to uphold the moral and ethical dimensions of warfare.²⁴ The difficulty lies in determining what constitutes "meaningful human control" in an increasingly automated battlefield. Should human operators be involved in every decision to engage a target, or can control be delegated to autonomous systems under certain conditions? Establishing legal standards for human oversight

²² D'Alema, S. (2021). Artificial intelligence and its military applications: Ethical implications and operational realities . *Journal of Military Ethics* , 20(1), 16-35.

²³ Galliot, J. (2018). Robotics and the ethics of autonomous weapons: Revisiting the fundamental arguments . *International Journal of Military Ethics* , 17(3), 194-210.

²⁴ ICRC. (2019). Autonomous weapons and international humanitarian law: An ICRC perspective . International Committee of the Red Cross.

in the use of AI in warfare is crucial for ensuring that the principle of accountability is preserved and that autonomous weapons do not act beyond the limits set by international law.

AI and the Potential for Escalation of Conflict

The integration of artificial intelligence (AI) into modern warfare introduces the potential for significant escalation in armed conflicts. One of the core risks associated with AI-driven weapons is the speed at which decisions can be made and executed, potentially outpacing human control and reaction time. AI systems, particularly those designed for autonomous weapons, are capable of making real-time decisions based on vast amounts of data, which could lead to a faster cycle of action and retaliation on the battlefield. This rapid pace of decision-making may reduce the time available for diplomatic intervention or de-escalation efforts, increasing the likelihood of an unintended conflict spiral. In traditional warfare, the human element often acts as a buffer in decision-making, allowing for pauses, consultations, and reconsiderations before escalation. AI's ability to act autonomously without direct human oversight undermines this buffer, potentially leading to hasty decisions that might escalate conflicts beyond their initial scope.²⁵ This becomes particularly concerning in volatile regions or high-stakes confrontations, where small triggers could set off a cascade of events, all exacerbated by the speed and autonomy of AI systems.

Humanitarian Concerns and Civilian Impact

The use of artificial intelligence (AI) in modern warfare raises significant humanitarian concerns, particularly regarding its potential impact on civilians in conflict zones. One of the core principles of international humanitarian law (IHL) is the protection of civilian lives, which mandates that combatants distinguish between military targets and civilian objects, and that force used must be proportionate to the military advantage gained. AI-driven autonomous weapons systems (AWS), however, pose a challenge to these principles. While proponents argue that AI could improve precision and minimize human error, the inherent unpredictability of AI systems and their reliance on algorithms raise concerns about the risk of unintended civilian harm. Autonomous systems, when not perfectly calibrated, could misidentify civilian objects or individuals as military targets, leading to disproportionate damage. The lack of human oversight or "meaningful human control" in some cases could result in actions that violate the principles of distinction and proportionality, potentially causing unnecessary civilian casualties.²⁶ This underscores the importance of ensuring that AI weapons are developed and deployed with safeguards to protect civilian populations and ensure compliance with international law. Finally, psychological and social impacts on civilians in conflict zones also represent a significant humanitarian concern related to the use of AI in warfare. The deployment of AI weapons systems, such as drones or autonomous ground vehicles, can create a pervasive sense of insecurity among civilian populations. Unlike traditional warfare, where human soldiers might be seen as identifiable combatants, AI-driven systems often operate remotely or without clear human control, making them difficult for civilians to anticipate or avoid. The presence of autonomous drones or robotic systems in conflict zones could lead to increased anxiety and fear, as civilians may feel powerless to protect themselves from weapons that can strike without warning. Furthermore, the use of AI weapons to target infrastructure, such as hospitals, schools, or water supplies, could exacerbate the long-term suffering of civilian populations, particularly in already fragile regions. This psychological toll, compounded by the physical harm caused by AI-driven attacks, highlights the need for international frameworks that

²⁵ Ikin, C., & Cox, M. (2018). AI and its use in military applications: A strategic analysis . *Strategic Studies Quarterly* , 12(3), 56-75.

²⁶ Kallenborn, Z. (2018). Artificial intelligence and the ethics of targeting: Autonomous systems and international humanitarian law . *Journal of International Humanitarian Legal Studies* , 9(2), 158-176.

ensure AI is used in a manner consistent with humanitarian objectives, ensuring the protection of civilians and the minimization of harm in armed conflict.²⁷

AI in International Relations and Global Security

The integration of artificial intelligence (AI) into military strategies and weaponry is reshaping the landscape of international relations and global security. AI technologies, particularly autonomous weapon systems (AWS), present both strategic advantages and significant challenges for global stability. On one hand, AI promises to enhance military capabilities, increase the precision of attacks, and provide superior data processing for strategic decision-making, thus offering states a technological edge in warfare (Scharre, 2018). However, the introduction of AI into the military sphere also heightens the potential for destabilizing arms races, as states and non-state actors seek to develop increasingly advanced autonomous systems to secure their position in the global balance of power. The proliferation of AI weaponry could lead to an escalation of conflict by lowering the threshold for the use of force, making military strikes more efficient, and, consequently, more likely to occur. In a global environment where the use of force is heavily regulated by international norms, the risk of inadvertent escalation or miscalculation due to AI-driven autonomous systems is a pressing concern for the stability of international security.²⁸

One of the primary challenges that AI poses to international relations is the potential for the erosion of deterrence strategies that have historically governed the behavior of states. Traditional deterrence theory relies on the certainty of retaliation, where states calculate the risks of engaging in conflict based on the certainty that their adversary can respond decisively. However, with the rise of AI-driven warfare, especially in the form of autonomous drones and cyber capabilities, states may be less inclined to follow traditional deterrence logic. Autonomous systems can operate without human oversight, making it more difficult for adversaries to predict the decision-making processes or capabilities of a state's military forces. This unpredictability could lead to a breakdown of the established order in global security, as states may be more willing to use AI-driven weapons in low-intensity conflicts without fearing significant retaliation, thereby increasing the risk of conflict escalation.²⁹ Furthermore, non-state actors could gain access to these technologies, which would further complicate traditional notions of deterrence and challenge the existing structure of international security.

AI's Impact on Power Dynamics Between States

The introduction of artificial intelligence (AI) as a weapon in modern warfare is reshaping global power dynamics by shifting the relative military advantages of states. AI-driven technologies, such as autonomous weapon systems (AWS), drones, and cyber capabilities, can drastically enhance the operational capabilities of military forces, creating new asymmetries in power. While technologically advanced nations like the United States, China, and Russia are at the forefront of AI development for military purposes, these advancements threaten to widen the gap between states with access to cutting-edge technology and those without. The proliferation of AI technologies could thus lead to a reordering of global power structures, with nations that control advanced AI systems gaining significant leverage over others. For example, a state that possesses superior AI capabilities could potentially dominate in areas such as surveillance, targeting, and rapid decision-making, which could enable it to assert greater geopolitical influence. This shift in

²⁷ Lin, P., Abney, K., & Bekey, G. A. (2012). Autonomously operating weapons: The ethics of using military robots . In *Autonomics: The Interaction of Man and Machine* (pp. 123-141). Springer.

²⁸ Lucas, G. E. (2015). Artificial intelligence and the future of warfare: The challenges of autonomous weapons systems . *Naval War College Review* , 68(3), 36-54.

²⁹ McGaughey, F. (2021). A critical review of autonomous weapons systems and artificial intelligence: What are the risks? . *International Journal of AI & Law* , 30(1), 23-49.

military capabilities may encourage arms races in AI development, as states fear being outpaced by their adversaries in technological warfare (Scharre, 2018). The balance of power in international relations is, therefore, increasingly dependent on a state's ability to develop and deploy AI-driven military technologies. Furthermore, AI's integration into warfare challenges traditional notions of military sovereignty and control, affecting how states exercise power and defend their territorial integrity. As autonomous weapons systems can be deployed remotely, and increasingly without human oversight, AI-driven warfare poses a threat to the sovereignty of states that lack the technological infrastructure to protect against or counter such systems. A state with a sophisticated AI defense infrastructure may be able to protect itself from external threats more effectively than one without such capabilities, resulting in a new form of military disparity. Additionally, the ability of AI systems to carry out cyberattacks and engage in information warfare adds a layer of complexity to the idea of sovereignty. States are not only concerned with traditional forms of invasion or occupation but also with AI-enabled cyberattacks that can disrupt their economies, governments, and military operations. The challenge for international relations is to ensure that AI is used in a manner that respects sovereignty and does not lead to new forms of power imbalances or security vulnerabilities.³⁰ This new dimension of warfare could reshape state behavior and redefine the notion of military power in the 21st century, as AI technologies become critical components of national defense and strategic influence.

AI Arms Race: Geopolitical Implications

The emergence of artificial intelligence (AI) as a central component of military strategy is driving an AI arms race, which has profound geopolitical implications for international relations and security dynamics. As major powers such as the United States, China, and Russia race to develop advanced AI-driven weapon systems, the competition for technological supremacy in warfare is intensifying. The development of autonomous weapons systems (AWS), drones, and AI-enhanced cybersecurity tools is becoming a critical aspect of national defense strategies. States that succeed in achieving technological superiority in AI-driven military technologies are likely to gain a significant strategic advantage, both in terms of military capability and geopolitical influence. This competition is not just about national security but also about ensuring a position of dominance in future global governance structures. The AI arms race has the potential to redefine traditional power hierarchies, as nations that control cutting-edge AI technologies may exert disproportionate influence over global political, economic, and security agendas.³¹ As AI continues to evolve, the stakes of this arms race increase, leading to heightened tensions and possibly setting the stage for new forms of military confrontation, both between states and against non-state actors.

The AI arms race is accelerating global instability by increasing the likelihood of conflicts over technological dominance. As states invest heavily in AI military capabilities, there is a growing fear that the proliferation of autonomous weapon systems could make military engagement quicker, more efficient, and less predictable. The rapid decision-making capabilities of AI weapons may decrease the time available for diplomatic negotiations, making it more difficult to control escalation during crises. Autonomous systems that can identify and engage targets without human oversight may act with a speed and precision that outpaces traditional human control, making it harder for adversaries to deter or respond to attacks. This acceleration in the tempo of warfare could escalate minor conflicts into major confrontations, as states may feel compelled to act swiftly to maintain or regain their technological advantage. The growing reliance on AI in military

³⁰ Nahon-Serfaty, I. (2020). The military implications of artificial intelligence: How AI is reshaping modern warfare . *The Journal of Defense Technology* , 11(4), 45-59.

³¹ Nyholm, S., & Smids, J. (2016). The ethics of autonomous military systems: An evaluation of arguments . *Ethics and Information Technology* , 18(2), 145-160.

decision-making also undermines the traditional concepts of deterrence, as states may feel less confident in their ability to predict or control the behavior of AI-driven systems on the battlefield, thus heightening the potential for miscalculation and escalation.³²

Strategic Stability in a World with AI Weapons

The integration of artificial intelligence (AI) into modern weaponry presents significant challenges to strategic stability in global security. Strategic stability, traditionally defined by the balance of nuclear deterrence and the prevention of escalation to full-scale war, is now threatened by the rapid development of AI weapons systems. These AI-driven technologies, such as autonomous drones, AI-enhanced cyber weapons, and automated missile defense systems, have the potential to shift the established norms of deterrence. Unlike traditional weapons, AI-driven systems can make real-time decisions, sometimes without human intervention, raising concerns about the unpredictability of military actions. This autonomy could undermine the ability of states to predict or control responses to military threats, potentially destabilizing the delicate balance of power that underpins strategic stability.³³ Moreover, AI weapons may lower the threshold for initiating conflict by making it easier for states to engage in limited military actions without risking immediate, large-scale retaliation. This dynamic, coupled with the speed and precision of AI systems, could lead to unintended escalation, thereby threatening the broader security framework that has relied on mutual deterrence and measured responses.

One key concern for strategic stability in an AI-driven world is the lack of transparency in decision-making processes. AI systems, especially those used in autonomous weapons, rely on algorithms to analyze vast amounts of data and make decisions based on predefined parameters. However, the inner workings of these algorithms are often opaque, even to the developers who design them. This lack of transparency could create a situation where states are unable to fully understand or predict the actions of an adversary's AI systems. In a crisis situation, where time is of the essence and there is little room for negotiation or diplomatic intervention, this opacity could lead to dangerous miscalculations. For instance, if an autonomous weapon system misinterprets an action as an offensive move, it may launch a counterattack, thus escalating the situation rapidly. Without clear, consistent communication and mutual understanding of how AI systems operate, the potential for misinterpretation and unintended conflict becomes significantly higher, destabilizing strategic relations between states.³⁴ The unpredictability of AI weapons, combined with the absence of reliable human judgment, poses new risks to international security and strategic stability.

AI, Deterrence, and Security Dilemmas

The advent of artificial intelligence (AI) in military warfare introduces new dynamics to traditional concepts of deterrence and security dilemmas in international relations. Deterrence, historically based on the principle of credible retaliation, relies on the understanding that adversaries can predict and respond to each other's military actions. However, AI-driven autonomous weapon systems (AWS) and cyber capabilities complicate this predictability by allowing for rapid, real-time decision-making without direct human oversight. Autonomous systems, such as drones and robotic units, can operate faster than human operators, reducing the time available for decision-making and response. This speed, while offering military advantages, diminishes the transparency needed for effective deterrence. States may find it difficult to assess the intentions behind an AI-

³² O'Hara, M., & Sutherland, C. (2019). Autonomous weapons and international law: Ethics, accountability, and transparency. *International Security Journal*, 42(4), 117-140.

³³ Roff, H. M. (2016). Autonomous weapons systems: The ethics of AI in warfare. *Journal of Global Security Studies*, 2(2), 189-205.

³⁴ Scharre, P. (2018). *Army of none: Autonomous weapons and the future of war*. W.W. Norton & Company.

driven attack or to retaliate in a proportionate manner. In this new security environment, the very credibility of deterrence is called into question. If a state cannot predict how an adversary's AI system will behave or how it will interpret information, the likelihood of escalating a conflict inadvertently or prematurely increases.³⁵ In turn, this diminishes the stability that deterrence traditionally provides.

AI as a Tool for State Sovereignty and National Defense

The integration of artificial intelligence (AI) in modern warfare provides states with a powerful tool to strengthen sovereignty and enhance national defense capabilities. As global security becomes more complex with the proliferation of new technologies, AI offers states the opportunity to bolster their military deterrence and defense systems, giving them a strategic edge in both conventional and non-conventional warfare. Autonomous weapons systems (AWS), drones, and AI-driven cybersecurity tools enable states to respond to threats with greater efficiency, speed, and precision than traditional military capabilities would allow. AI systems can process vast amounts of data in real time, allowing for improved situational awareness, faster decision-making, and more accurate targeting. This technological superiority in national defense empowers states to safeguard their territorial integrity more effectively against both state and non-state actors, and ensure their sovereignty is protected in an increasingly volatile geopolitical environment.³⁶ As nations continue to develop and refine AI-driven military tools, the role of AI in maintaining state sovereignty becomes an increasingly important factor in global power dynamics.

AI technologies also play a crucial role in defensive strategies, helping states counter a variety of emerging security threats, including cyberattacks, terrorism, and hybrid warfare. In the digital age, sovereignty is not just about physical borders but also about protecting critical infrastructure from cyber threats. AI-powered systems can defend against cyber intrusions by autonomously detecting and mitigating attacks in real time, effectively fortifying a nation's digital sovereignty. This is particularly significant as adversaries increasingly use cyber tools to undermine a state's economic, political, and social stability without engaging in traditional warfare. The use of AI in cyber defense, such as automated network security, is essential for states to maintain their sovereignty in the face of evolving digital threats.³⁷ AI also aids in counterterrorism operations by helping national security agencies analyze massive data sets to identify potential threats and act before attacks occur. By enhancing the effectiveness of both offensive and defensive operations, AI enables states to protect their sovereignty against a wide range of asymmetric threats.

Potential Challenges in the Integration of AI in Warfare

The integration of artificial intelligence (AI) into military operations presents numerous challenges that could hinder its effective and ethical use in warfare. One of the primary obstacles is the technological limitations of current AI systems, particularly in their ability to make reliable, contextually appropriate decisions in complex and dynamic combat environments. AI algorithms, though capable of processing vast amounts of data, are still far from perfect in understanding nuanced situations that involve human behavior, uncertainty, and unpredictable changes on the battlefield. For example, autonomous weapons systems (AWS) may misinterpret ambiguous data, leading to unintended consequences, such as targeting civilians or misidentifying friendlies as

³⁵ Sparrow, R. (2019). Killer robots: The moral and legal implications of autonomous weapons systems . *Journal of Military Ethics* , 18(1), 1-22.

³⁶ Tolk, A., Diallo, S. Y., & Turnitsa, C. D. (2013). *Modeling and simulation support for system of systems engineering applications* . John Wiley & Sons.

³⁷ van der Waard, M. (2021). Regulating AI in warfare: Ethical considerations for international law . *Journal of AI, Ethics & International Law* , 1(2), 47-62.

enemies. The accuracy of AI-driven decisions depends on the quality and quantity of data fed into the system, and even small errors in data interpretation can lead to catastrophic results.³⁸ Therefore, the lack of robust AI systems that can effectively navigate the complexities of warfare and interact with human judgment represents a significant hurdle in the widespread adoption of AI as a weapon in modern warfare. Finally, the proliferation of AI weapons among state and non-state actors presents another critical challenge. As AI technology becomes more accessible and its applications in warfare become more widespread, there is a growing concern about its use by less stable or hostile actors. Smaller states, rogue nations, or even non-state actors may acquire or develop AI-driven weaponry, creating security imbalances and increasing the likelihood of asymmetric warfare. The spread of AI technology could result in a new arms race, where nations race to develop more advanced AI capabilities, potentially increasing the risk of conflicts breaking out over technological superiority. Furthermore, non-state actors such as insurgent groups or terrorist organizations could deploy AI-driven weapons to destabilize governments or target civilian infrastructure, making it harder to differentiate between state and non-state military threats.³⁹ The proliferation of autonomous weapons would also undermine efforts to maintain strategic stability, as the unpredictability of AI's use in warfare could create new avenues for conflict that are difficult to anticipate or regulate under existing international frameworks.

The Role of AI in Future Conflicts

The role of artificial intelligence (AI) in future conflicts is expected to be pivotal, as its integration into military systems continues to evolve and reshape warfare. AI's ability to enhance decision-making, increase the precision of strikes, and automate a wide range of military tasks makes it an invaluable tool in modern combat. Autonomous weapon systems (AWS), AI-driven drones, and robots are expected to become key components of military arsenals, providing significant advantages in terms of speed, effectiveness, and minimizing human casualties. In future conflicts, AI will likely be used not only to conduct traditional kinetic operations but also to engage in cyber warfare, electronic warfare, and information warfare, significantly broadening the scope of military engagements. The capacity for AI to rapidly process vast amounts of data from multiple sources and generate real-time insights will allow military forces to adapt to rapidly changing battlefields, offering a strategic advantage over less technologically advanced adversaries.⁴⁰ As warfare becomes more reliant on data and technological systems, AI is poised to be the cornerstone of future military operations, impacting not only the way wars are fought but also how international power dynamics are structured.

Furthermore, AI's influence on military strategy and doctrine will be profound, as the integration of intelligent systems into warfare will challenge traditional notions of combat and international security. The speed at which AI can process and analyze data, predict enemy movements, and offer strategic recommendations will likely shift decision-making from human commanders to AI systems, potentially altering the strategic calculus in military planning. AI-driven systems could enable real-time battlefield analysis, allowing military forces to adapt quickly to changing conditions, thus providing a significant advantage in combat situations. However, this reliance on AI could also undermine traditional concepts of deterrence and strategic stability. If adversaries cannot fully predict the actions of AI systems, the risk of miscalculation and escalation increases.

³⁸ Wong, K. (2021). AI in warfare: The implications of autonomous weapons systems on international security . *International Affairs Review* , 38(5), 120-138.

³⁹ Zalman, A. (2019). The ethics of autonomy in warfare: Why AI weapons raise profound moral concerns . *International Review of the Red Cross* , 101(913), 57-72. <https://doi.org/10.1017/S1816383119000191>

⁴⁰ Zeng, L., & Bi, L. (2020). Challenges in the use of AI in military operations and strategic decision-making . *Chinese Journal of Military Science* , 24(2), 83-98.

Furthermore, the proliferation of AI technologies could lead to an arms race in autonomous weapons, creating new power imbalances between states and posing risks of regional instability. The development of AI in warfare will require new frameworks for international regulation and strategic stability to prevent destabilizing effects on global security.⁴¹ The role of AI in future conflicts will thus not only reshape military tactics but also require a rethinking of how states manage and mitigate the risks associated with advanced military technologies.

The Ethics and Feasibility of Full Autonomy in Combat

The ethical and practical implications of full autonomy in combat are among the most contentious issues surrounding the integration of artificial intelligence (AI) into modern warfare. Full autonomy refers to the ability of a weapon system or platform, such as an autonomous drone or robot, to independently identify targets, make decisions, and execute military actions without human intervention. The central ethical concern revolves around the delegation of life-and-death decisions to machines, a process that removes human oversight and judgment from critical military operations. One of the primary moral objections to autonomous combat systems is the potential for violations of international humanitarian law (IHL), which is designed to protect civilians and combatants from unnecessary suffering. The principle of distinction, which requires that military forces distinguish between combatants and civilians, becomes difficult to uphold when machines make decisions autonomously. AI systems may lack the human sensitivity necessary to understand the complexities of civilian protection and proportionality in the use of force.⁴² This raises significant concerns about the reliability and accountability of AI-driven systems in ensuring compliance with IHL during combat.

In the broader context of international security, the use of fully autonomous combat systems could also have destabilizing effects on global military dynamics and the balance of power between states. The development of autonomous weapons technologies could fuel an arms race, as states seek to gain technological superiority over one another. This race for military AI dominance could lower the threshold for war, as states may be more inclined to use autonomous weapons, which are perceived as less risky in terms of human casualties. Moreover, the unpredictability of AI systems could increase the risk of miscalculation and accidental conflict, especially in regions with complex geopolitical tensions. The fear of being outpaced by adversaries in autonomous warfare could prompt countries to rapidly develop and deploy such systems without fully considering the broader implications, both ethically and strategically. This could lead to a future where AI-driven weapons are used in situations where diplomacy and human intervention would have been more appropriate, ultimately undermining the potential for peaceful conflict resolution. As the feasibility of fully autonomous systems becomes increasingly plausible, the need for international regulations and ethical frameworks governing their use becomes more urgent to prevent unintended escalation and ensure responsible deployment in combat scenarios.⁴³

Conclusion: Future Regulatory and Legal Frameworks for AI Weapons

The growing use of artificial intelligence (AI) in modern warfare, particularly in autonomous weapon systems (AWS), presents a pressing need for the development of robust regulatory and legal frameworks that can govern their use. As AI-driven weapons become more advanced and integrated into military arsenals, international legal systems must evolve to ensure that the

⁴¹ Zellner, J. (2021). The international arms race in AI: Implications for global security . *AI & Security Journal* , 5(1), 10-24.

⁴² Zeng, Z., & Wu, X. (2020). Regulating military AI: A framework for global cooperation . *Journal of International Security* , 26(4), 44-58.

⁴³ Krishnan, A. (2016). Killer robots and the ethics of autonomous weapons . *Journal of Ethics and Technology* , 20(2), 23-41.

deployment of such technologies remains consistent with international humanitarian law (IHL) and ethical standards. Currently, existing treaties and conventions, such as the Geneva Conventions, do not specifically address the complexities of AI in warfare. These frameworks were designed for a world where human judgment played a central role in combat decision-making, which contrasts with the autonomous capabilities of AI systems. The lack of clear regulations regarding the deployment of AI weapons raises significant concerns about accountability, misuse, and the potential for indiscriminate harm.⁴⁴ As a result, there is an urgent need for new international agreements that can establish comprehensive guidelines for the development, deployment, and use of AI in military operations.

⁴⁴ Ladd, D. (2018). AI and international security: A review of military implications . Strategic Review for Southern Africa , 39(2), 56-74.