



Emerging Trends in International Humanitarian Law: Implications of New Warfare Technologies

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ARTICLE DETAILS	ABSTRACT
Research Paper	The advent of new warfare technologies, particularly drones (unmanned aerial vehicles) and autonomous weapons systems, poses significant challenges to International Humanitarian Law (IHL). This article examines the implications of these technologies on IHL principles, including distinction, proportionality, and accountability. It explores the historical context of IHL, the nature of emerging warfare technologies, and the gaps in current legal frameworks. The article further discusses the ethical considerations surrounding the use of drones and autonomous systems in armed conflict. Ultimately, the necessity for reform and adaptation of IHL to address the challenges posed by these technologies is emphasized, alongside recommendations for international cooperation and legal accountability.
Keywords : International Humanitarian Law, drones, autonomous weapons systems, warfare technologies, legal frameworks, ethical considerations.	

Introduction

International Humanitarian Law (IHL), also known as the law of armed conflict, aims to regulate armed conflicts and protect individuals who are not participating in hostilities¹. The rapid evolution of warfare technologies, particularly the deployment of drones and autonomous weapons systems (AWS), presents significant challenges to existing IHL frameworks. As these technologies become increasingly integrated into military operations, they raise critical questions about compliance with IHL principles and the protection of civilians in armed conflict.

¹ The interplay between international humanitarian law and international human rights law in situations of armed conflict, Cordula Droege, Israel Law Review 40 (2), 310-355, 2007, https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=International+Humanitarian+Law+%28IHL%29%2C+also+known+as+the+law+of+armed+conflict%2C+aims+to+regulate+armed+conflicts+and+protect+individuals+who+are+not+participating+in+hostilities&btnG=#d=gs_qabs&t=1728351335687&u=%23p%3DaU35sSltFsMJ,visited on 08/10/2024



This article explores the historical context of IHL, the implications of new warfare technologies on IHL principles, the challenges presented by these technologies, and the ethical considerations surrounding their use. The necessity for reform and adaptation of IHL to address these challenges is emphasized, along with recommendations for enhancing legal accountability and international cooperation.

Historical Context of International Humanitarian Law

International Humanitarian Law has evolved in response to the need to regulate the conduct of armed conflicts and protect individuals affected by war. The modern framework of IHL was significantly shaped by the Geneva Conventions, adopted in 1949 after the atrocities of World War II. These treaties were established to ensure the humane treatment of individuals during armed conflicts and emphasize principles such as distinction, proportionality, and the protection of those hors de combat (out of the fight)².

The Geneva Conventions consist of four main treaties:

1. First Geneva Convention: Protects the wounded and sick in armed forces in the field.
2. Second Geneva Convention: Protects wounded and shipwrecked military personnel at sea.
3. Third Geneva Convention: Provides protections for prisoners of war.
4. Fourth Geneva Convention: Extends protections to civilians in times of war.

The Additional Protocols of 1977 further expanded the protections afforded under IHL, particularly in relation to non-international armed conflicts and the protection of victims of armed conflicts. The evolution of IHL has been driven by the changing nature of warfare, including the rise of asymmetric conflicts involving non-state actors and the increasing complexity of modern combat.

Historically, technological advancements in warfare have prompted legal responses to mitigate their impact on civilians. The use of aerial bombardment during World War I, for example, raised concerns about civilian casualties, leading to calls for regulation. The establishment of the Chemical Weapons

² International humanitarian law in 21st century conflict: a historical examination of the Third Geneva Convention relative to the treatment of prisoners of war (1949), and its ... Stephen P Huffman, Fort Leavenworth, KS: US Army Command and General Staff College, 2018,

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=The+modern+framework+of+IHL+was+significantly+shaped+by+the+Geneva+Conventions%2C+adopted+in+1949+after+the+atrocities+of+World+War+II.&btnG=#d=gs_qabs&t=1728351685430&u=%23p%3DyRI65-uh77MJ,visited on 08/10/2024



Convention in 1992 was a direct response to the devastating effects of chemical warfare during the First World War.

However, the rapid pace of technological change in recent decades has outstripped the capacity of existing legal frameworks to adequately address emerging challenges. The development and use of drones and AWS in armed conflict have raised significant legal and ethical questions regarding their compliance with IHL principles.

Overview of New Warfare Technologies

The landscape of modern warfare is increasingly characterized by the use of drones and autonomous weapons systems. These technologies have transformed military operations and raised new challenges for IHL.

Drones (Unmanned Aerial Vehicles)

Drones, or unmanned aerial vehicles (UAVs), have become integral to military operations in recent years³. They are remotely operated or can fly autonomously and are employed for various purposes, including surveillance, reconnaissance, and targeted strikes. Drones offer significant advantages, such as the ability to gather intelligence in real-time, conduct precision strikes, and minimize risks to military personnel. For example, the United States has extensively used drones in counter-terrorism operations in countries like Afghanistan, Pakistan, and Yemen.

Despite their benefits, the use of drones raises substantial legal and ethical concerns. The ability to conduct remote strikes has led to debates regarding the legality of targeted killings, particularly when civilians are present. The principle of distinction, which requires parties to distinguish between combatants and civilians, becomes increasingly complicated in densely populated areas. Furthermore, the potential for drone strikes to cause unintended civilian casualties raises questions about compliance with IHL principles, particularly proportionality and necessity.

³ The role of unmanned aerial vehicles in military communications: application scenarios, current trends, and beyond, Michael Gargalakos, The Journal of Defense Modeling and Simulation 21 (3), 313-321, 2024, https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Drones%2C+or+unmanned+aerial+vehicles+%28UAVs%29%2C+have+become+integral+to+military+operations+in+recent+years.&btnG=#d=gs_qabs&t=1728351878234&u=%23p%3Dvp_yXkxJ6G8J.visited on 08/10/2024



The psychological impact of drone warfare on both combatants and civilians also warrants consideration. For combatants, the remote nature of drone operations may create a disconnect from the realities of warfare, potentially leading to desensitization. For civilians in conflict zones, the presence of drones can induce fear and anxiety, knowing that surveillance and strikes can occur without warning.

Autonomous Weapons Systems (AWS)

Autonomous Weapons Systems represent a further evolution in warfare technology. Defined as systems capable of selecting and engaging targets without human intervention, AWS have the potential to revolutionize combat. Examples include robotic ground vehicles, loitering munitions, and other systems capable of independent operation. Proponents argue that AWS can enhance military efficiency and reduce human error in combat situations.

However, the deployment of AWS raises profound legal and ethical dilemmas. The lack of human oversight in targeting decisions raises concerns about accountability and compliance with IHL. Questions arise regarding the capacity of AWS to adhere to the principles of distinction and proportionality, as these systems may struggle to assess the context of a target effectively. The potential for AWS to make autonomous decisions about life and death without human intervention challenges the fundamental principles of humanity that underpin IHL⁴.

The development of AWS also raises concerns about an arms race in military technology. As countries compete to develop advanced autonomous systems, there is a risk of diminishing ethical considerations in warfare, as speed and efficiency may take precedence over humanitarian concerns.

Legal Framework Governing Drones and Autonomous Weapons

⁴ The dehumanization of international humanitarian law: legal, ethical, and political implications of autonomous weapon systems, Markus Wagner, Vand. J. Transnat'l L. 47, 1371, 2014
https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=The+potential+for+AWS+to+make+autonomous+decisions+about+life+and+death+without+human+intervention+challenges+the+fundamental+principles+of+humanity+that+underpin+IHL.&btnG=#d=gs_qabs&t=1728352167930&u=%23p%3DZ-Jiw8DQu7sJ,visited on 08/10/2024



The existing legal framework governing IHL must be examined in light of the challenges posed by drones and AWS. The principles of IHL are based on several core tenets that remain applicable, yet their implementation becomes increasingly complex in the context of new technologies.

Applicability of Existing IHL Principles

The principles of distinction, proportionality, and necessity are central to IHL and remain applicable to drone and AWS operations⁵. The principle of distinction requires parties to distinguish between combatants and civilians, ensuring that military operations are directed only at legitimate military targets. The principle of proportionality prohibits attacks that may cause incidental civilian harm that would be excessive in relation to the anticipated military advantage gained.

While these principles remain relevant, the challenges of applying them in the context of drone warfare and AWS are significant. The ability of drones to conduct surveillance and strikes may facilitate the identification of legitimate military targets; however, the risk of civilian casualties remains high, particularly in urban environments. The autonomous nature of AWS complicates compliance with these principles, as the systems may lack the situational awareness necessary to make informed decisions regarding targeting and collateral damage.

Challenges in Applying IHL to New Technologies

The rapid advancement of drone and AWS technology has outpaced the development of legal frameworks to govern their use. Current IHL provisions do not adequately address the unique characteristics of these systems, leading to gaps in legal accountability. Moreover, the evolving nature of warfare requires ongoing dialogue among states, legal scholars, and practitioners to adapt IHL to the realities of modern conflict.

The challenges of regulating drone and AWS use also extend to state practice and customary international law. The widespread use of these technologies by various states and non-state actors raises questions about

⁵ Command responsibility of autonomous weapons under international humanitarian law, Yordan Gunawan, Muhamad Haris Aulawi, Rizaldy Anggriawan, Tri Anggoro Putro, Cogent Social Sciences 8 (1), 2139906, 2022
https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=The+principles+of+distinction%2C+proportionality%2C+and+necessity+are+central+to+IHL+and+remain+applicable+to+drone+and+AWS+operations&btnG=#d=gs_qabs&t=1728352519008&u=%23p%3DKjMywbYxMkcJ, visited on 08/10/2024



the establishment of legal norms and customary practices. The lack of consensus on the legal status of AWS, for example, underscores the need for international cooperation and dialogue to develop a comprehensive legal framework.

Implications of Drones and Autonomous Weapons on IHL

The implications of drones and AWS on IHL are profound and multifaceted, encompassing accountability, targeting, and emerging legal norms⁶.

Accountability and Attribution

One of the most significant challenges posed by the use of drones and AWS is the issue of accountability. In instances where drones are used for targeted strikes, attributing responsibility for unlawful killings becomes complex. The remote nature of drone operations may lead to a detachment from the battlefield, raising concerns about the moral and legal implications of such actions. Furthermore, the challenge of attributing actions to states or individuals involved in autonomous operations exacerbates the issue of accountability.

The potential for unlawful killings, particularly in cases where civilian casualties occur, highlights the need for robust mechanisms to ensure accountability. The principle of accountability is fundamental to IHL, as it serves to deter violations and uphold the rule of law in armed conflict. Efforts to establish accountability for drone strikes and AWS operations may require new legal frameworks or adaptations to existing ones, emphasizing the importance of transparency and oversight in military operations.

Targeting and Civilian Protection

The use of drones and AWS has raised concerns about the protection of civilians in armed conflict. The principle of distinction requires parties to distinguish between combatants and civilians, yet the complexity of modern warfare blurs these lines. The potential for drones to cause unintended civilian casualties poses significant challenges for compliance with IHL.

⁶ Autonomous weapons systems controlled by artificial intelligence: A conceptual roadmap for international criminal responsibility, Guido Acquaviva, Available at SSRN 4070447, 2021
https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=The+implications+of+drones+and+AWS+on+IHL+are+profound+and+multifaceted%2C+encompassing+accountability%2C+targeting%2C+and+emerging+legal+norms.&btnG=#d=gs_qabs&t=1728352726522&u=%23p%3DIIBVIJFtusJ,visited on 08/10/2024



Reports of drone strikes resulting in civilian casualties have sparked public outrage and criticism of their legality. The challenges of assessing proportionality in drone strikes further complicate efforts to protect civilians. The reliance on intelligence and data in targeting decisions may lead to overreliance on technological assessments, potentially resulting in miscalculations that endanger civilian lives.

To enhance civilian protection, there is a pressing need to strengthen legal frameworks and establish clearer guidelines for the use of drones and AWS in armed conflict. This includes developing protocols that emphasize the importance of gathering comprehensive intelligence, ensuring accountability for decisions made during operations, and promoting the implementation of measures to minimize civilian harm.

Emerging Legal Norms

The widespread use of drones and AWS has implications for the development of emerging legal norms in IHL. As these technologies continue to evolve, the international community must engage in discussions to define the legal status and operational parameters of such systems. The establishment of binding agreements or conventions specifically addressing the use of drones and AWS may be necessary to ensure compliance with IHL principles.

Additionally, the role of international organizations and forums, such as the United Nations, in facilitating dialogue on the legal and ethical implications of these technologies is crucial. Efforts to create consensus on the appropriate use of drones and AWS can contribute to the development of normative standards that enhance compliance with IHL and protect civilian populations.

Ethical Considerations Surrounding Drones and Autonomous Weapons

The ethical implications of employing drones and AWS in armed conflict extend beyond legal compliance, raising significant moral questions about the conduct of warfare⁷.

Human Element in Warfare

⁷ The ethical troubles of future warfare. on the prohibition of autonomous weapon systems, Mihai-Valentin Cernea *Analele Universității din București–Seriă Filosofie* 66 (2), 67-89, 2017, https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=The+ethical+implications+of+employing+drones+and+AWS+in+armed+conflict+extend+beyond+legal+compliance%2C+raising+significant+moral+questions+about+the+conduct+of+warfare&btnG=#d=gs_qabs&t=1728352932559&u=%23p%3DbjergK8mQpYJ, visited on 09/10/2024



The remote nature of drone operations may create a detachment from the realities of combat. This separation can lead to a desensitization of operators who conduct strikes from thousands of miles away, potentially diminishing the moral weight of decisions made regarding the use of lethal force. The ethical principle of just war theory emphasizes the importance of human judgment in the decision-making process during armed conflict. The delegation of targeting decisions to machines challenges this principle and raises concerns about the erosion of accountability in warfare.

Moreover, the psychological effects on drone operators must be considered. Studies have indicated that drone operators may experience high levels of stress and moral injury due to the nature of their work, leading to potential long-term psychological consequences. These ethical concerns necessitate a re-evaluation of the use of technology in warfare and the implications for both military personnel and civilian populations.

Impact on Warfare Dynamics

The integration of drones and AWS into military operations may alter the dynamics of warfare itself. The increased reliance on technology in combat can change the nature of conflict, potentially leading to more frequent and prolonged engagements. The ability to conduct remote strikes with minimal risk to military personnel may lower the threshold for the use of force, resulting in a greater willingness to engage in military operations⁸.

Furthermore, the proliferation of drones and AWS among state and non-state actors may contribute to an arms race in military technology. This arms race could lead to increased instability and conflict, raising significant ethical concerns about the consequences of technological advancements in warfare.

Conclusion

⁸ Killing by remote control: the ethics of an unmanned military, Jeff McMahan, *Oxford University Press*, 2013
https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=The+ability+to+conduct+remote+strikes+with+minimal+risk+to+military+personnel+may+lower+the+threshold+for+the+use+of+force%2C+resulting+in+a+greater+willingness+to+engage+in+military+operations&btnG=#d=gs_qabs&t=1728353136738&u=%23p%3DG6p8duoY4TQJ,visited on 09/10/2024

The emergence of drones and autonomous weapons systems represents a paradigm shift in warfare that challenges the existing frameworks of International Humanitarian Law. The principles of distinction, proportionality, and accountability are increasingly difficult to uphold in the face of these new technologies. The potential for civilian casualties, the complexities of attributing responsibility, and the ethical dilemmas surrounding the use of autonomous systems necessitate a comprehensive reevaluation of IHL.

To effectively address the challenges posed by drones and AWS, the international community must engage in ongoing dialogue and cooperation to develop adaptive legal frameworks that account for the realities of modern warfare. This includes establishing clear guidelines for the use of these technologies, ensuring accountability for violations, and promoting civilian protection.

As warfare continues to evolve, the need for a robust and adaptable legal framework becomes increasingly evident. The future of International Humanitarian Law depends on the ability to reconcile the advancements in warfare technology with the fundamental principles that seek to protect human dignity and minimize the suffering caused by armed conflict.

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