

**Assessing the Compatibility of Autonomous Weapon Systems
With IHL, IHRL, ICL: The Legal Lacunae Between
Responsibility and Autonomy in The Decision-making Process**



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(2024)

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A thesis submitted to the National University of Sciences and Technology, Islamabad,

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Supervisor: Dr. Ansar Jamil

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DEDICATION

“This thesis is dedicated to my dear parents whose sacrifices and relentless support have made all my achievements possible.”

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LIST OF ABBREVIATIONS AND ACRONYMS

ACHR	American Convention on Human Rights
AfCHPR	African Charter on Human and Peoples' Rights
AI	Artificial Intelligence
API	Additional Protocol I (to the Geneva Conventions)
APII	Additional Protocol II (to the Geneva Conventions)
ARS	Articles on Responsibility of States
ATC	Algorithmic Target Construction
AWS	Autonomous Weapon Systems
CCW	Convention on Certain Conventional Weapons
ECHR	European Convention on Human Rights
ECtHR	European Court of Human Rights
DoD	Department of Defense (United States)
ICC	International Criminal Court
ICL	International Criminal Law
ICCPR	International Covenant on Civil and Political Rights
ICRC	International Committee of the Red Cross
ICTR	International Criminal Tribunal for Rwanda
ICTY	International Criminal Tribunal for the former Yugoslavia
IHL	International Humanitarian Law
IHRL	International Human Rights Law
LAWS	Lethal Autonomous Weapon Systems

MHC Meaningful Human Control

OODA Loop Observe, Orient, Decide, Act Loop

UAV Unmanned Aerial Vehicle

Abstract

This thesis examines the profound legal and ethical implications of deploying Autonomous Weapon Systems (AWS) within the frameworks of International Humanitarian Law (IHL), International Human Rights Law (IHRL), and International Criminal Law (ICL). It identifies a significant accountability gap emerging from the substitution of human decision-making with machine autonomy in AWS, thereby challenging the established principles of responsibility within these legal regimes. The research questions focus on reconciling AWS development and deployment with the imperatives of human control, legal accountability, and moral responsibility, alongside exploring the regulation of AWS under IHL and IHRL, the criteria for attributing penal responsibility under ICL, and the integration of Meaningful Human Control (MHC) to bridge this accountability gap. Utilizing a doctrinal research methodology, this study scrutinizes key treaties, customary laws, judicial decisions, and scholarly literature to assess the adequacy of current legal norms in addressing the unique challenges posed by AWS. The findings reveal that AWS complicate the application of IHL principles of distinction, proportionality, and military necessity, while also raising concerns regarding the arbitrary deprivation of life under IHRL and disrupting traditional frameworks of criminal responsibility under ICL. The thesis advocates for the integration of MHC as a customary law to ensure robust human oversight and intervention in critical decision-making processes, thus preserving adherence to legal and ethical standards. By emphasizing the need for normative guidelines that sustain human agency and responsibility, the study underscores the necessity for states to adapt international legal frameworks to address the accountability challenges posed by AWS. Ultimately, the research promotes the incorporation of MHC to uphold the principles of human control, legal accountability, and moral responsibility, ensuring that the deployment of AWS aligns with fundamental international norms and values.

Keywords: Autonomous Weapon Systems (AWS), International Humanitarian Law (IHL), International Human Rights Law (IHRL), International Criminal Law (ICL), Legal Accountability, Moral Responsibility, Meaningful Human Control (MHC), Machine Autonomy, Ethical Implications, Customary Law

Chapter 1

INTRODUCTION

Carl Schmitt echoes Hegel in his major work "Der Nomos der Erde," where he argues that the rise of new forms of power requires the creation of corresponding instruments of force to oppose the "other".¹ Schmitt made this insight in the late 1940s, the time when the nuclear weapons had shown humanity an unprecedented level of destructive power, the fear of annihilation of the whole world, the rise of terrifying vocabulary such as 'nuclear winter' and 'Mutually Assured Destruction' and 'Nuclear fall-out'.² The use of these weapons was crucial in bringing World War II to an end, and for the next forty years, anxiety lingered as the USSR and the United States, two superpowers, teetered on the verge of nuclear conflict.³ The existential threat to human civilization posed by this standoff underscore the importance of Schmitt's observations that the interaction between the use of power and weapons has shaped human history since antiquity.

Carl Schmitt's work also indicate that a weapon frequently predates its era, illustrating humanity's tendency and propensity to take advantage of emerging technologies to close gaps in the application of force equation. New weaponry has always been developed and used in battles throughout history, from catapults to nuclear weapons.⁴ A striking example in this claim is the extensive deployment of Unmanned Aerial Vehicles (UAVs) for military purposes, which emerged

¹ Carl Schmitt, *Der Nomos Der Erde* (DUNCKER UND HUMBLOT, 2012), <https://doi.org/10.3790/978-3-428-48983-1>.

² Alan Robock and Owen Brian Toon, "Self-Assured Destruction: The Climate Impacts of Nuclear War," *Bulletin of the Atomic Scientists* 68, no. 5 (March 2012): 66–74, <https://doi.org/10.1177/0096340212459127>.

³ Michael C. Horowitz, Paul Scharre, and Alexander Velez-Green, "A Stable Nuclear Future? The Impact of Autonomous Systems and Artificial Intelligence" (arXiv, December 13, 2019), <http://arxiv.org/abs/1912.05291>.

⁴ Robert L. O'Connell, *Of Arms and Men: A History of War, Weapons, and Aggression* (Oxford University Press, 1990).

at the same time when the Global War on Terrorism was in the offing.⁵ This pattern implies that humans have continuously tried to employ technology developments to their advantage in combat, which feeds a cycle of innovation and increasing force use. Hence humanity never shies away from adapting to different lethal mechanisms of inflicting harm to the ‘other’ the ‘enemy’.

But in the era of information and enlightenment, masses are more aware of rights and obligations of the safety and unsafety, of enemy and non-enemy, this epoch needs humanitarian weapons, weapons that ensure remoteness to an extent that it does not inflict a single wound on the combatant on the just and ‘human’ side of the conflict, and Autonomous Weapons System (AWS) are here.⁶ These are the weapons tailored for our epoch, there is no risk involved and no spilling of blood on the just part of the conflict. Hence, no public outcry and objections against these humanitarian weapons which ironically have placed human out of the whole command and control.

Robots are not limited by human emotions or prejudices; instead, they can make decisions based only on programming and objective standards. As a result, they are more consistently compliant with established norms limiting the use of force than people are.⁷ In a desperate bid to mitigate their own destructive tendencies and to herald an era of humanitarian weapons, human beings have turned to machines as a last resort, acknowledging that their own species has been deemed the most lethal, capable of inflicting harm upon itself and others on a catastrophic scale, unmatched by any other species.

⁵ Timothy Ravich, “A Comparative Global Analysis of Drone Laws: Best Practices and Policies,” in *The Future of Drone Use*, ed. Bart Custers, vol. 27, Information Technology and Law Series (The Hague: T.M.C. Asser Press, 2016), 301–22, https://doi.org/10.1007/978-94-6265-132-6_16.

⁶ Christopher P. Toscano, “Friend of Humans: An Argument for Developing Autonomous Weapons Systems,” *J. Nat’l Sec. L. & Pol’y* 8 (2015): 189.

⁷ Marco Sassoli, “Autonomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,” *International Law Studies* 90, no. 1 (2014): 1.

Which brings us to the question of legality and morality, as evinced that new forms of weapons are accepted by humanity either in the primitive era where only military gains held importance or today where we are ready to accept AWS under the garb of humane weapons.⁸ Were nuclear weapons legally regulated during the devastating attacks on cities of Hiroshima and Nagasaki, which ended up in the death of 140,000 and 80,000 people, respectively.⁹ More recently, what about legality and morality of target killing and UAVs, which were introduced to lessen the collateral damage and balance ‘proportionality’ equation in armed conflicts and counter-terrorism initiatives.¹⁰ Throughout history, humanity has accepted new forms of weaponry, often prioritizing military gains over ethical considerations. One must ask that the military necessity or any other excuse overshadowed the morality and legality that is associated with that weapon.

Another theme in the use of force is the characterization of the enemy, how an enemy is defined tremendously influences what kind of force is being used against them. The hero-protector narrative is employed and the enemy is often described as an inhumane thread to humanity that has to be eradicated in-order to rid the world of all the menace.¹¹ Aerial warfare introduced a new dimension, with a radical separation between parties, making annihilation the primary goal strengthening the narrative of othering the enemy and characterizing them as sub humans. This feature is evident in the drone campaigns where terrorism and terrorist are a thread to humanity and has to be eradicated.¹² This characterization is furthered by the emergence of Autonomous

⁸ Eliot A. Cohen, “A Revolution in Warfare,” *Foreign Aff.* 75 (1996): 37.

⁹ Elliott L. Meyrowitz, “The Opinions of Legal Scholars on the Legal Status of Nuclear Weapons,” *Stan. J. Int’l L.* 24 (1987): 111.

¹⁰ Claire Finkelstein, Jens David Ohlin, and Andrew Altman, *Targeted Killings: Law and Morality in an Asymmetrical World* (OUP Oxford, 2012), <https://books.google.com.pk/books?hl=en&lr=&id=-MMXvPN2f2kC&oi=fnd&pg=PP1&dq=target+killing+and+morality+&ots=IURSBrrorh&sig=olCwQIhkjuMydFhxtRQMh-2yLXg>.

¹¹ Michael Loadenthal, “Othering Terrorism: A Rhetorical Strategy of Strategic Labeling,” *Genocide Studies and Prevention: An International Journal* 13, no. 2 (2019): 9.

¹² Finkelstein, Ohlin, and Altman, *Targeted Killings*.

Weapons Systems (AWS), which create an unparalleled asymmetry between humans and machines by having machines decide who lives and who dies. In order to defend this kind of behavior, the enemy must be dehumanized and made into nothing more than targets of aggression. This is similar to Schmitt's comment that the opponent becomes an object of violence and the idea of war as a fight between equals is lost when weapons are blatantly unequal.¹³ The application of AWS calls into question the humanity and dignity of both the targeted and the side that is being targeted.

The point of departure of this research is legal; it questions the morality and legality of AWS with the special focus to the notion of accountability and responsibility. As laws is a human creation and made to serve humans, how can machines adorned with the capacity of independent decision making can comply with the laws. The legal and moral issues raised by AWS will be studied from lens of International Humanitarian Law (IHL), International Human Rights Law (IHRL) and International Criminal Law (ICL). AWS, by operating without human decision-making, may seem to undermine the fundamental concept of humanity that underlies these legal frameworks, and that brings us to contents of this research;

1.1 Problem Statement

The central problem to be researched in the replacement of human agency in decision making process in the development and utilization of AWS, which raises a significant accountability gap in the application of International law regimes. The deployment of AWS in conflict or law enforcement changes the traditional subject of legal responsibility i.e. the human being and this role is supplanted by machines which can make autonomous decisions.¹⁴ This

¹³ Schmitt, *Der Nomos Der Erde*.

¹⁴ Mihai-Valentin Cernea, "The Ethical Troubles of Future Warfare. on the Prohibition of Autonomous Weapon Systems," *Analele Universității Din București—Seria Filosofie* 66, no. 2 (2017): 67–89.

unprecedented occurring in the history of use of force has challenged the foundations of accountability in the three regimes of law i.e. IHL, IHRL and ICL.¹⁵ The problem identified for this research is threefold;

First through the lens of Law of Armed Conflict or IHL the employment of these Autonomous Weapons undermines the placement of accountability as it obscures the whole chain of command and blurs the lines between two fundamentals of IHL; military necessity and proportionality. AWS operate without human oversight, it becomes challenging if not impossible to allocate responsibility in case of violations of three cardinal principles of law of war i.e. distinction proportionality and precaution.

Secondly, the deployment of AWS in law enforcement scenarios both domestically and extra-territorial raises concerns about lack of human decision making and judgment in the use of lethal force that can directly impinge upon the fundamental human rights such as arbitrarily loss of life or violation of human dignity. The automation of decision making places the human out of the OODA loop hence, it becomes difficult to remedy in cases of violations of IHRL.

Thirdly, the problem identified from the purview of ICL is that the autonomous nature of AWS obstructs the fundamental principle of criminal responsibility, which relies solely on human intent and agency. There is a big accountability gap in ICL since AWS operates without human involvement, making it difficult to determine who is criminally responsible for war crimes and violations of human rights committed by these machines.

¹⁵ Nicholas W. Mull, "The Roboticization of Warfare with Lethal Autonomous Weapon Systems (Laws): Mandate of Humanity or Threat to It," *Hous. J. Int'l L.* 40 (2017): 461.

1.2 Research Gap

There has been significant amount of debate around AWS in different contexts and scenarios; including but not limited to decision making, military necessity, human agency and the changing norms of use of force. However, a holistic research focusing solely on the allocation of responsibility within the frameworks of three predominant regimes of International Law i.e. IHL, IHRL and ICL remains largely unexplored. The research aims to fill this this gap in the AWS legal scholarship by investigating the accountability and allocation of criminal responsibility in conflict or in law enforcement.

The existing literature on AWS has to a great degree been discussed from the theoretical and conceptual framework of IHL, specifically in the conflict zones or state of wars, however, in contemporary developments, the use of force is not constrained to war zones only. There is an implicit scarcity of scholarship that systematically addresses the question of allocation of responsibility on a broader framework. Hence, this research attempts to fill this research gap by diversifying the legal context of the existing scholarship on AWS.

Secondly, the application of AWS in law enforcement settings, both locally and internationally, has received noticeably less attention than its use in armed conflict, which has dominated the debate on the technology. This study provides a more thorough grasp of the accountability implications of AWS deployment by extending the scope of inquiry beyond traditional conflict settings and including IHRL issues into the analysis.

Moreover, the autonomy of AWS calls into question the conventional notions of criminal responsibility in the context of ICL, which have historically rested on human agency and purpose. Even while this problem is becoming more widely acknowledged, there is still a big vacuum in

the research when it comes to determining who is criminally responsible for war crimes and violations of human rights that AWS commits. By analyzing the accountability gap triggered by AWS's autonomy within the context of ICL, this study aims to close this gap.

In summary, although there has been much discussion of AWS from a variety of angles, this study seeks to add to the body of knowledge by concentrating on the allocation of accountability within the IHL, IHRL, and ICL frameworks and by taking into account the consequences of AWS deployment in both law enforcement and conflict situations.

Apart from addressing the noted research gap, this research holds significance because it advances the conversation on the moral and legal implications of autonomous weapon systems. This study examines how established norms of accountability in armed conflict and law enforcement are challenged by evolving technology by examining how responsibility is allocated within the frameworks of IHL, IHRL, and ICL. Furthermore, this study offers a nuanced knowledge of the various challenges posed by autonomous weapon systems across various operational situations by looking at AWS deployment in both combat and law enforcement scenarios.

This research goes beyond theoretical discussions and aims to develop and test the concept of Meaningful Human Control (MHC) in Autonomous Weapons Systems (AWS). By integrating MHC into AWS, this study seeks to establish whether traditional accountability frameworks can be effectively applied to these systems, thereby addressing the accountability gap in international law. Hence, the research's findings will be relevant for legislators, attorneys, and military officials who are considering the moral and legal ramifications of adopting AWS. The present study helps to educate decisions about the regulation, use, and governance of autonomous weapon systems by highlighting the accountability implications of AWS deployment. Moreover, the research's

multidisciplinary methodology, which integrates the fields of ethics, technology, and law, offers insightful analysis for addressing the complex problems arising from the convergence of accountability and autonomy in contemporary military and law enforcement tactics. Finally, in line with humanitarian principles and international legal conventions, the study seeks to advance critical discourse and informed policymaking to support the moral and responsible deployment of autonomous weapon systems.

1.3 Hypothesis

It has been established while defining the problem statement that the deployment of AWS during armed conflicts or in law enforcement operations calls into question the legal accountability. Critical questions that accompany this assumption are; how does autonomy of AWS impact the capacity of legal regimes to hold them accountable for their actions? What are the implications of the decisions taken by AWS that result in the breach of International Law? And to what extent the existing legal frameworks have adapted or can adapt to this technological disruption in warfare and law enforcement.

Scholars such as Thurnher (2013) have argued that the incorporation of autonomy in the weapon systems obstructs the conventional process of attribution of responsibility, as all the law instruments were designed for human subjects, hence human decision makers.¹⁶ Similarly, International Committee of Red Cross has emphasized the necessity for explicit accountability procedures and the difficulties in guaranteeing adherence to international humanitarian law when employing autonomous technologies in a recent report submitted to United Nations Secretary

¹⁶ Jeffrey S. Thurnher, "Examining Autonomous Weapon Systems from a Law of Armed Conflict Perspective," in *New Technologies and the Law of Armed Conflict*, ed. Hitoshi Nasu and Robert McLaughlin (The Hague: T.M.C. Asser Press, 2014), 213–28, https://doi.org/10.1007/978-90-6704-933-7_13.

General.¹⁷ Drawing from these discussions, the hypothesis of this study has been formulated as; “*The deployment of Autonomous Weapon Systems (AWS) by military forces during armed conflict and law enforcement poses significant challenges to the notion of legal accountability.*”

The deployment of AWS introduces a complex dynamic that undermines the conventional principles of accountability and responsibility, hence can be characterized as *Independent Variable* (IV). Whereas, legal accountability which includes the capacity of holding the persons or states accountable will serve as a *Dependent Variable (DV)* in this study. Introduction of autonomy to weapons and weapon systems has brought about a paradigm shift in the operational landscape of the legal foundations of accountability in the law regimes. The more autonomously AWS may function, the more difficult it is to hold them accountable for their acts. The lack of agreement on how to govern AWS under the current legal frameworks adds to this complication. Consequently, it is imperative to investigate legislative modifications that might successfully tackle these obstacles, guaranteeing that accountability stays a fundamental aspect of military and law enforcement activities.

The introduction of autonomy and its impact on the accountability regime prompts us to further explore how the lacuna between technological advancements and International Law regimes can be effectively bridged. MHC is hereby posited as a solution to the accountability conundrum in the use of AWS. Research by writers like Sharkey (2019) highlights how crucial human supervision is to reducing the moral and legal hazards connected to AWS.¹⁸ MHC has also been supported by the United Nations Institute for Disarmament Research (UNIDIR) as a way to

¹⁷ “Autonomous Weapons: ICRC Submits Recommendations to UN Secretary-General,” Report, March 20, 2024, <https://www.icrc.org/en/document/autonomous-weapons-icrc-submits-recommendations-un-secretary-general>.

¹⁸ Amanda Sharkey, “Autonomous Weapons Systems, Killer Robots and Human Dignity,” *Ethics and Information Technology* 21, no. 2 (June 2019): 75–87, <https://doi.org/10.1007/s10676-018-9494-0>.

guarantee that autonomous systems follow international legal norms, encouraging more responsibility and compliance.¹⁹

1.4 Research Questions

The research questions that are in focus and will subsequently guide the content of current research are;

- a) How can the development and deployment of Autonomous Weapon Systems (AWS), characterized by varying levels of autonomy, AI, and remoteness, be reconciled with the requirements of human control, legal accountability, and moral responsibility?
- b) To what extent the core principles of International Humanitarian Law (IHL) regulate the development and deployment of Autonomous Weapon Systems (AWS) and how does it debate accountability and responsibility in autonomous military decision-making?
- c) How the development and deployment of Autonomous Weapons Systems is regulated in law enforcement, in context of International Human Rights Law, how is responsibility associated in autonomous decision making?
- d) What are the criteria for attributing penal responsibility to individuals and entities in cases of gross violations of International Humanitarian Law (IHL) and International Human Rights Law (IHRL) via Autonomous Weapon Systems in the context of International Criminal Law, and how can such responsibility be effectively attributed and prosecuted?
- e) How can the integration of Meaningful Human Control (MHC) in AWS be achieved to establish clear lines of accountability and attribute responsibility to human operators, thereby

¹⁹ UNIDIR Security and Technology Programme, “The Weaponization of Increasingly Autonomous Technologies: Considering How Meaningful Human Control Might Move the Discussion Forward,” November 13, 2014, <https://unidir.org/publication/the-weaponization-of-increasingly-autonomous-technologies-considering-how-meaningful-human-control-might-move-the-discussion-forward/>.

addressing the accountability gap in the development and deployment of autonomous weapon systems?

1.5 Theoretical Framework

Having established this from the problem statement that the deployment of AWS in warfare and law enforcement scenarios raises several legal and ethical questions. The study investigates the raised questions from the lenses of lenses of Just War Theory, Natural Law Theory, and Legal Positivism. Each of these theories is applied in correlation with the relevant legal convention, hence following a structured approach to debating and addressing the challenges posed by AWS.

Just War Theory is critical in forming the foundations of IHL, serving as a basis of the ethical considerations governing the armed conflict. The theory has been articulated by scholars like Augustine and Aquinas has two fundamental components; jus ad bellum (the right to go to war) and jus in bello (the right conduct in war). Jus in bello principles of the Just War Theory are more pertinent to this research, such as distinction (differentiating between armed personnel and civilians) and proportionality (avoiding inordinate amount of lethal force), relate directly to the utilization of AWS in armed conflict.²⁰ These principles are enshrined in the Geneva Conventions and their Additional Protocols. The Geneva Conventions (1949) and the Additional Protocols (1977) provide the legal framework that governs how victims of war can be protected.²¹ The jus in bello principles mandate that enemies in the conflict must always differentiate between combatants and non-combatants (civilian populations) and prohibit indiscriminate attacks. Michael Walzer's in his "Just and Unjust Wars" emphasize the importance of adhering to jus in

²⁰ John Langan, "The Elements of St. Augustine's Just War Theory," *The Journal of Religious Ethics*, 1984, 19–38.

²¹ Ryan Dreveskracht, "Just War in International Law: An Argument for a Deontological Approach to Humanitarian Law," *Buff. Hum. Rts. L. Rev.* 16 (2010): 237.

bello principles to maintain moral integrity in warfare and have been taken into account while formulating the theoretical framework of the research work.²² Another significant contribution is James Turner Johnson's "Morality and Contemporary Warfare" which provides an in-depth analysis of Just War principles in modern conflicts.²³ Study analyzes if AWS can comply with the legal conventions of IHL through the core principles of Just War theory such as Just Cause, Legitimate Authority and Right intention. The theory also constitutes a normative basis to argue for the integration of meaningful human control in AWS to ensure compliance with IHL.

Natural Law Theory posits that there are certain rights and moral values are inherent to human nature and universally recognizable based on human reason. This theory serves as a foundational work to both IHRL and ICL. As a theoretical foundation to IHRL, Natural Law Theory has stimulated the Universal Declaration of Human Rights (UDHR, 1948), that asserts that human rights are inherent and inalienable to all human beings, independent of any subjectivity or situation.²⁴ The current study examines how the deployment of AWS aligns with the fundamental human rights of life, dignity, and security with an interplay of the fundamental features of Natural Law Theory such as 'Inherent Morality' and 'Common Good'. John Finnis in his "Natural Law and Natural Rights" underscore the importance of natural law as a foundation for understanding and protecting human rights.²⁵ For ICL, Natural Law Theory serves as a basis of prosecution of

²² Michael Walzer, *Just and Unjust Wars* (New York: Basic Books, 1977).

²³ Martin L. Cook, "Morality and Contemporary Warfare. By James Turner Johnson. New Haven: Yale University Press 1999. Pp. ix, 259. \$30.00. ISBN: 0-300-07837-4. Paper. (Price NA.) ISBN: 0-300-09104-4.," *Journal of Law and Religion* 16, no. 2 (January 2001): 1019–24, <https://doi.org/10.2307/1051767>.

²⁴ James Rooney, "International Human Rights as a Source of Unenumerated Rights: Lessons from the Natural Law," *Dublin ULJ* 41 (2018): 141.

²⁵ John Finnis, *Natural Law and Natural Rights* (Oxford University Press, 2011), https://books.google.com.pk/books?hl=en&lr=&id=1RFHEI6JQoC&oi=fnd&pg=PP1&dq=John+Finnis%27+%22Natural+Law+and+Natural+Rights%22+&ots=GWiy7ur9Ft&sig=BHg0w0UwLUSB_rwRPDG3ENsHWyU.

grave international crimes such as genocide.²⁶ The Rome Statute of the International Criminal Court (ICC, 1998) is a positive interpretation of the principles of Natural law Theory as it criminalizes egregious acts that subvert the inherent human rights.²⁷ In his work "The Morality of Law" Lon L. Fuller, discusses how legal systems must be underpinned by moral principles for them to be just and or practical.²⁸ By grounding human rights and criminal accountability in the basic moral principles, Natural Law Theory gives a solid framework for assessing the impact of AWS on human rights and for keeping intact the accountability if these rights are violated. The theory substantiates the argument that even autonomous systems must operate within a framework that regards inherent human dignity and rights.

Legal Positivism is a theory that hold that law is a set of rules and norms created by legitimate authorities and must be recognized as binding. This theory is applied in this research work as it is central to the doctrinal research in this study, which will be adopted as the research methodology Legal Positivism underscores the significance of treaties and conventions, such as the Geneva Conventions, the UDHR, and the Rome Statute, as sources of binding legal obligations, these conventions serve as the data sources in the research and hence will be analyzed and assessed for their effectiveness in regulating AWS. By applying a positivist approach, the study examines the specific legal provisions that govern AWS and evaluates their adequacy in addressing the unique challenges posed by autonomous systems. H.L.A. Hart's in his "The Concept of Law" delineates how a clear and structured legal system is fundamental for doctrinal analysis.²⁹ Another

²⁶ Robert Cryer and Albert Nell, "The Philosophy of International Criminal Law," in *Research Handbook on the Theory and History of International Law* (Edward Elgar Publishing, 2020), 200–239, <https://www.elgaronline.com/edcollchap/edcoll/9781788116701/9781788116701.00016.xml>.

²⁷ "Rome Statute of the International Criminal Court," n.d.

²⁸ Edwin W. Tucker, "The Morality of Law, by Lon L. Fuller," *Indiana Law Journal* 40, no. 2 (1965): 5.

²⁹ Herbert Lionel Adolphus Hart and Leslie Green, *The Concept of Law* (oxford university press, 2012), https://books.google.com.pk/books?hl=en&lr=&id=hCOUDAAAQBAJ&oi=fnd&pg=PP1&dq=.+H.L.A.+Hart%27s+%22The+Concept+of+Law%22+&ots=MF7iACXAyt&sig=8zV26f_GFgBniqkmAvBisv29gZk.

seminal work in legal Positivism scholarship is Hans Kelsen's "Pure Theory of Law," which argues for the separation of law and morality and emphasizes the role of a structured legal order.³⁰ Legal Positivism provides a systematic methodology for identifying and interpreting the legal norms applicable to AWS, ensuring that the analysis is grounded in the established legal standards. The theory aids in articulating clearly the binding legal responsibilities and accountability mechanisms that apply in the context of AWS.

This theoretical framework offers a thorough examination of the moral and legal issues raised by AWS through the integration of Just War Theory, Natural Law Theory, and Legal Positivism. The research aims to guarantee that AWS deployment complies with established legal and moral norms, so improving accountability and safeguarding human rights. It does this by linking these ideas with pertinent legal conventions.

1.6 Objectives of Research

The objectives of current research are;

- a) To Identify the key challenges and concepts in AWS development and deployment
- b) To inspect the extent to which International Humanitarian Law principles regulate AWS development and deployment during war.
- c) To Investigate how International Human Rights Law regulates AWS development and deployment in law enforcement.
- d) To Identify the criteria for attributing penal responsibility to individuals and entities via International Criminal Law

³⁰ Hans Kelsen, "What Is the Pure Theory of Law," *Tul. L. Rev.* 34 (1959): 269.

- e) To Investigate the concept of Meaningful Human Control and debating responsibility and accountability in AWS development and deployment.

1.7 Limitations

The research on the development and deployment and legal regulation of AWS in war and law enforcement situations is subject to several limitations. These limitations should be acknowledged in order to get a holistic understanding of the study's scope and the concomitant constraints. One major challenge is the speed at which autonomous technology and artificial intelligence are developing. The present legal and ethical frameworks may not last long given how rapidly these technologies are evolving. It's possible that this study didn't fully account for upcoming changes or foresee every technical advancement that would have an influence on AWS implementation.

Another challenge is the access to information, because military technology and activities are classified in nature, it is difficult to get precise and comprehensive information regarding AWS's capabilities and deployment. This constraint makes it more difficult to conduct a thorough analysis of AWS applications in the real world and places a significant reliance on publicly accessible data that might not be entirely accurate.

There are uncertainties and loopholes in the current international legal frameworks pertaining to the regulation of autonomous weapon systems (AWS), including IHL, IHRL and ICL. It may be difficult to definitive conclusions on legal accountability and compliance as a result of these uncertainties. Furthermore, because these legal systems are predominantly the outcome of Western academia, different states and legal academics may interpret and apply these laws differently. The different cultural and legal settings in which AWS are deployed may not be fully

captured by this Western-centric approach, which would make the creation of rules and recommendations that are relevant to all regions of the world more difficult.

As doctrinal research methodology has been adopted in this research, which focuses primarily on the analysis of legal texts, statutes, case law, and legal principles, the nature of this research presents certain limitations. This approach may not fully capture the practical realities and operational challenges that can be encountered during AWS deployment. It also limits the ability to incorporate empirical data or firsthand accounts from military and law enforcement personnel who interact with these systems. Consequently, the research may be devoid of a holistic understanding of the real-world implications and effectiveness of legal regimes in regulating AWS.

The principle of Meaningful Human Control (MHC) in this research is introduced as a fundamental link to assess the relevance of existing legal frameworks to AWS, its practical implementation in AWS poses significant challenges. Defining and operationalizing MHC in a way that is both effective and enforceable is complex, and there may be practical limitations in applying this concept uniformly across different types of AWS. Furthermore, the advances in state conduct, international law, and technology improvements are unpredictable by nature. It's possible that the research underestimates how these variables will change and affect AWS deployment and regulation in the years to come.

1.8 Research Methodology

The research will employ a doctrinal research methodology to address the delineated research questions and to achieve the objectives of the research. Doctrinal research methodology will proceed by thoroughly assessing the contemporary legal frameworks; which will include international conventions, customary laws, judicial decisions as well as the

scholarly work on the subject matter. Throughout the research primary focus will be the following legal regimes: IHRL, IHL and ICL.

For International Humanitarian Law (IHL), key treaties such as the Hague Conventions, Geneva Conventions of 1949 and their Additional Protocols of 1977, which establish the core rules of war means and methods of warfare and the protection of civilians and combatants, will be thoroughly analyzed. Customary International Humanitarian Law, as set forth by the International Committee of the Red Cross (ICRC), will also be taken into consideration to understand state practices and *opinio juris* that are considered binding in nature although they are not treaties. IHL will also be interpreted by reference to judicial rulings from international courts and tribunals, including the International Criminal Tribunal for the former Yugoslavia (ICTY) and the International Court of Justice (ICJ).

The International Covenant on Civil and Political Rights (ICCPR, 1966), the International Covenant on Economic, Social, and Cultural Rights (ICESCR, 1966), and regional human rights instruments such as the European Convention on Human Rights (ECHR, 1950) will be the main subjects of research for IHRL. Additionally, customary norms based on *opinio juris* and consistent state practices will be examined. Human rights duties that are pertinent to AWS will be interpreted by case law from the Human Rights Committee (HRC), and the European Court of Human Rights (ECHR).

For International Criminal Law (ICL), the Rome Statute of the International Criminal Court (ICC, 1998) will be the main treaty analyzed. Specific focus will be on the definitions of crimes against humanity, and genocide and war crimes which are pertinent to IHL. Certain features of customary ICL, that outline the practices recognized as binding by states, will be taken into

account. Judicial decisions from the ICC, the ICTY, and the International Criminal Tribunal for Rwanda (ICTR) will provide precedents on accountability and criminal responsibility.

Secondary sources will complement these primary legal texts, providing a broader context for the analysis. Academic journals and books from leading international law scholars will offer in-depth discussions and critiques of existing legal frameworks. Reports and statements from the United Nations, the ICRC, and non-governmental organizations will provide insights into ongoing debates and policy discussions surrounding AWS.

Doctrinal research is the most appropriate research methodology to address the research concerns raised in this thesis because of its analytical and thorough approach to comprehending and interpreting current legal frameworks. This approach entails a thorough analysis of the primary legal frameworks, including judicial rulings, customary international law, international treaties, and reputable academic publications. Because IHL, IHRL and ICL are intricate and multidimensional, doctrinal study enables a careful analysis of these legal frameworks and tenets. It makes it possible to pinpoint legal ambiguities and gaps in the regulation of AWS which makes it easier to do a comprehensive examination of how these laws can be read and applied to modern problems. Doctrinal study guarantees a thorough assessment of the legal accountability and compliance procedures related to AWS by methodically examining these legal texts. Moreover, it offers a structured framework for suggesting improvements—like incorporating Meaningful Human Control (MHC)—to address the gaps. Consequently, doctrinal research is the most useful methodology for this subject because it not only aids in comprehending the current legal environment but also in suggesting workable legal improvements.

1.9 Delimitations

In order to ensure a targeted and practical scope of the study, this research will be delimited in several ways. The main areas of interest will be the legal frameworks pertaining to autonomous weapon systems (AWS) under IHL, IHRL and ICL. The geographic focus will be on international standards and norms, with a few representative references to regional instruments. The temporal scope of the research work will encompass the development and application of legal norms up to the present year i.e. 2024; historical evolution will only be discussed where it is essential for understanding the situation or for contextualization. Technologically the research will concentrate on autonomous weapon systems (AWS) that can be verified as being in operation or in development, based on publicly accessible and declassified data sources.

The research will examine both international and national armed conflicts as well as law enforcement situations; peacetime activities will not be included unless they are specifically related. International treaties, customary law, court rulings, and academic papers will be the main sources of legal information; secondary sources such as reports and policy documents will be used as needed. The discussion will center around AWS-specific legal accountability and compliance, with an emphasis on broader ethical and strategic issues solely to the extent that they bear on legal considerations. These boundaries guarantee that the study stays focused and cohesive, offering a lucid and organized evaluation of the legal issues raised by AWS

1.10 Thesis Structure

1.10.1 Chapter 1: Reconciling Autonomy and Remoteness with Accountability and Human Control

In this chapter, the fundamental ideas behind autonomous weapon systems (AWS) and their legal ramifications are covered in this chapter. The chapter will delve deep into the terms, ideas, and concepts including AWS, autonomy, remoteness, human control, accountability, and responsibility. In order for these ideas to be utilized consistently throughout the thesis, the chapter attempts to establish working definitions for them. The chapter will lay the groundwork for the legal interpretation and analysis in later chapters by defining these terms.

1.10.2 Chapter 2: IHL and AWS: Accountability in Autonomous Decision-Making

In this chapter AWS will be analyzed using the framework of IHL. The chapter will examine the ways in which the deployment and utilization of AWS are impacted by the fundamental IHL concepts of necessity, proportionality, and distinction. The main goal will be to comprehend how IHL addresses accountability in independent decision-making processes. The difficulties and shortcomings in the existing legal environment pertaining to AWS will also be discussed.

1.10.3 Chapter 3: Regulating AWS in Law Enforcement: Human Rights and Responsibility

The application of AWS in relation to IHRL will be examined in this chapter. It will look at how the deployment of AWS affects basic human rights and human dignity, including the inalienable right to life. This chapter will assess the ways in which AWS can be controlled to guarantee adherence to IHRL and will go over the states' and individuals' obligations to respect human rights norms when utilizing AWS for law enforcement.

1.10.4 Chapter 4: Penal Responsibility in IHL and IHRL Violations via AWS under International Criminal Law

In this chapter the responsibility and accountability for IHL and IHRL violations committed by the use of AWS, with a focus on International Criminal Law (ICL) will be discussed. It will examine the standards for assigning criminal liability to individuals and entities, as well as the difficulties in bringing these offenses to justice. This chapter will examine pertinent case law and legal theories to comprehend how, in the context of AWS, accountability might be effectively implemented.

1.10.5 Chapter 5: Meaningful Human Control and Responsibility in AWS: A Way Forward

In this chapter, the concept of Meaningful Human Control (MHC) will be introduced and discussed as a potential solution to bridge the ensuing gap in the responsibility framework in the use of AWS. The chapter will assess that if the integration of MHC can enhance legal accountability and compliance with international legal standards.

1.10.6 Conclusion and Recommendations

The conclusion will summarize the findings from the previous chapters, hypotheses will be tested, and the research questions will be addressed to determine if the proposed solutions are effective. It will offer recommendations for policymakers, legal practitioners, and stakeholders on how to enhance the regulation and accountability of AWS under IHL, IHRL, and ICL.

Chapter 2

RECONCILING AUTONOMY AND REMOTENESS WITH ACCOUNTABILITY AND HUMAN CONTROL

2.1 Remoteness as a concept in the Use of Force

Throughout human history, the idea of remoteness in the use of force has undergone substantial change. In this sense, "remoteness" refers to the strategic separation of combatants from their targets in order to reduce personal risk and increase enemy casualties. The goal of this strategy has been to project lethality without vulnerability, and it has remained constant throughout different kinds of combat. Historically remoteness in the use of force was seen as an affront to bravery and heroism, as evidenced by Greek literature, where hand-to-hand fighting was valorized and distant combat was considered dishonorable and unchivalrous.³¹ This ethos is best illustrated by Homer's Idomeneus in the Iliad, who argues about the moral superiority of intimate combat over strategic distancing from the enemy. These texts are indicative of an early conflict between bravery and strategic detachment.³² However, romanticism of heroism was outpaced by pragmatism and the need for efficiency and risk mitigation, leading to the development of remote weaponry as a more practical and effective solution.

2.1.1 Early Developments in Remote Weaponry

The move from weapons driven by muscle to that of chemicals has been a major advancement in the pursuit of remoteness. Due to their physical constraints, early humans invented

³¹ Hans Van Wees, "Greeks Bearing Arms," *Archaic Greece: New Approaches and New Evidence*, 1998, 333–78.

³² Richard Janko and Geoffrey Stephen Kirk, *The Iliad: A Commentary: Volume 4, Books 13-16* (Cambridge University Press, 1991),

[https://books.google.com.pk/books?hl=en&lr=&id=z8HLCgAAQBAJ&oi=fnd&pg=PP1&dq=\(Homer,+Iliad,+Book+13&ots=7oTFFxaWQX&sig=OVtOKeMQWuZcJ_0N7G8SgZBZ--s](https://books.google.com.pk/books?hl=en&lr=&id=z8HLCgAAQBAJ&oi=fnd&pg=PP1&dq=(Homer,+Iliad,+Book+13&ots=7oTFFxaWQX&sig=OVtOKeMQWuZcJ_0N7G8SgZBZ--s).

tools like sticks and rocks and later more advanced weaponry like crossbows and bows to project force at a distance.³³ The crossbow—a weapon that allowed less skilled people to kill knights—evolved from the primitive bows used in the Mesolithic cave paintings in Morela la Vella, Spain. This allowed people to challenge the established social order and lead to temporary bans.³⁴ These developments emphasize how technology advancements in armament have continuously pushed the bounds of remoteness, illustrating the ongoing tension between combat effectiveness and the morality of remote warfare.

2.1.2 Chemical-Powered Weaponry

Gunpowder's invention in China and the subsequent introduction of chemical power to Europe revolutionized the history of use of lethal force. The nature of warfare was drastically changed by gunpowder weapons such as muskets and cannons, which allowed soldiers to attack with more lethality and at even longer ranges.³⁵ The 19th century saw the invention of dynamite and high explosives, which increased the power and influence of remote forces and resulted in the creation of increasingly advanced artillery and missile systems.³⁶ Around this time, machine guns also became popular. Like crossbows before them, they were first viewed as unjust and morally objectionable, but their tactical benefits led to their eventual acceptance, like every weapon before

³³ Vicente Lull et al., *El Argar and the Beginning of Class Society in the Western Mediterranean* (na, 2011), https://www.academia.edu/download/30864920/100_Argar-Kiel2007.pdf.

³⁴ Adam Henschke, Patrick F. Walsh, and Roger Bradbury, "Changing Practices, Disruptive Technologies, and the Evolution of Intelligence Institutions," in *The Ethics of National Security Intelligence Institutions* (Routledge, 2024), 185–204, <https://library.oapen.org/bitstream/handle/20.500.12657/88270/1/9781040021958.pdf#page=194>.

³⁵ J. P. Perry Robinson, "Supply, Demand and Assimilation in Chemical-Warfare Armament," in *Military Technology, Armaments Dynamics and Disarmament*, ed. Hans Günter Brauch (London: Palgrave Macmillan UK, 1989), 112–23, https://doi.org/10.1007/978-1-349-10221-1_5.

³⁶ John P. Harris, *Men, Ideas, and Tanks: British Military Thought and Armoured Forces, 1903-1939* (Manchester University Press, 1995), [https://books.google.com.pk/books?hl=en&lr=&id=00myJhLVIUUC&oi=fnd&pg=PP13&dq=\(Harris,+2000%3B+artillery+%&ots=BZ1kO5FOUN&sig=R62CM3GqUdmOXIs6SvqZeqKxaIM](https://books.google.com.pk/books?hl=en&lr=&id=00myJhLVIUUC&oi=fnd&pg=PP13&dq=(Harris,+2000%3B+artillery+%&ots=BZ1kO5FOUN&sig=R62CM3GqUdmOXIs6SvqZeqKxaIM).

them.³⁷ The evolution of chemical-powered weaponry exemplifies the escalating priority on enhancing combat effectiveness while reducing troop vulnerability, with the historical trajectory of this equation steadily shifting towards maximizing lethality and minimizing risk to combatants.

2.1.3 Nuclear and Cyber-Powered Force

The catastrophic effect and remoteness of military power underwent a quantum leap with the introduction of nuclear weapons. Nuclear deterrence, a concept that aims to forbid the use of nuclear weapons by threatening mutual destruction, was developed in response to the catastrophic potential of these weapons.³⁸ Despite efforts to restrict and outlaw these weapons, their existence has fundamentally influenced global military strategy and the concept of remoteness in conflict.³⁹ Analogously, the advent of cyberweapons in the twenty-first century has created new forms of remoteness, permitting nations to cause harm via digital methods even when they are not physically present.⁴⁰ These advancements demonstrate the continuous pursuit of strategic benefits through greater remoteness and decreased susceptibility.

2.1.4 Unmanned Aerial Vehicles (UAVs) and Remoteness

Drones, also referred to as Unmanned Aerial Vehicles (UAVs), are the perfect example of the modern extension of remoteness in warfare. A major advancement in military technology occurred when the Predator drone, which had been employed for surveillance, was later equipped

³⁷ Joanna Bourke, "War and Violence," *Thesis Eleven* 86, no. 1 (August 2006): 23–38, <https://doi.org/10.1177/0725513606066238>.

³⁸ Lawrence Freedman and Jeffrey Michaels, *The Evolution of Nuclear Strategy: New, Updated and Completely Revised* (London: Palgrave Macmillan UK, 2019), <https://doi.org/10.1057/978-1-137-57350-6>.

³⁹ Thomas Rid, "Cyber War Will Not Take Place," *Journal of Strategic Studies* 35, no. 1 (February 2012): 5–32, <https://doi.org/10.1080/01402390.2011.608939>.

⁴⁰ Peter W. Singer and Allan Friedman, *Cybersecurity: What Everyone Needs to Know* (oup usa, 2014), https://books.google.com.pk/books?hl=en&lr=&id=f_lyDwAAQBAJ&oi=fnd&pg=PP1&dq=singer+and+friedman+2014&ots=Dol3UIDHlj&sig=vFsSYP6I5B-uJ-hNifITXtDYW5w.

with Hellfire missiles.⁴¹ With UAVs, operators can interact with targets thousands of kilometers distant while maintaining a high degree of physical distance and high-resolution, real-time monitoring capabilities.⁴² The combination of precision and remoteness has prompted debate on the nature of remote warfare and accountability in ethical and legal contexts.⁴³ UAVs challenge conventional ideas of combat and heroism, representing the pinnacle of historical trends toward remoteness.

2.1.5 AI-Powered Force and Autonomous Weapon Systems (AWS)

The most recent advancement in distant warfare is the creation of artificial intelligence (AI)-powered force, especially through Autonomous Weapon Systems (AWS). With pre-programmed algorithms and real-time data processing, AWS can function without direct human control.⁴⁴ This degree of autonomy results in previously unheard-of remoteness, further removing human operators from the actual battlefield and decision-making process. There is continuous discussion about the ethical ramifications of AWS, including accountability concerns and the possibility of unforeseen effects.⁴⁵ The introduction of AI in weaponry represents a seismic shift in the conduct of war, severing the traditional link between weapons and their human operators. This tremendous shift is poised to radically altering the dynamics of combat.

⁴¹ Jeremiah Gertler, "US Unmanned Aerial Systems" (Congressional Research Service Washington, DC, 2012), <https://apps.dtic.mil/sti/citations/tr/ADA566235>.

⁴² Sarah Elizabeth Kreps, *Drones: What Everyone Needs to Know* (Oxford University Press, 2016), https://books.google.com.pk/books?hl=en&lr=&id=jT-BCwAAQBAJ&oi=fnd&pg=PP1&dq=Kreps,+2016%3B++UAVs&ots=ub-cGekY8g&sig=21g_DxdyAZuF0apMoiTYI2Wtfol.

⁴³ Anthony R. Cummings et al., "The Rise of UAVs," *Photogrammetric Engineering & Remote Sensing* 83, no. 4 (2017): 317–25.

⁴⁴ R. Arkin, "Accountability and Liability for the Deployment of Autonomous Weapon Systems," accessed June 15, 2024, <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/C830948C7B18270B884F0A53095D0544>.

⁴⁵ Peter Asaro, "On Banning Autonomous Weapon Systems: Human Rights, Automation, and the Dehumanization of Lethal Decision-Making," *International Review of the Red Cross* 94, no. 886 (2012): 687–709.

From the first tools powered by muscle to the most advanced AI-powered systems, the idea of remoteness in the use of force has changed, reflecting a constant attempt to maximize combat effectiveness while lowering personal risk. This chronological sequence demonstrates how ethical concerns in combat and technical innovation interact dynamically. Particularly with the growing remoteness of combat has created new difficulties for upholding human accountability and control. A major concern is how ethical responsibility and technical advancement interact. The debate brings us to autonomy and its features AWS and how do they interact with the legal norms.

2.2 Autonomy in Weapons

The concept of 'autonomy' derives from the Greek words *autos* (self) and *nomos* (law), signifying the human capacity to self-govern by creating one's own laws. This notion has been extensively explored across various disciplines. In theology, autonomy is defined as "the right and freedom of self-determination as contrasted with determination by somebody or something else".⁴⁶ Kantian philosophy introduces moral autonomy as the ability to govern oneself based on moral principles, in contrast to heteronomy, which involves external moral imposition.⁴⁷

The idea of autonomy changes significantly when talking about non-human entities, specifically machines. Heteronomy, which is defined as reliance on human intervention, is frequently used to contrast autonomy in robots. The degree of autonomy exhibited by a machine is negatively correlated with its reliance on human operators, as per Lin (2016) and Arkin

⁴⁶ Hans Küng, *A Global Ethic for Global Politics and Economics* (Oxford University Press, USA, 1998), [https://books.google.com.pk/books?hl=en&lr=&id=Fc7nCwAAQBAJ&oi=fnd&pg=PR7&dq=K%C3%BCng,+1995\)+AUTONOMY&ots=iHal_wq1b8&sig=iwUQdz38-r0K0TS2oecUstKDcJk](https://books.google.com.pk/books?hl=en&lr=&id=Fc7nCwAAQBAJ&oi=fnd&pg=PR7&dq=K%C3%BCng,+1995)+AUTONOMY&ots=iHal_wq1b8&sig=iwUQdz38-r0K0TS2oecUstKDcJk).

⁴⁷ Jerome B. Schneewind, *The Invention of Autonomy: A History of Modern Moral Philosophy* (Cambridge University Press, 1998), [https://books.google.com.pk/books?hl=en&lr=&id=VfadsTs-1bUC&oi=fnd&pg=PR13&dq=Schneewind,+1998\)+&ots=4_mjyFllwQ&sig=WVVl5QuT20ltIJWkVunU-q8dm3c](https://books.google.com.pk/books?hl=en&lr=&id=VfadsTs-1bUC&oi=fnd&pg=PR13&dq=Schneewind,+1998)+&ots=4_mjyFllwQ&sig=WVVl5QuT20ltIJWkVunU-q8dm3c).

(2009).^{48,49} Furthermore, functional performance tends to be in focus rather than moral conclusions in the scholarship regarding machine autonomy. For example, from a strategic and military vantage point there is more emphasis on building machines that can execute certain tasks better than humans than rather than being moral infallible.⁵⁰ Hence, machines morals and were never a yardstick to gauge their autonomy or performance.

According to this functionalist perspective, machine autonomy is defined as the ability to carry out tasks on its own without human intervention in the real world. Autonomy is the capacity, once triggered, to function without human intervention; it does not imply moral decision-making. This definition emphasizes how machine autonomy is morally neutral.⁵¹

2.2.1 *The OODA Loop and Its Relevance to Autonomy*

While defining in the context of AWS, an understanding from OODA Loop can be derived. OODA Loop is a decision-making process that was coined by military strategist John Boyd, it is an acronym of Observe, Orient, Decide, and Act.⁵² According to Boyd a combatant A human soldier begins by "observing" his surroundings and obtaining as much information as possible through his senses; he then "orients" himself or his vehicle toward the enemy, "decides" which course of action is most appropriate to achieve the objective, and finally "acts".⁵³ This model is crucial for understanding the functionalities required for autonomous weapon systems (AWS). A

⁴⁸ Einar Broch Johnsen, Jia-Chun Lin, and Ingrid Chieh Yu, "Comparing AWS Deployments Using Model-Based Predictions," in *Leveraging Applications of Formal Methods, Verification and Validation: Discussion, Dissemination, Applications*, ed. Tiziana Margaria and Bernhard Steffen, vol. 9953, Lecture Notes in Computer Science (Cham: Springer International Publishing, 2016), 482–96, https://doi.org/10.1007/978-3-319-47169-3_39.

⁴⁹ Arkin, "Accountability and Liability for the Deployment of Autonomous Weapon Systems."

⁵⁰ Cummings et al., "The Rise of UAVs."

⁵¹ David J. Gunkel, *The Machine Question: Critical Perspectives on AI, Robots, and Ethics* (mit Press, 2012), https://books.google.com.pk/books?hl=en&lr=&id=h6mKLnwYj_UC&oi=fnd&pg=PR7&dq=GUNKEL+2012+&ots=9bGSxO_r1Z&sig=R-PUJ4dfz0luEzAmXs--h9ZTIVc.

⁵² Chet Richards, "Boyd's OODA Loop," 2020, <https://fhs.brage.unit.no/fhs-xmlui/handle/11250/2683228>.

⁵³ Richards.

fully autonomous system must independently perform all four steps of the OODA Loop without human intervention.

In combat settings, Boyd's model highlights the significance of prompt and precise decision-making. AWS needs to quickly collect data (Observe), process and analyze it (Orient), decide on the best course of action (Decide), and carry out the action (Act) in order to be effective.⁵⁴ In dynamic and uncertain situations, establishing real autonomy poses distinct obstacles at each level of this loop.⁵⁵

2.2.2 *Sheridan's Scale and Measuring Autonomy*

Sheridan's 10-level scale offers a thorough framework for assessing a system's autonomy. This scale goes from Level 1, where a system offers no autonomous functions, to Level 10, where a system operates entirely autonomously without any human input.⁵⁶ A growing level of autonomy is represented by each intermediate level.

The systems at the lower echelons of Sheridan's scale are capable of carrying out certain activities on their own, but they still need human oversight or approval when making important judgments. At Level 5, for example, a system might recommend actions, but they still need to be

⁵⁴ Robert Zager and John Zager, "OODA Loops in Cyberspace: A New Cyber-Defense Model," *J. Article* 21, no. 12 (2017), https://www.researchgate.net/profile/Robert-Zager/publication/320809843_OODA_Loops_in_Cyberspace_A_New_Cyber-Defense_Model/links/59fb88dd0f7e9b9968ba6bd7/OODA-Loops-in-Cyberspace-A-New-Cyber-Defense-Model.pdf.

⁵⁵ Mark S. Phillips, "REVISITING JOHN BOYD AND THE OODA LOOP IN OUR TIME OF TRANSFORMATION.," *Defense Acquisition* 50, no. 5 (2021), <https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=26375052&asa=N&AN=174362836&h=t%2BiJOTgjTwRIs3Q2BNFEKhV3SyOHZ5A3kOpR1%2BnhDi6Pfl%2BZj86yAHfwupxkQRWWBfJHjOlzjmNNvKN9Vga%2B4A%3D%3D&crl=c>.

⁵⁶ Thomas B. Sheridan, *Telerobotics, Automation, and Human Supervisory Control* (MIT press, 1992), https://books.google.com.pk/books?hl=en&lr=&id=eu41_M2Do9oC&oi=fnd&pg=PR21&dq=Sheridan%E2%80%99s+Scale+and+Measuring+Autonomy&ots=Z9m37Tryd5&sig=gE098Z_ARupvpW2IVwpORc4hBlw.

confirmed by a person before being carried out.⁵⁷ Greater autonomy is reflected in higher levels, when the system can carry out tasks and notify the human operator thereafter or at its discretion.⁵⁸ Autonomous Weapon Systems (AWS) with absolute autonomy are generally categorized as Level 10 autonomous, signifying complete independence in their operations, decision-making, and action execution, without any human oversight or input.

2.2.3 *Defining Autonomy in AWS*

Based on the previous discussions autonomy within the context of AWS is described as the ability to function and make decisions in real-world contexts without the need for human involvement. This definition is in line with the functionalist viewpoint since it emphasizes the effectiveness of the machine over ethical issues.⁵⁹

The level of autonomy is frequently situational and contingent upon the particular tasks the machine executes. The degree of autonomy is determined, for example, by the capacity to travel, recognize, and interact with targets on its own without assistance from a human.⁶⁰ Thus, a more nuanced evaluation of AWS capabilities is possible when autonomy is viewed as a continuum rather than a binary quality.

2.2.4 *Autonomy in Today's Weapons*

Different levels of autonomy are already included in modern weapon systems. According to pre-programmed criteria, sensor-fused and loitering munitions, like the Israeli Harpy and Harop,

⁵⁷ Raja Parasuraman, Thomas B. Sheridan, and Christopher D. Wickens, "A Model for Types and Levels of Human Interaction with Automation," *IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans* 30, no. 3 (2000): 286–97.

⁵⁸ Michael A. Goodrich and Alan C. Schultz, "Human–Robot Interaction: A Survey," *Foundations and Trends® in Human–Computer Interaction* 1, no. 3 (January 24, 2008): 203–75, <https://doi.org/10.1561/1100000005>.

⁵⁹ Arkin, "Accountability and Liability for the Deployment of Autonomous Weapon Systems."

⁶⁰ Goodrich and Schultz, "Human–Robot Interaction."

select and engage targets inside a predetermined area, exhibiting limited autonomy.⁶¹ These systems still require human input for target selection and activation even if they operate autonomously after launch.⁶²

Missile defense systems like the Phalanx used by the US and the Iron Dome developed by Israel serve as additional examples of enhanced autonomous capabilities. Although these systems are capable of detecting, tracking, and engaging with incoming threats on their own, they are nevertheless managed by humans to guarantee correct operation and to overrule judgments when needed.⁶³

Anti-personnel sentry weapons, such as the Super aEgis II from South Korea, demonstrate the trend toward greater defensive system autonomy. Although they normally need human authority to engage, these systems are capable of autonomously detecting and tracking human targets.⁶⁴ But as these technologies progress, the limits are being pushed toward completely autonomous operations with minimal human interaction.⁶⁵

2.2.5 *Ethical and Legal Implications of Autonomy*

There are important moral and legal issues when autonomy is included into military systems. International Humanitarian Law (IHL) requires autonomous systems to abide by the

⁶¹ Tom F.A. Watts and Ingvild Bode, "Automation and Autonomy in Loitering Munitions Catalogue (v.1)" (Zenodo, 2023), <https://doi.org/10.5281/ZENODO.7860762>.

⁶² Cummings et al., "The Rise of UAVs."

⁶³ Daphne Richemond-Barak and Ayal Feinberg, "The Irony of the Iron Dome: Intelligent Defense Systems, Law, and Security," *Harvard National Security Journal* 7 (2016 2015): 469.

⁶⁴ Jina Kim, *Country Report: South Korea; Defense Reform and Force Enhancement Plans*, DGAP Report (Berlin: Forschungsinstitut der Deutschen Gesellschaft für Auswärtige Politik e.V., 2022).

⁶⁵ Kenneth Anderson and Matthew C. Waxman, "Debating Autonomous Weapon Systems, Their Ethics, and Their Regulation Under International Law," SSRN Scholarly Paper (Rochester, NY, February 28, 2017), <https://papers.ssrn.com/abstract=2978359>.

norms of distinction and proportionality.⁶⁶ For even the most sophisticated AI to be distinguished, it must be capable of differentiating between combatants and non-combatants.⁶⁷ In order to maintain proportionality, a strike must not cause more harm to civilians than it does to the military. This requires complicated moral decisions that machines might not be able to make.

Furthermore, there are accountability issues when using autonomous systems in conflict areas. It is more difficult to assign blame when autonomous systems inflict injury since traditional legal frameworks presume human agency and intent.⁶⁸ The implementation of IHL and the defense of human rights are threatened by the accountability gap.

2.3 Future Directions in Autonomous Weapon Systems

Future advancements in AWS development will likely continue to push the limits of autonomy. The capabilities of these systems are expected to advance with the introduction of new technologies like improved AI algorithms and sophisticated sensor systems.⁶⁹ But in order to guarantee that the implementation of AWS complies with global legal and ethical norms, these developments also call for strong regulatory frameworks.

The necessity of human supervision in crucial tasks, especially those in which deadly force is involved, is emphasized in proposals for assuring real human control over AWS.⁷⁰ By guaranteeing that human operators maintain final say over decisions made by autonomous systems,

⁶⁶ Thompson Chengeta, "Accountability Gap: Autonomous Weapon Systems and Modes of Responsibility in International Law," *Denver Journal of International Law and Policy* 45 (2017 2016): 1.

⁶⁷ Anastasia Roberts and Adrian Venables, "The Role of Artificial Intelligence in Kinetic Targeting from the Perspective of International Humanitarian Law," in *2021 13th International Conference on Cyber Conflict (CyCon)*, 2021, 43–57, <https://doi.org/10.23919/CyCon51939.2021.9468301>.

⁶⁸ Arkin, "Accountability and Liability for the Deployment of Autonomous Weapon Systems."

⁶⁹ Chengeta, "Accountability Gap."

⁷⁰ Arkin, "Accountability and Liability for the Deployment of Autonomous Weapon Systems."

the concept of meaningful human control aims to close the accountability gap, the notions that will be discussed in the later part of the dissertation.

The investigation of autonomy in AWS exposes a nuanced interaction between human supervision and technology capabilities. We learn more about the definition and measurement of autonomy by looking at frameworks such as Sheridan's scale and the OODA Loop. The design and operational environment of military systems today show that autonomy is a spectrum with different degrees of human engagement as technology develops, it will be important to carefully analyze the ethical and legal ramifications of AWS's growing autonomy in order to maintain human dignity and adhere to international humanitarian norms.

2.4 Definition and Key Features of AWS

Following a thorough discussion of the concepts of autonomy and remoteness, a thorough definition of autonomous weapon systems (AWS) must be developed. The scholarly discourse has highlighted several issues that this definition needs to take into account. These include the degree of human intervention and autonomy, the type of activities that AWS does, and the legal and ethical consequences of the tasks performed by AWS.

The comparative analysis of AWS definitions provided by states and organizations evince a diverse range of perspectives. The Department of Defense (DoD) in the United States, for example, defines AWS as systems that, once initiated, can independently identify and engage targets without further human intervention. This definition encompasses human-supervised autonomous weapons, which are designed to enable human operators to override the system's actions, but once activated, can independently select and engage targets without additional human

intervention⁷¹ This term highlights AWS's operational independence, highlighting their capacity to operate independently after deployment.

Conversely, the ICRC describes AWS as weapon systems capable of attacking (using force against, neutralizing, damaging, or destroying) targets without requiring human intervention. This definition, however, focuses on the critical functions of AWS and describes them as such.⁷² This strategy reflects the functional independence of AWS and emphasizes the lack of or absence of human oversight in the target engagement decision-making, which is consistent with the moral and legal issues surrounding the use of such systems.

Although the Chinese definition emphasizes autonomy in a similar way, it goes on to include other elements including lethality, the inability to stop once triggered, and the capacity for self-learning and adaptability through contact with the environment.⁷³ This thorough approach takes into account not only the functional features of AWS but also their capacity for adaptation and the possibility of unanticipated conduct, which poses serious moral and legal issues.

In the discussion of AWS, it is fundamental to differentiate between autonomy and human control. For example, the French definition proposes a completely autonomous system that functions without human interference by emphasizing the lack of human supervision and connection with the military chain of command This viewpoint is consistent with concerns about

⁷¹ M. Firlej, "The Problematisation of Autonomous Weapon Systems - a Case Study of the US Department of Defense" (<http://purl.org/dc/dcmitype/Text>, University of Oxford, 2022), <https://ora.ox.ac.uk/objects/uuid:e2318acc-f8af-4845-b87f-40ec17a2c687>.

⁷² "ICRC Position on Autonomous Weapon Systems," May 12, 2021, <https://www.icrc.org/en/document/icrc-position-autonomous-weapon-systems>.

⁷³ Alek Hillas and Aiden Warren, "'Xi Jinping Thought': Lethal Autonomous Weapons Systems and Military Modernization with Chinese Characteristics," *The Journal of International Relations, Peace Studies, and Development* 7, no. 1 (October 7, 2022), <https://scholarworks.arcadia.edu/agsjournal/vol7/iss1/6>.

the loss of human supervision and the moral ramifications of allowing robots to make decisions that involve matters of life and death.⁷⁴

2.4.1 Rationale for Selecting ICRC Definition

The ICRC definition of AWS is particularly persuasive for a number of reasons, most notably in light of the intricate ethical and legal ramifications that were previously articulated. It is inclusive in the first place, covering military systems that are autonomous both now and, in the future.⁷⁵ Because of its inclusivity, AWS's ethical and legal ramifications may be thoroughly examined.

Furthermore, the ICRC's emphasis on public conscience and humanity ideals is consistent with broader ethical considerations in an armed conflict. The ICRC definition tackles the fundamental ethical issues surrounding the use of AWS in war by highlighting the requirement that AWS must comply with the IHL principles of necessity, proportionality, and distinction.⁷⁶ This strategy makes sure that the conversation on AWS stays rooted in the core principles that support both international law.

The possibility that AWS may function in intricate and dynamic situations adds to the ethical and regulatory complexities surrounding AWS. There are concerns regarding the predictability and reliability of AWS due to its ability to adapt to changing circumstances and make decisions on its own. In this context, the ICRC's focus on the limitations of human-determined

⁷⁴ Mariarosaria Taddeo and Alexander Blanchard, "A Comparative Analysis of the Definitions of Autonomous Weapons Systems," *Science and Engineering Ethics* 28, no. 5 (August 23, 2022): 37, <https://doi.org/10.1007/s11948-022-00392-3>.

⁷⁵ "ICRC Position on Autonomous Weapon Systems."

⁷⁶ Anderson and Waxman, "Debating Autonomous Weapon Systems, Their Ethics, and Their Regulation Under International Law."

programming and the degree of choice that AWS enjoys is especially pertinent, as it emphasizes the necessity of having explicit and legally binding norms governing their usage.⁷⁷

Given the wide diversity of definitions and the intricate ethical and legal concerns involved, it is crucial to choose a definition that strikes a balance between operational functionality and the need for ethical accountability and human oversight, given the wide diversity of definitions and the intricate ethical and legal concerns involved. A thorough and impartial approach is offered by the ICRC's definition, which highlights the essential roles of AWS and the absence of human involvement during the decision-making process. In addition to capturing AWS's operational autonomy, this definition also adheres to the values of compassion and public conscience, which are essential to any weapon system's legality under IHL (ICRC, 2016). Hence, throughout the research wherever AWS is mentioned, interpreted and analyzed with relevant legal frameworks, the working definition of AWS shall be the one provided by ICRC.

2.5 Human Control and Decision Making

The development of Autonomous Weapon Systems (AWS) poses substantial difficulties in maintaining efficient human oversight and assuring rational decision-making in conflicts and in law enforcement. The autonomy and remoteness of AWS give rise to significant ethical and legal considerations, as previously discussed in the chapter. The notion of autonomy in AWS, as defined by theories like as the OODA Loop and Sheridan's scale, highlights the need of subtle human supervision. Ensuring ethical decision-making and conformity with the existing legal frameworks is of utmost significance when it comes to AWS and human control and decision-

⁷⁷ "Autonomous Weapons."

making plays a critical role in achieving this.⁷⁸ This section explores the intricacies of human control and decision-making in AWS, highlighting the constraints in knowledge, cognitive abilities, temporal limitations associated with the use of these weapons. Only after contextualization of these terminologies, one can bring in the issue of responsibility and accountability which is the prime focus of this research work.

2.5.1 Epistemic Limitations

Epistemic limits on human control pertain to the restrictions on human knowledge and comprehension while engaging with Autonomous machines. AWS often function with a significant degree of intricacy and independence, posing a challenge for human operators to completely comprehend their decision-making procedures.⁷⁹ The inherent opacity of machine learning algorithms makes it difficult for even their creators to consistently anticipate their behavior, once a command has been initiated. The opaque nature of AI presents a substantial obstacle to maintaining substantial human control, since operators may lack the requisite knowledge to make well-informed judgments or may not be able to intervene once an action has been initiated.⁸⁰ The Observe-Orient-Decide-Act (OODA) loop as discussed previously had been a monumental paradigm typically in the process of making decisions in military contexts. Nevertheless, Breton and Bossé in their research on human agency contend that the conventional OODA loop is too comprehensive to include the dynamic and non-linear procedures necessary for successful human involvement in automated systems and the current systems are not that sophisticated to allow for

⁷⁸ Phillips, "REVISITING JOHN BOYD AND THE OODA LOOP IN OUR TIME OF TRANSFORMATION."

⁷⁹ Ilse Verdiesen, Filippo Santoni de Sio, and Virginia Dignum, "Accountability and Control Over Autonomous Weapon Systems: A Framework for Comprehensive Human Oversight," *Minds and Machines* 31, no. 1 (March 1, 2021): 137–63, <https://doi.org/10.1007/s11023-020-09532-9>.

⁸⁰ Thea Riebe, Stefka Schmid, and Christian Reuter, "Meaningful Human Control of Lethal Autonomous Weapon Systems: The CCW-Debate and Its Implications for VSD," *IEEE Technology and Society Magazine* 39, no. 4 (December 2020): 36–51, <https://doi.org/10.1109/MTS.2020.3031846>.

parallel decision making and are devoid of mechanisms to integrate viable human intervention.⁸¹ This constraint is worsened by the intricacy of AWS, which often necessitates operators to formulate novel cognitive frameworks to comprehend and anticipate system behavior. These models need a significant amount of time and resources to develop, and in critical circumstances where these machines are deployed, there is frequently not enough time available for this mental adjustment to occur and that too occur efficiently.⁸²

2.5.2 *Cognitive Limitations*

Cognitive limits emerge from the intrinsic restrictions of human intellect while they interact with high throughput technical systems. Research in cognitive psychology has shown that people have an intrinsic propensity to take automatic decision as it is, which is quicker but less thoughtful than reflective thinking which only humans are capable of. The process of automated reasoning is often inadequate when it comes to the scenario of intricate and ethically crucial decisions that are necessary for the functioning of AWS.⁸³ Sharkey (2012) argues that individuals often depend on automatic reasoning in their daily lives. However, when this kind of reliance is used in the operation of AWS, it might result in mistakes and ethical oversights.⁸⁴ Furthermore, the cognitive constraints are further worsened by the presence of automation bias. Automation bias is the inherent inclination of humans to excessively depend on automated systems, placing faith in their results generated automatically, without employing any critical assessment⁸⁵. This prejudice is especially troublesome in the context of AWS, where the consequences of decision-making are

⁸¹ Richard Breton and Eloi Bosse, "The Cognitive Costs and Benefits of Automation," n.d.

⁸² Elke Schwarz, "Autonomous Weapons Systems, Artificial Intelligence, and the Problem of Meaningful Human Control," *Philosophical Journal of Conflict and Violence* 5, no. 1 (May 20, 2021): 53–72, <https://doi.org/10.22618/TP.PJCV.20215.1.139004>.

⁸³ Robert Sparrow, "Killer Robots," *Journal of Applied Philosophy* 24, no. 1 (2007): 62–77, <https://doi.org/10.1111/j.1468-5930.2007.00346.x>.

⁸⁴ Sharkey, "Autonomous Weapons Systems, Killer Robots and Human Dignity."

⁸⁵ Parasuraman, Sheridan, and Wickens, "A Model for Types and Levels of Human Interaction with Automation."

quite significant and can lead to arbitrary loss of life.⁸⁶ Studies have shown that operators may neglect to override incorrect choices made by AWS as a result of this bias, which may result in potentially disastrous consequences.

2.5.3 Temporal Limitations

Temporal limits are the restrictions caused by the difference in pace between AWS operations and human decision-making processes. AWS has the ability to digest information and perform actions far faster than what humans are capable of. Wiener cautioned that robots working at such high speeds provide substantial obstacles to human control, since operators may not have sufficient time to intervene and rectify mistakes.⁸⁷ The disparity in time frames of human cognition and machine action is evident in some of the existing systems such as the Phalanx or SeaRAM. These weapon systems possess the capacity to achieve their objectives within a matter of seconds, henceforth leaving little or no opportunity for human involvement.⁸⁸ The prompt decision-making that is an intrinsic feature AWS clashes with the more careful and curated speed of human ethical deliberation. AI systems priorities speed, efficiency, and prediction skills, which is actually demanded from them, in doing that these systems are prone to neglecting the subtle and context-sensitive aspects of human moral judgement. The temporal mismatch may lead to ethical and legal violations, since the rapid mode of action of Autonomous Weapons may not allow for the required human supervision and careful consideration.⁸⁹

⁸⁶ M L Cummings, "Artificial Intelligence and the Future of Warfare," n.d.

⁸⁷ Elke Schwarz, "Delegating Moral Responsibility in War: Lethal Autonomous Weapons Systems and the Responsibility Gap," in *The Routledge Handbook on Responsibility in International Relations* (Routledge, 2021).

⁸⁸ Maaïke Verbruggen and Vincent Boulanin, *Mapping the Development of Autonomy in Weapon Systems* (Stockholm: Stockholm International Peace Research Institute (SIPRI), 2017), <https://doi.org/10.13140/RG.2.2.22719.41127>.

⁸⁹ Thurnher, "Examining Autonomous Weapon Systems from a Law of Armed Conflict Perspective."

2.6 The Interplay of Human Control and AWS Autonomy

The interaction between human operators and AWS cannot be regarded as simple and direct one, but it rather involves an intricate interplay of cognitive and technological elements. Katharine Hayles characterizes views this relationship as a "cognitive assemblage," a kind of interconnection which involves parallel cognition of human and machines, that influences each other's choices and behaviors.⁹⁰ This interplay of human and machine cognition questions the conventional presence of human authority, proposing that humans are not only the only ones in control of technology but are instead components of a unified system where agency is scattered between human and machine parts. Introduction of human control in AWS is further complicated by this shared agency. As AWS becomes increasingly sophisticated and self-governing, the human position transitions from hands-on control to a supervisory role, where the capacity to intervene is constrained by the system's intricacy and velocity. This transition gives rise to substantial ethical and legal concerns regarding the allocation of responsibility and liability in the utilization of AWS.⁹¹

2.6.1 *The Role of Human Operators in AWS Decision-Making*

The participation of human operators in the decision-making is vital to ensure that these systems operate within ethical and regulatory parameters. Operators have the responsibility of establishing the parameters and objectives that direct AWS actions. The human control ideally begins when the codes for these systems are being written, human cognition via programming should be there while determining the criteria for identifying and engaging targets. It is essential for human operators to actively observe the performance of AWS and should have a mechanism

⁹⁰ N. Katherine Hayles, "Ethics for Cognitive Assemblages: Who's in Charge Here?," in *Palgrave Handbook of Critical Posthumanism*, ed. Stefan Herbrechter et al. (Cham: Springer International Publishing, 2022), 1195–1223, https://doi.org/10.1007/978-3-031-04958-3_11.

⁹¹ Rebecca Crootof, "War Torts: Accountability for Autonomous Weapons," *University of Pennsylvania Law Review* 164 (2016 2015): 1347.

to intervene to subvert any unforeseen negative outcomes.⁹² The efficacy of human operators in AWS decision-making relies on their capacity to comprehend the system's capabilities and constraints. Proficiency in AWS necessitates extensive training and a profound comprehension of the ethical and legal principles that regulate its utilization. Operators must possess the ability to make quick judgements in stressful conditions, effectively managing the requirement for prompt response while also ensuring compliance with ethical and regulatory guidelines.⁹³

The ethical and legal implications of using AWS are intricately related to the level of human agency is possessed by these systems. According to international humanitarian law, all weapon systems, including AWS, must comply with the core principles of distinction, proportionality, and military necessity, which will be discussed in the subsequent chapters. The IHL principles require that those engaged in conflict be clearly identified as combatants or non-combatants, the amount of force used must be proportional to the military advantage gained, and actions must be considered necessary to achieve legitimate military objectives.⁹⁴ Integrating AWS into military operations poses substantial hurdles in retaining efficient human control and providing robust decision-making processes. The ability of human operators to successfully oversee and interfere in the behavior of these systems is complicated by epistemic, cognitive, and temporal restrictions. To overcome these restrictions, a comprehensive strategy is needed, which encompasses transparency, education, ethical principles, and technology measures. It is contended by the scholars to have strong human oversight in order to maintain the ethical and legal norms of combat and reduce the

⁹² Schwarz, "Delegating Moral Responsibility in War."

⁹³ Ben Wagner, "Liable, but Not in Control? Ensuring Meaningful Human Agency in Automated Decision-Making Systems," *Policy & Internet* 11, no. 1 (2019): 104–22, <https://doi.org/10.1002/poi3.198>.

⁹⁴ Vincent Boulanin et al., "The Exercise of Human Control from Legal, Ethical and Operational Perspectives," LIMITS ON AUTONOMY IN WEAPON SYSTEMS (Stockholm International Peace Research Institute, 2020), <https://www.jstor.org/stable/resrep25354.8>.

hazards that are concomitant with growing autonomy of AWS.⁹⁵ To gain a deeper understanding of the issues and improve human oversight and decision-making in the usage of sophisticated systems, it is important to contextualize Accountability and Responsibility with these systems.

2.7 Algorithmic Target Construction and Decision-Making

For better understanding of the dynamics of autonomous decision-making in autonomous weapon systems and human control, one must grasp the idea of Algorithmic Target Construction in machines. The process of selecting and engaging with a target in AWS is becoming more and more dependent on data-driven algorithms, consequently removing the need for human oversight. In-depth discussion of Algorithmic Target Construction is provided in this section, along with an analysis of its consequences for human control and decision-making, as previously covered in relation to autonomy and ethical issues in AWS.

The term "ATC" describes the procedure that AWS uses to collect and re-examine data in order to decide which people should be the target for use of force. The Geneva Academy of International Humanitarian Law and Human Rights' 2017 Briefing, "Defending the Boundary", emphasized this idea.⁹⁶ "Construction" refers to the methods used to gather and process data, while "Algorithmic" means that computer algorithms are used to make these conclusions. Finding a "Target" for military intervention is the ultimate objective.

There are three primary parts to ATC: gathering data, digesting data using algorithms, and deciding to use force based on this data. During the first stage, known as data collection, AWS

⁹⁵ Schwarz, "Delegating Moral Responsibility in War."

⁹⁶ Maya Brehm, "Defending the Boundary: Constraints and Requirements on the Use of Autonomous Weapon Systems Under International Humanitarian and Human Rights Law," *SSRN Electronic Journal*, 2017, <https://doi.org/10.2139/ssrn.2972071>.

collects large amounts of field data, including big, biometric, and personal data. Sensitive information like political beliefs, racial or ethnic origin, and biometric information like physiological traits and face photos may be revealed by personal data.⁹⁷ Drones are frequently used in modern military operations to gather this kind of information in order to create databases that facilitate the identification of possible targets; this approach has been called "data-driven warfare".⁹⁸

Once the data is gathered, the autonomous system proceeds to analyze and manipulate this information using advanced algorithms. An algorithm can be defined as a systematic set of rules or procedures created to address problems or generate desired results based on given input data.⁹⁹ For an algorithm to be considered effective, it needs to generate certain outcomes, be time-efficient, and work in a deterministic manner within a limited number of steps.¹⁰⁰ Machine learning algorithms, namely those that utilize deep learning and neural networks, are anticipated to have a substantial impact on the future of AWS by enhancing their performance through ongoing learning and adaptation.¹⁰¹ The last phase of (ATC) entails the independent decision-making of the AWS, in which the system utilizes analyzed data to determine whether or not to engage targets. This decision-making process is deterministic, adhering to pre-established criteria, and devoid of the impromptu nature and ethical discernment that are inherent in human decision-making.¹⁰² The

⁹⁷ Cummings, "Artificial Intelligence and the Future of Warfare."

⁹⁸ Hannah Devereux, "Data-Driven Cyber Prediction in Hybrid Warfare," n.d.

⁹⁹ Kenneth Anderson and Matthew C. Waxman, "Law and Ethics for Autonomous Weapon Systems: Why a Ban Won't Work and How the Laws of War Can," SSRN Scholarly Paper (Rochester, NY, April 10, 2013), <https://doi.org/10.2139/ssrn.2250126>.

¹⁰⁰ Michael C. Horowitz, "When Speed Kills: Lethal Autonomous Weapon Systems, Deterrence and Stability," in *Emerging Technologies and International Stability* (Routledge, 2021).

¹⁰¹ Alexander Blanchard and Mariarosaria Taddeo, "Autonomous Weapon Systems and Jus Ad Bellum," *AI & SOCIETY* 39, no. 2 (April 1, 2024): 705–11, <https://doi.org/10.1007/s00146-022-01425-y>.

¹⁰² Schwarz, "Autonomous Weapons Systems, Artificial Intelligence, and the Problem of Meaningful Human Control."

approach frequently entails analyzing individuals' behavior patterns and classifying them as possible targets based on statistical connections.

As a result of the ATC, the capabilities of AWS have gotten increasingly sophisticated. Consequently, the responsibilities of human operators have shifted from direct control to supervisory oversight. This transition poses numerous obstacles. The intricate nature of AWS and their dependence on sophisticated algorithms might obfuscate the decision-making process from human operators.¹⁰³ The opaque nature of AWS poses challenges for operators in comprehending and anticipating its operations, hindering their ability to maintain well-informed and efficient oversight.

The introduction ATC in the Autonomous Weapons debate signifies a notable progression towards technology that allows limited human intervention. However as contended by leading scholars and subject experts, effective supervision by humans is essential in AWS because human dependence on data gathering, algorithmic analysis, and independent decision-making to guarantee ethical and legal adherence. To provide effective control over these advanced systems, it is crucial to address the limits related to knowledge, cognition, and time constraints of human operators. As the evolution of AWS progresses, it is imperative to establish frameworks that strike a balance between technological capabilities and the ethical and legal criteria that regulate the utilization of force in military operations.¹⁰⁴ The pertinent question that shall be debated how ATC can be developed in a way that allows for human oversight?

To align the deployment of autonomous weapon systems with ethical and legal standards, it is crucial to understand and address the complexities of Algorithmic Target Construction (ATC).

¹⁰³ Asaro, "On Banning Autonomous Weapon Systems."

¹⁰⁴ Arkin, "Accountability and Liability for the Deployment of Autonomous Weapon Systems."

By doing so, we can navigate the ethical and legal challenges these systems present, ensuring their use upholds principles of humanity and public conscience.

2.8 Concluding Remarks

This chapter offers a thorough examination of the ideas of remoteness and autonomy concerning the application of force, with a specific emphasis on Autonomous Weapon Systems (AWS). The historical progression from early muscle-powered tools to present AI-powered AWS demonstrates a consistent endeavor to improve combat efficacy while reducing personal risk. The concept of remote warfare was equated with cowardice in the primitive ages, however, the fixation with heroism could not keep pace with the demands of optimizing lethality and minimizing vulnerability.¹⁰⁵ Hence, the history of use of force unraveled with developments such as crossbow, gunpowder, and nuclear weapons.

The term "autonomy" originates from the Greek literature has also been discussed in detail, it refers to the ability to operate independently. Speaking in the context of machines, autonomy refers to the ability to operate independently without the need for human involvement. Autonomy is opposite to heteronomy, which involves relying on human intervention. Machine autonomy, is best defined by the functionalist approach, which refers to the capacity of machine to operate without human intervention, with a focus on performance rather than moral factors.¹⁰⁶ This definition, which is morally neutral, highlights the ethical difficulties presented by autonomous systems in warfare.

¹⁰⁵ Janko and Kirk, *The Iliad*.

¹⁰⁶ Verbruggen and Boulanin, *Mapping the Development of Autonomy in Weapon Systems*.

The OODA Loop, devised by military strategist John Boyd, is essential for comprehending the functionality of AWS. A completely self-governing system must autonomously carry out the four stages of the OODA Loop: Observation, Orientation, Decision, and Action. Sheridan's 10-level scale provides a structured approach to evaluate the extent of autonomy in a system, spanning from complete absence of autonomous functions to complete autonomy.^{107,108} These frameworks emphasize the range of independence and different levels of human participation in AWS operations.

When defining AWS, it is important to take into account factors such as autonomy, human control, and functional capabilities, as well as the ethical and legal concerns that may arise. The definition of AWS provided by the ICRC emphasizes the crucial functions of AWS and the lack of human involvement. This definition has been adopted for this research as it takes a complete approach that ensures operational independence while adhering to the values of compassion and public conscience that are important to International Humanitarian Law (IHL).

Human oversight and decision-making are essential for ensuring ethical decision-making and compliance to IHL. The introduction of AWS brings restrictions on humans in terms of knowledge, understanding, making it challenging to maintain a human agency over machines. Epistemic limitations refer to the constraints on human knowledge and comprehension of AWS, whereas cognitive limitations represent the inherent restraints of human intelligence.¹⁰⁹ Temporal constraints exist due to the swift pace of AWS operations in contrast to the slower cognitive

¹⁰⁷ Richards, "Boyd's OODA Loop."

¹⁰⁸ Sheridan, *Telerobotics, Automation, and Human Supervisory Control*.

¹⁰⁹ Boulanin et al., "The Exercise of Human Control from Legal, Ethical and Operational Perspectives."

processes involved in human decision-making. It is crucial to overcome these restrictions by implementing openness, providing training, and establishing ethical principles

Algorithmic Target Construction (ATC) in AWS entails the collection, manipulation, and examination of data to facilitate decision-making regarding target selection. This approach aims to minimize human supervision while also adding notable ethical and legal complexities.¹¹⁰ The opaque nature of machine learning algorithms and the deterministic nature of algorithmic decision-making lays emphasis on the necessity for clear visibility and strong human supervision. It is vital to build frameworks that strike a balance between technology improvements and ethical and regulatory standards as AWS capabilities progress.

To summarize, having a comprehensive understanding of the historical development of remote weaponry, the idea of autonomy, and the intricacies of human control and decision-making lays the groundwork for tackling the ethical and legal difficulties presented by AWS. The definition provided by the ICRC gives a strong and comprehensive framework that guarantees the alignment of AWS deployment with values of compassion and public conscience. This establishes the foundation for a more in-depth examination of accountability and responsibility in the utilization of AWS, which will be investigated in upcoming sections.

¹¹⁰ Brehm, "Defending the Boundary."

Chapter 3

IHL AND AWS: ACCOUNTABILITY IN AUTONOMOUS DECISION- MAKING

3.1 Introduction

The goal of IHL, formerly known as the laws of war or the law of armed conflict, aims to mitigate the horrors of war.. The basic premise was that, although though conflict is unavoidable due to human nature, humans may at least work to lessen its negative consequences on other people. This was achieved by limiting the tools and tactics of combat and by instituting regulations that safeguard individuals who are taking part in hostilities or have ceased to do so.¹¹¹ IHL particularly refers to a set of regulations intended to lessen the impact of armed conflict for humanitarian purposes. It limits the tools and techniques of conflict while safeguarding those who are not or are not now engaged in hostilities. The roots of this area of international law can be traced back to the humanitarian impulse, particularly to Henry Dunant, whose experiences at the Battle of Solferino in 1859 inspired the creation of the Red Cross and the initial Geneva Convention, ratified in 1864.¹¹²

IHL is centered on the Geneva Conventions and its Additional Protocols. These agreements guarantee the humane treatment of civilians and medical personnel and lay forth basic safeguards for people during times of armed conflict. They also forbid specific kinds of warfare.¹¹³ The foundation of IHL is lies on the concepts of necessity, proportionality, and distinction. Parties

¹¹¹ Emily Crawford and Alison Pert, *International Humanitarian Law* (Cambridge University Press, 2024).

¹¹² Louise Doswald-Beck and Sylvain Vit , "International Humanitarian Law and Human Rights Law," *International Review of the Red Cross* (1961 - 1997) 33, no. 293 (April 1993): 94–119, <https://doi.org/10.1017/S0020860400071539>.

¹¹³ Doswald-Beck and Vit .

involved in a conflict must adhere the principle of distinction to discern between combatants and non-combatants so solely military objectives are engaged. Attacks that would inflict disproportionately more harm on civilians than on the expected military gain are forbidden by the principle of proportionality. Only those actions required to accomplish a justifiable military goal are permitted by necessity.¹¹⁴

The introduction of new weapons systems has throughout history presented challenges to IHL, specifically its application and practicality. It has been a constant theme in the evolution of IHL, and different conventions were introduced as different means and methods were introduced in the armed conflict. The journey began with the St. Petersburg Declaration of 1868 when it forbade the employment of explosive projectiles weighing less than 400 grams because of their extreme agony and lack of military necessity.¹¹⁵ Subsequently, the Hague Conventions of 1899 and 1907 were implemented, which established comprehensive guidelines for the tactics and weapons of war. These included bans on the use of poison and poisoned weapons, as well as limitations on the application of expanding bullets and asphyxiating gasses.¹¹⁶ The international community's growing understanding of the disastrous humanitarian effects of chemical and biological weapons, particularly in light of their devastating usage in the course of world wars, led to the further prohibition of their use in the 1925 Geneva Protocol.¹¹⁷ The 1949 Geneva Conventions and their Additional Protocols of 1977 were adopted in the wake of World War II. These agreements established extensive safeguards for individuals affected by armed conflict and

¹¹⁴ Doswald-Beck and Vité.

¹¹⁵ Hans-Peter Gasser, "A Look at the Declaration of St. Petersburg of 1868," *International Review of the Red Cross* (1961 - 1997) 33, no. 297 (December 1993): 511–16, <https://doi.org/10.1017/S0020860400082188>.

¹¹⁶ Manley O. Hudson, "Present Status of the Hague Conventions of 1899 and 1907," *American Journal of International Law* 25, no. 1 (January 1931): 114–17, <https://doi.org/10.2307/2189634>.

¹¹⁷ G. Mantilla, *The Origins and Evolution of the 1949 Geneva Conventions and the 1977 Additional Protocols* (Oxford University Press, 2017), <https://doi.org/10.17863/CAM.84496>.

imposed additional limitations on the conduct of hostilities in warfare, including the requirement to distinguish between civilian and military targets, as well as the specific prohibition against indiscriminate attacks.¹¹⁸

The introduction of AWS, marks the beginning of a new phase in the history of applying military force obstructing the existing legal framework that essentially regulates armed conflict. AWS as discussed previously are capable of choosing and engaging targets without the need for human participation, raise important moral, legal, and practical issues. Concerns over adherence to IHL principles are raised by the fact that these systems can function in a range of autonomy levels, ranging from partially autonomous to fully autonomous.¹¹⁹ The incorporation of AWS into armed situations requires a careful analysis of how compliance can be maintained with the legal frameworks. This need calls for a development of sophisticated method is needed to evaluate AWS in armed conflict under IHL. It entails looking at AWS's effects on the battlefield from the perspectives of targeting law and weapons law. Weapons Law examines the legitimacy of military tactics, determining if the use of AWS complies with international bans on weapons of mass destruction and indiscriminate use. Conversely, Targeting Law examines how AWS is used to choose and interact with targets, making sure that the concepts of proportionality and distinction are followed.¹²⁰ This division makes it possible to comprehend the full scope of the moral and legal implications of using AWS in modern combat.

¹¹⁸ George K Walker, "State Practice Following World War II, 1945-1990," n.d.

¹¹⁹ Sparrow, "Killer Robots."

¹²⁰ Michael N. Schmitt and Eric Widmar, "The Law of Targeting," in *Targeting: The Challenges of Modern Warfare*, ed. Paul A.L. Ducheine, Michael N. Schmitt, and Frans P.B. Osinga (The Hague: T.M.C. Asser Press, 2016), 121–45, https://doi.org/10.1007/978-94-6265-072-5_6.

3.1.1 Theoretical Underpinning of Just War theory

The theory of Just War, deeply embedded in philosophical and theological traditions, offers a vital perspective for assessing the implementation of Autonomous Weapon Systems (AWS) within the context of IHL. The two primary tenets of just war theory are *jus in bello*, which discusses the morality of behavior during a conflict, and *jus ad bellum*, which examines how just is the application of force. These concepts are closely aligned with International Humanitarian Law (IHL), since they emphasize the need for military measures to be proportionate and to discriminate between combatants and non-combatants.¹²¹ By integrating Just War Theory with AWS, it becomes even more morally imperative to make sure that these systems are able to uphold the moral integrity of military operations while still adhering to IHL rules. Apart from adhering to IHL, the use of Just War Theory highlights the wider ethical consequences of utilizing AWS. The idea calls for critical thought on the moral obligations placed on nations and military leaders when implementing AWS, especially with regard to making sure that these systems are operated in a way that upholds the norms of the justice of going to war and the justice in the conduct of war. In order to prevent the dehumanization of war and the obscuring of the moral agency of those who deploy and operate AWS, it is imperative that thoughtful consideration be done in order to prevent the degradation of ethical standards in conflict.¹²² We can gain a better understanding of the difficulties and ramifications of incorporating autonomous systems into contemporary warfare by doing an examination of the effects of AWS using Weapons Law and Targeting Law and placing it within the larger ethical framework of Just War Theory.

¹²¹ Walzer, *Just and Unjust Wars*.

¹²² Dreveskracht, "Just War in International Law."

3.2 Weapons Law

The purpose of weapons law, which is an integral part of IHL, aims to regulate the use of weapons during armed conflicts in order to minimize their detrimental impact on humanity. Despite the absence of a universally agreed-upon definition of "weapon" in international law, it is commonly understood to refer to a tool that is intended or utilized to inflict injury, either in an offensive or defensive manner.¹²³ The ICRC proposed the constitution of domestic legal systems that should converge a clear and focused definition of weapons, which eventually will lead in a globally accepted agreement on what to categorize as weapons.¹²⁴ There are two fundamental enquiries that are in focus while legislating weapons; the first pertains to the legality of the weapon itself while second is the permissibility of its utilization in armed conflict (Additional Protocol I, Article 36). These rules guarantee that the choice of weapons and their usage methods are restricted to protect both combatants and civilians.¹²⁵

The history of weapons law commenced during the Saint Petersburg Declaration of 1868, which sought to outlaw the utilization of specific explosive projectiles which were used during that time, that inflicted undue pain on soldiers. This statement, while lacking legal enforceability, marked an important achievement in the endeavor to make warfare more humane by limiting the utilization of cruel technology.¹²⁶ The two Hague Peace Conferences of 1899 and 1907 made significant progress in the field of weapons legislation by establishing several international agreements, such as the ban on asphyxiating gasses and expanding bullets. The 1907 Hague

¹²³ David Turns, "Weapons in the ICRC Study on Customary International Humanitarian Law," *Journal of Conflict and Security Law* 11, no. 2 (July 1, 2006): 201–37, <https://doi.org/10.1093/jcsl/kr1010>.

¹²⁴ "Weapons: ICRC Statement to the United Nations, 2014," Statement, International Committee of the Red Cross, October 17, 2014, <https://www.icrc.org/en/document/weapons-icrc-statement-united-nations-2014>.

¹²⁵ Christopher Greenwood, "A Critique of the Additional Protocols to the Geneva Conventions of 1949" (Brill, 1999), https://doi.org/10.1163/9789004433601_007.

¹²⁶ Greenwood.

Convention IV established the premise that belligerents do not have unrestricted rights to use methods of harming the enemy, thereby establishing the principle of limitation in weapons law.¹²⁷

The Geneva Protocol of 1925, which banned the use of suffocating gasses, along with the 1899 Declaration, established the idea that weapons without the ability to distinguish between lawful and unlawful targets are prohibited. The 1977 Additional Protocols to the 1949 Geneva Conventions further developed this principle by stating that weapons that inflict excessive injury or undue suffering are not allowed (Additional Protocol I, Article 35).¹²⁸ Article 36 of Additional Protocol I goes further in underscoring the need to scrutinize the legality of weapons at every stage starting from their development to their procurement and deployment in the armed conflict. This article testifies to the proactive nature of weapons law.¹²⁹

These concepts of weapons law are significant in the context of Autonomous Weapon Systems. AWS are an arrangement of one or more sophisticated weapons in a unified weapon and a delivery platform. To address the intricate nature of weapons law and AWS, it is mandatory to apply weapons law in a way that guarantees that the weapon itself and the delivery method is in compliance with IHL.¹³⁰ This complexity in the application can be evidenced with an example of the Predator drone; originally employed for information gathering, monitoring, and reconnaissance (ISR) objectives, was subsequently outfitted with Hellfire missiles, so converting it into a platform

¹²⁷ Christopher Greenwood, "International Humanitarian Law and United Nations Military Operations," *Yearbook of International Humanitarian Law* 1 (December 1998): 3–34, <https://doi.org/10.1017/S1389135900000040>.

¹²⁸ Jonathan Crowe, "The Geneva Conventions and Their Additional Protocols," in *Ensuring Respect for International Humanitarian Law* (Routledge, 2020).

¹²⁹ Antonio Cassese, "The Geneva Protocols of 1977 on the Humanitarian Law of Armed Conflict and Customary International Law," *UCLA Pacific Basin Law Journal* 3 (1984): 55.

¹³⁰ William G. Schmidt, "The Protection of Victims of International Armed Conflicts: Protocol I Additional to the Geneva Conventions," *Air Force Law Review* 24 (1984): 189.

for precise and deliberate assassinations.¹³¹ Within this context, the Hellfire missile serves as the armament, while the drone functions as the means of transportation and deployment. The legality of AWS must be evaluated by considering not only the kind of the weapon, but also the way it is employed, in conformity with the principles of differentiation and proportionality.

Ethical considerations surrounding AWS are in line with the emphasis of the Saint Petersburg Declaration on restricting the use of inhumane technology. It is crucial to ensure compliance with weapons law for AWS, which can operate with significant autonomy, in order to prevent unnecessary suffering and indiscriminate harm.¹³² Weapons law's central principle is based on limitation which mandates that AWS are manufactured, designed to minimize harm to both military personnel and civilians on the battlefield. The United Nations framework adopted the Convention on Certain Conventional Weapons (CCW) to present a more flexible approach to regulating specific weapons by using its annexed protocols. This blanket treaty on weapons, allows states to ratify and implement protocols hereby enabling adaptation of weapons law according to the new and emerging technologies.¹³³ This flexible nature of CCW is fundamental for addressing the evolving nature of warfare and ensuring the regulation of emerging technologies such as AWS to prevent breaches of IHL.

Moreover, ongoing efforts to prohibit weapons that inflict excessive harm or undue suffering are exemplified by the 1976 ENMOD Convention, the 1997 Ottawa Convention on anti-

¹³¹ Michael W. Lewis and Emily Crawford, "Drones and Distinction: How IHL Encouraged the Rise of Drones," *Georgetown Journal of International Law* 44 (2013 2012): 1127.

¹³² Emily Crawford, "The Enduring Legacy of the St Petersburg Declaration: Distinction, Military Necessity, and the Prohibition of Causing Unnecessary Suffering and Superfluous Injury in IHL," February 19, 2019, <https://doi.org/10.1163/15718050-12340097>.

¹³³ Robert J. Mathews, "The 1980 Convention on Certain Conventional Weapons: A Useful Framework despite Earlier Disappointments," *International Review of the Red Cross* 83, no. 844 (December 2001): 991–1012, <https://doi.org/10.1017/S1560775500183506>.

personnel mines, and the 2008 Oslo Convention on cluster munitions. These treaties, as well as the 1972 Biological Weapons Convention (BWC) and the 1993 Chemical Weapons Convention (CWC), demonstrate the comprehensive framework of weapons law aimed at humanizing warfare.¹³⁴ These conventions further underscore that AWS should be developed that aligns with humanitarian principles.

To apply weapons law to AWS in an effective and practical manner, it is crucial to consider the weapon and the delivery system as a unified whole. This comprehensive approach guarantees that the development, deployment, and use of AWS undergo thorough legal examination to prevent breaches of IHL. By following the core principles of IHL, states can guarantee that AWS are utilized in a manner that minimizes harm and upholds the ethical standards of warfare.

3.2.1 Weapons Law Legal Review:

In the realm of weapons law, there are two key principles: the prohibition of weapons that cause undue suffering and the necessity for accurate and controlled targeting which entails the prohibition of indiscriminate weapons. These provisions guarantee that both the weapon systems and their delivery platforms adhere to IHL standards. During the legal review of weapons law, both of these rules will be used to assess AWS and determine if they can meet the strict standards of IHL.

3.2.1.1 Prohibiting Excessive Harm

The utilization of weapons that inflict excessive injury and unnecessary suffering is explicitly forbidden by Articles 23(e) of Hague Convention IV and 35.2 of Additional Protocol I

¹³⁴ Amanda Alexander, "A Short History of International Humanitarian Law," *European Journal of International Law* 26, no. 1 (February 1, 2015): 109–38, <https://doi.org/10.1093/ejil/chv002>.

(API).¹³⁵ This prohibition is a fundamental principle of International Humanitarian Law (IHL) which is given the status as customary law by the International Court of Justice and International Criminal Court.¹³⁶ Despite this, there is considerable discussion about the specifics of this prohibition.

The idea of excessive harm and unwarranted pain is primarily centered on the concept of proportionality. It suggests that while inflicting harm during warfare is unavoidable, the harm inflicted should not go beyond what is required for military goals. This concept is rooted in the idea of military necessity but needs to be weighed against the ethical considerations to uphold the humanitarian principles.¹³⁷ In the case of AWS, this principle necessitates a thorough assessment of whether their autonomous nature inherently leads to excessive harm or unwarranted pain. Supporters of AWS contend that the autonomous capability itself does not inherently cause unwarranted suffering or excessive harm. Instead, it is argued that the deployed weapons should not be indiscriminate. If the weapons are lawful, their delivery autonomous systems are less likely to make them lawful.¹³⁸

The second part of the rule about causing unnecessary harm and suffering deals with the notion if the use of a specific weapon will inevitably lead to death or some form of severe injury. The question thus in on the development of AWS, if they are designed to inflict superfluous injury,

¹³⁵ "Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.," accessed June 15, 2024, <https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/article-35>.

¹³⁶ Roger S. Clark, "Chapter 12. 'The Rome Statute Of The International Criminal Court And Weapons Of A Nature To Cause Superfluous Injury Or Unnecessary Suffering, Or Which Are Inherently Indiscriminate'" (Brill, 2006), https://brill.com/display/book/edcoll/9789004296749/Bej.9781571052674.i-1142_013.xml.

¹³⁷ Michael N. Schmitt, "Military Necessity and Humanity in International Humanitarian Law: Preserving the Delicate Balance," in *Essays on Law and War at the Fault Lines*, ed. Michael N. Schmitt (The Hague, The Netherlands: T.M.C. Asser Press, 2012), 89–129, https://doi.org/10.1007/978-90-6704-740-1_3.

¹³⁸ Toscano, "Friend of Humans."

then they will be considered illegal.¹³⁹ Thus, the legality of AWS in this regard depends on their programming and their ability to make context-specific assessments. The third part of the rule looks at whether there are less harmful options available. AWS need to be assessed based on this standard to ensure that, whenever possible, less damaging alternatives are chosen.

The final assessment on the prohibition of excessive injury and unnecessary suffering should be focused towards the design of weapon, and its lawful use in battlefield rather than its misuse. Even weapons that are regulated and regarded as lawful as per the provisions of IHL, can be misused, however, this misconduct will not make the weapon itself unlawful, the question will be on the user of weapon (combatant or machine in the case of AWS), this will be particularly discussed in the targeting law. Thus, AWS as systems combining lethality and autonomy must be scrutinized for their design and intended use to ensure compliance with the excessive injury and unnecessary harm.

3.2.1.2 Ensuring Precision and Control

The ban on indiscriminate weapons is the second core provision of Weapons Law, which refers to weapons that cannot differentiate between permissible and non-permissible targets. This principle is embodied in Article 51, paragraph 4, of API and is considered both conventional and customary law.¹⁴⁰ Indiscriminate weapons are characterized by their inability to differentiate between military and non- military target and are indiscriminate in their impact on civilian populations. Throughout history, these weapons have been identified as indiscriminate and

¹³⁹ Anzhelika Solovyeva and Nik Hynek, "Going Beyond the 'Killer Robots' Debate," n.d.

¹⁴⁰ "Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.," accessed June 15, 2024, <https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/article-51>.

subsequently prohibited via different weapon conventions.¹⁴¹ The crucial issue at hand is determining whether AWS demonstrate discriminate or indiscriminate behavior. Article 36 of API mandates that each weapon that is introduced must undergo a thorough legal review. The review should be carried out at each stage from development to deployment.¹⁴²

Testing AWS against this rule involves assessing their capacity for precision and control. Proponents argue that with advanced algorithms and processing capabilities, AWS can be designed to meet these criteria, indiscriminate effects can be avoided. Moreover, these kinds of weapons such as UAV's before them were designed to ensure targeted response against the enemy.¹⁴³ The key technological challenge in this debate is to ensure that the deployed AWS are honed with substantial artificial intelligence to enable them to differentiate between lawful and unlawful military targets. This proposition aligns with the notion of "technological objection" which avers; that if technology advances sufficiently, AWS can comply with the principle against indiscriminate weapons.^{144,145} However, the notion that how much these weapon systems are infallible and dependable shrouds the whole argument in obscurity; if a certain glitch or a tiny error on coding can suddenly transform them into indiscriminate weapons, or if the system is prone to cyber-attacks and hacking, hence, to ensure their compliance with the provision against indiscriminate weapons there should be an element of 'absolute infallibility' in these weapon systems.

¹⁴¹ Dietrich Schindler and Jiri Toman, "No. 20 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects" (Brill, 2004), https://doi.org/10.1163/9789047405238_023.

¹⁴² "Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.," accessed June 15, 2024, <https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/article-36>.

¹⁴³ Rupal Malik and Benarji Chakka, "Autonomous Weapons System: Probing the Legality and Regulation," *CMR University Journal for Contemporary Legal Affairs* 4 (2022): 216.

¹⁴⁴ Anthony Miccoli, *Posthuman Suffering and the Technological Embrace* (Lexington Books, 2009).

¹⁴⁵ Rebecca Crootof, "The Varied Law of Autonomous Weapon Systems," SSRN Scholarly Paper (Rochester, NY, February 24, 2015), <https://papers.ssrn.com/abstract=2569322>.

In conclusion, AWS, due to their unique combination of lethality and autonomy, must undergo rigorous legal reviews to determine their compatibility with cardinal IHL provisions that specifically prohibit prohibiting excessive injury, unnecessary suffering, and indiscriminate weapons. These both provisions mandate the states to conduct these reviews at the national level, ensuring that all potential uses of AWS are examined for legality. The legal frameworks must also be applied in a holistic manner (from laboratory to field), the application of IHL rules shall begin when an initial wire frame of such a weapon is drafted, hence law should be thoroughly applied at each milestone of development of these weapons, then procurement and deployment.

3.3 Targeting Law-Means and Methods of Warfare

The integration of AWS into modern warfare presents a tremendous challenge to IHL, particularly in the realm of Targeting Law. Targeting Law is that arm of weapon's law that debates the just application of force in attacks, emphasizing the user's responsibility.¹⁴⁶ The weapons law is particularly important in this debate because the conventional subject of this law is not human which prompts us to ask if these systems themselves be considered lawful users of lethal force?

Traditionally, Targeting Law has focused on human combatants who possess the autonomy to observe, reflect, and choose a course of action. Combatants are expected to be trained in the principles of IHL and to be held accountable if any of their action leads to violation of the principles of IHL. This framework of law inherently presumes a level of human judgment and moral reasoning that is certainly beyond a machine's capacity.¹⁴⁷ However, AWS, particularly with

¹⁴⁶ Shayne Longpre, Marcus Storm, and Rishi Shah, "Lethal Autonomous Weapons Systems & Artificialintelligence: Trends, Challenges, and Policies," ed. Kevin McDermott, *MIT Science Policy Review* 3 (August 29, 2022): 47–56, <https://doi.org/10.38105/spr.360apm5typ>.

¹⁴⁷ Mark Roorda, "NATO's Targeting Process: Ensuring Human Control Over and Lawful Use of 'Autonomous' Weapons," SSRN Scholarly Paper (Rochester, NY, April 13, 2015), <https://papers.ssrn.com/abstract=2593697>.

advanced levels of autonomy, challenge this assumption by assuming the roles which traditionally belonged to human soldiers, such as identifying and engaging targets. The fundamental shift in the accountability regime in the law regimes is specifically concerning.

One viewpoint suggests that advanced AWS could be likened to human fighters due to their capacity to autonomously carry out the decision-making process. With regard to the OODA Loop (Observe, Orient, Decide, Act), AWS could potentially complete the entire sequence on their own, without any explicit involvement from humans. This comparison implies that in performing these functions, AWS could be regarded as "robo-combatants" rather than just tools.¹⁴⁸ However, this perspective is disputed, critics contend that this comparison is flawed because it fails to recognize the fundamental distinctions between human combatants and machines.¹⁴⁹ Secondly, if this assumption is taken, and robo-combatants replace humans, this is particularly detrimental to the accountability and responsibility framework. Humans possess moral and ethical judgment, which is crucial to the application of IHL, while AWS operate based on pre-programmed algorithms which are unable to apply moral judgement to the adapting circumstances in the battlefield.¹⁵⁰ Despite these debates, applying the principles of Targeting Law to AWS is essential to ensure their use aligns with IHL. Three core principles are particularly relevant: distinction, proportionality, and precautions in attack

¹⁴⁸ Mustafa Can Sati, "The Attributability of Combatant Status to Military AI Technologies under International Humanitarian Law," *Global Society* 38, no. 1 (January 2, 2024): 122–38, <https://doi.org/10.1080/13600826.2023.2251509>.

¹⁴⁹ Malik and Chakka, "Autonomous Weapons System."

¹⁵⁰ Michael C. Horowitz, "The Ethics & Morality of Robotic Warfare: Assessing the Debate over Autonomous Weapons," *Daedalus* 145, no. 4 (2016): 25–36.

3.3.1 Distinction

The principle of distinction is a cornerstone of IHL, requiring that parties involved in an armed conflict are required to always differentiate between military personnel and objects, and civilians and civilian objects. This seminal provision mandates that only military targets can be directly attacked, while non-combatants and non-military targets are shielded from direct attacks.¹⁵¹ Saint Petersburg Declaration of 1868 is a formal declaration of the principle of distinction, by emphasizing that war aim should limit itself to weakening the enemy's military and military capacities. This principle was further incorporated into the Hague Regulations of 1899 and 1907, and more comprehensively in the Geneva Conventions.¹⁵² Additional Protocol I (API) to the Geneva Conventions, Article 48, explicitly mandates that parties involved in a conflict must consistently differentiate between civilian populations and armed personnel, as well as between non-military objects and military targets, directing their operations solely towards military targets.¹⁵³

In the Nuclear Weapons decision, the International Court of Justice (ICJ) categorically defended the concept of distinction as the tenet of IHL, highlighting its central significance.¹⁵⁴ The distinction rule is further codified in ICRC's Customary Rules of IHL.¹⁵⁵ This concept requires

¹⁵¹ Fredrik Petersson, "Legitimate Targets of Attack-The Principles of Distinction and Proportionality in IHL," 2003, <https://lup.lub.lu.se/student-papers/record/1561261/file/1565579.pdf>.

¹⁵² Jean-François Quéguiner, "The Principle of Distinction: Beyond an Obligation of Customary International Humanitarian Law," in *The Legitimate Use of Military Force* (Routledge, 2016), 161–87, <https://api.taylorfrancis.com/content/chapters/edit/download?identifierName=doi&identifierValue=10.4324/9781315556185-10&type=chapterpdf>.

¹⁵³ Derek Jinks, "The Geneva Conventions and Enforcement of International Humanitarian Law," in *Revisiting the Geneva Conventions: 1949-2019* (Brill Nijhoff, 2019), 300–326, <https://brill.com/downloadpdf/book/edcoll/9789004375543/BP000012.pdf>.

¹⁵⁴ Dale Stephens, "Human Rights and Armed Conflict-The Advisory Opinion of the International Court of Justice in the Nuclear Weapons Case," *Yale Hum. Rts. & Dev. LJ* 4 (2001): 1.

¹⁵⁵ "Principle of Distinction | How Does Law Protect in War? - Online Casebook," accessed June 15, 2024, <https://casebook.icrc.org/law/principle-distinction>.

Autonomous Weapon Systems (AWS) to reliably discriminate between legal and impermissible targets, whether they be objects or persons, assuming that AWS are capable of utilizing fatal force in the same manner as human fighters.

For AWS to adhere to the principle of distinction, the Algorithm Construction Target must possess them with a capacity to differentiate between combatants and non-combatants. This assessment is particularly challenging for machines, because it involves rapid context related and complex judgement.¹⁵⁶ For instance, identifying a military object, such as a tank, can be a straightforward pursuit if AWS contain adequate sensors to identify them. However, determining whether an object directly serves a military purpose or is used in a manner contributing to military action requires context related deliberation and interpretation.¹⁵⁷ AWS must be capable of picking and analyzing the real-time data to make these distinctions, which appears to be a technical challenge.

In order to uphold the concept of distinction, AWS must have the algorithms that allow them to precisely evaluate a target's military value and the precise military gain of enacting an operation. This evaluation needs to be done rapidly, taking into account the unique conditions that arise during the military operation.¹⁵⁸ While doing these kinds of evaluations dynamically is crucial for AWS, it is still a major issue for existing technologies. According to some experts, AWS should only be used in simple situations where algorithms can produce reliable real-time assessments.¹⁵⁹

The complexity is exacerbated when the targets are human. AWS must distinguish between combatants, who can be targeted, and non-combatants, who cannot. Combatants encompass

¹⁵⁶ Emily Whittaker, "Machine Judgement and the Law of Armed Conflict: Can Autonomous Weapons Systems Comply with the Principle of Distinction?," *NEL Rev.* 8 (2021): 52.

¹⁵⁷ Ilse Verdiesen and Virginia Dignum, "Value Elicitation on a Scenario of Autonomous Weapon System Deployment: A Qualitative Study Based on the Value Deliberation Process," *AI and Ethics* 3, no. 3 (August 2023): 887–900, <https://doi.org/10.1007/s43681-022-00211-2>.

¹⁵⁸ Whittaker, "Machine Judgement and the Law of Armed Conflict."

¹⁵⁹ Schwarz, "Delegating Moral Responsibility in War."

members of the armed forces, militias, volunteer corps, and those participating in a levée en masse.¹⁶⁰ Civilians who directly resort to violence can also be targeted, but civilians who are not directly participating, or combatants who are hors de combat (e.g., injured or surrendering), must not be attached as per the principle of distinction. AWS must be programmed to assess these minute distinctions in a precise manner, recognizing signals of surrender and identifying legitimate targets even in complex scenarios such as insurgent hideouts, where combatants may not wear distinctive signs.¹⁶¹ This level of compliance brings us to the concept of ‘technological objection’ if the technology is significantly sophisticated, AWS can be compliant to the precepts of IHL.

The principle of distinction does not require that the process of choosing and engaging targets be a human domain; in fact, no convention specifically mentions the presence of humans in this command and control hierarchy, despite the difficulties in achieving AWS absolute distinction capabilities.¹⁶² Since AWS's algorithms are bound by predetermined criteria, they are able to make decisions devoid of the emotional prejudices and poor assessments that may harm human combatants. AWS proponents contend that because of its intrinsic impartiality, they may be able to target more accurately than humans—but only if the technology can reliably distinguish between acceptable and unacceptable targets.¹⁶³

Algorithmic Target Construction (ATC) may provide AWS with a workable targeting strategy. In particular, concerns that explicitly emerge because of technological restrictions may

¹⁶⁰ Duncan Purves, Ryan Jenkins, and Bradley J. Strawser, “Autonomous Machines, Moral Judgment, and Acting for the Right Reasons,” *Ethical Theory and Moral Practice* 18, no. 4 (August 2015): 851–72, <https://doi.org/10.1007/s10677-015-9563-y>.

¹⁶¹ Ondrej Rosendorf, Michal Smetana, and Marek Vranka, “Autonomous Weapons and Ethical Judgments: Experimental Evidence on Attitudes toward the Military Use of ‘Killer Robots’,” *Peace and Conflict: Journal of Peace Psychology* 28, no. 2 (2022): 177.

¹⁶² Toscano, “Friend of Humans.”

¹⁶³ Sparrow, “Killer Robots.”

become irrelevant if AWS technology advances to the point where it can reliably discern between legal and illegitimate targets.¹⁶⁴ To guarantee adherence to the concept of distinction, this progression would need major developments in sensor technology, data processing, and algorithmic decision-making.

In conclusion, one of the most important ideas in the discussion around AWS legislation is the notion of differentiation. Even if there are obstacles with the technology we now have, AWS has the ability to make impartial, objective targeting judgments and fulfill its promise of compliance. Achieving absolute sophistication and infallibility in technology will equip AWS to adhere to the principles of morality and legality in warfare.

3.3.2 *Proportionality*

A key provision of international humanitarian law (IHL) is proportionality, which guarantees that military operations be carried out in a manner that minimizes harm to non-combatants and non-combatant entities is minimum. Although direct assaults on people are prohibited, the concept of proportionality recognizes that accidental injury to civilians—also referred to as collateral damage in normal jargon—is acceptable as long as it does not outweigh the expected military gain.¹⁶⁵ For generations, this idea has been acknowledged without express language in IHL. This is particularly the case with Articles 51 and 57 of Additional Protocol I (API) to the Geneva Conventions.¹⁶⁶

¹⁶⁴ Brehm, “Defending the Boundary.”

¹⁶⁵ Amichai Cohen and David Zlotogorski, *Proportionality in International Humanitarian Law: Consequences, Precautions, and Procedures* (Oxford University Press, 2021).

¹⁶⁶ “Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.”

Understanding the technological capabilities of AWS and the ethical frameworks that govern their usage in a nuanced manner is crucial in order to adhere to the principle of proportionality to them. Accurately balancing military benefits against possible harm to civilians is a fundamental need for AWS. The subjective nature of proportionality evaluations, however, poses a serious problem.¹⁶⁷ Supporters claim that algorithms may be built into AWS to assess proportionality; nevertheless, this requires making intricate, context-dependent decisions that are customarily made by people.¹⁶⁸

Article 51(5)(b) of API specifically articulates the notion of proportionality, which provides that an attack is indiscriminate if the incidental harm to civilians is disproportionate to the expected direct and concrete military benefit. If this proportionality is not upheld, Article 57(2)(b) goes further to call for suspension of such attacks that are against proportionality as held by the precepts of IHL.¹⁶⁹ Although not mentioned specifically in Additional Protocol II, this idea among the legal fraternity is regarded as customary law, hence applicable universally.¹⁷⁰ AWS must have sophisticated algorithms to evaluate a target's military worth and precisely estimate the possible harm to civilians. This calls for real-time analysis and complex data processing, which are difficult tasks for the technologies available.

Opponents of AWS contend that proportionality is hard to put into algorithms because it is essentially subjective. Although attempts have been made to convert proportionality calculations

¹⁶⁷ Jeroen Van Den Boogaard, "Proportionality and Autonomous Weapons Systems," *Journal of International Humanitarian Legal Studies* 6, no. 2 (2015): 247–83.

¹⁶⁸ Axel Rantanen, "Are Individuals in an Armed Conflict Developing into Zeroes and Ones?: A Study of Autonomous Weapon Systems and International Humanitarian Law," 2024, <https://www.doria.fi/handle/10024/189030>.

¹⁶⁹ "Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.," accessed June 15, 2024, <https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/article-51>.

¹⁷⁰ Doswald-Beck and Vité, "International Humanitarian Law and Human Rights Law."

into machine algorithms, many experts argue that these calculations are not objective enough for machine implementation since they are context-specific and intrinsically subjective.¹⁷¹ In spite of this, reasonableness standards are commonly used in practice to direct these evaluations. This implies that AWS might eventually be able to do proportionality calculations on par with those performed by human operators given enough technology developments.¹⁷²

AWS needs to be kept up to date on the most recent military plans and actions in order to do proportionality assessments. This stipulation highlights the importance of human supervision, especially in intricate and ever-changing settings where it might be difficult to appropriately weigh the benefits to the military against the harm to civilians.¹⁷³ Incorporating human operators in an "on-the-loop" role could alleviate any shortcomings in AWS decision-making procedures, guaranteeing that proportionality evaluations are solid and suitably contextualized.¹⁷⁴

Suppose that AWS is able to do proportionality assessments on its own without the need for human intervention. In this situation, their activities would be assessed using the same standards that apply to judgments made by people, with an emphasis on gathering adequate and trustworthy information and applying it reasonably.¹⁷⁵ Whether the decision was taken by a human or a machine, the legality of the result, for example, the unintentional killing of civilians close to

¹⁷¹ Frank Sauer, "Stopping 'Killer Robots': Why Now Is the Time to Ban Autonomous Weapons Systems," *Arms Control Today* 46, no. 8 (2016): 8–13.

¹⁷² Crootof, "War Torts," 2016 2015.

¹⁷³ Sparrow, "Killer Robots."

¹⁷⁴ Merel Ekelhof, "Moving Beyond Semantics on Autonomous Weapons: Meaningful Human Control in Operation," *Global Policy* 10, no. 3 (September 2019): 343–48, <https://doi.org/10.1111/1758-5899.12665>.

¹⁷⁵ Kelly Cass, "Autonomous Weapons and Accountability: Seeking Solutions in the Law of War," *Loy. LAL Rev.* 48 (2014): 1017.

a military target, would rely on an ex ante evaluation.¹⁷⁶ This raises another issue with the accountability framework that may be in place while these evaluations are being conducted.

The technological argument against AWS's capacity to evaluate proportionality rests on the claim that these systems are incapable of making the kind of subjective judgments required for such assessments. This criticism, however, might become less relevant if advances in machine learning and artificial intelligence allow AWS to more closely mimic human decision-making processes, which is consistent with the ideas of "absolute infallibility" and "technological objection" that were previously articulated.¹⁷⁷ AWS may be approved for use in military operations if they are able to conduct situational evaluations that satisfy the fundamental standards of proportionality.

In summary, the proportionality principle must be taken into account when deploying AWS for them to stay in the bounds of IHL. Even if there are currently technological barriers, continuous developments in artificial intelligence and machine learning could eventually allow AWS to do proportionality calculations on par with those performed by human operators. Maintaining the moral and legal integrity of military operations requires that AWS be able to appropriately balance military advantages against potential harm to civilians.

3.3.3 *Precaution*

A foundational element of IHL is the principle of precautions in assault, which is essential to justifiable application of force in armed conflicts. According to this principle, incidental harm to non-combatants and non-combatant property must be avoided or at least minimized by taking

¹⁷⁶ Carrie McDougall, "Autonomous Weapon Systems and Accountability: Putting the Cart before the Horse," *Melbourne Journal of International Law* 20, no. 1 (2019): 58–87.

¹⁷⁷ Alan L. Schuller, "At the Crossroads of Control: The Intersection of Artificial Intelligence in Autonomous Weapon Systems with International Humanitarian Law," *Harv. Nat'l Sec. J.* 8 (2017): 379.

all reasonable care. The duty to take continuous precautions to protect individuals during military operations is outlined in Article 57 of Additional Protocol I (API) to the Geneva Conventions.¹⁷⁸

It becomes especially difficult to apply the precautionary principle in the context of AWS. Given that AWS is built to operate with a significant level of autonomy, it is unclear how these systems will comply with IHL regulations, which have historically relied on human judgment.¹⁷⁹ According to the precautionary principle, anyone organizing or choosing an assault must make sure that all reasonable steps are taken to confirm that the targets are actual military targets and not civilian targets.¹⁸⁰

A crucial interpretation of the precautionary principle's definition of "feasibility" is that it refers to actions that are practically feasible while accounting for all relevant circumstances at the moment. It is difficult for pre-programmed AWS to navigate the battlefield dynamically without human oversight in real-time, as this context-specific assessment demands it.¹⁸¹ ICRC, which emphasizes that feasibility includes the obligation to verify the aim to the greatest extent practical, concurs with this interpretation.¹⁸²

It is important to examine AWS's technological capabilities to see if they can adequately fend off attacks. To reliably distinguish between military targets and civilians, AWS needs to be

¹⁷⁸ "Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.," accessed June 16, 2024, <https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/article-57>.

¹⁷⁹ Jeffrey S. Thurnher, "Feasible Precautions in Attack and Autonomous Weapons," in *Dehumanization of Warfare*, ed. Wolff Heintschel Von Heinegg, Robert Frau, and Tassilo Singer (Cham: Springer International Publishing, 2018), 99–117, https://doi.org/10.1007/978-3-319-67266-3_6.

¹⁸⁰ Ian S. Henderson, Patrick Keane, and Josh Liddy, "Remote and Autonomous Warfare Systems: Precautions in Attack and Individual Accountability," in *Research Handbook on Remote Warfare* (Edward Elgar Publishing, 2017), 335–70, <https://www.elgaronline.com/downloadpdf/edcoll/9781784716981/9781784716981.00022.pdf>.

¹⁸¹ Van Den Boogaard, "Proportionality and Autonomous Weapons Systems."

¹⁸² "Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977."

outfitted with advanced sensors and algorithms that can process enormous volumes of real-time data. Given that the systems must be able to make quick, context-sensitive decisions that presently mostly rely on human intuition and experience, this need suggests a substantial technological challenge.¹⁸³

In addition, the precautionary principle requires that combatants use tactics and strategies that reduce unintentional harm to civilians. Combatants are expressly required under API Article 57(2)(a)(ii) to choose their weapons and strategies in a way that minimizes the risk to civilian lives and property.¹⁸⁴ According to this part of the precautionary principle, AWS must be built with the capacity to automatically adjust its operations to the shifting circumstances of the battlefield in order to limit injury to civilians even as the tactical situation changes.¹⁸⁵

The need to halt or cancel strikes if it appears that the target is not a legitimate military objective or if the attack would result in disproportionate harm to civilians is a crucial part of the precautionary principle. This requirement is outlined in API Article 57(2)(b), which emphasizes the requirement for real-time decision-making capabilities.¹⁸⁶ This suggests to AWS that these systems ought to have features that let human operators step in and stop missions if needed. There is disagreement, nevertheless, about whether AWS itself ought to be able to make these decisions on its own. This would necessitate a hitherto unheard-of degree of artificial intelligence and situational awareness.

¹⁸³ Whittaker, “Machine Judgement and the Law of Armed Conflict.”

¹⁸⁴ “Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.”

¹⁸⁵ Elliot Winter, “The Compatibility of the Use of Autonomous Weapons with the Principle of Precaution in the Law of Armed Conflict,” *The Military Law and the Law of War Review* 58, no. 2 (2020): 240–73.

¹⁸⁶ Winter.

The necessity of accountability in the design and implementation of these systems is also touched upon in the discussion surrounding AWS and the precautionary principle. The precautionary principle requires that those who violate it be held accountable under existing IHL regulations, which presents a problem for AWS, which has a great deal of autonomy.¹⁸⁷ Robust supervision procedures and rigorous testing may be necessary to guarantee that AWS adheres to the precautionary principle and that these systems can accurately and consistently duplicate human judgment.

In conclusion, the application of the precautions in assault principle to AWS poses several challenges and is essential to the lawful use of force under IHL. Strong supervision procedures and cutting-edge technological skills are needed to guarantee that AWS can limit injury to civilians by taking all reasonable precautions. In order to preserve the moral and legal integrity of military operations, it is imperative that AWS be able to follow the precautionary principle as technology advances.

3.4 Martens Clause: Principles of Humanity and The Dictates of Public Conscience

The Martens Clause is a cornerstone of international humanitarian law (IHL), originally appearing in the Preamble to the Hague Convention II in 1899.¹⁸⁸ It says that the laws of public morality and the standards of humanity continue to protect combatants and civilians in situations not covered by current treaties. The Hague Convention IV of 1907 and the Additional Protocol I

¹⁸⁷ Malik and Chakka, "Autonomous Weapons System."

¹⁸⁸ "Convention (II) with Respect to the Laws and Customs of War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land. The Hague, 29 July 1899.," accessed June 16, 2024, <https://ihl-databases.icrc.org/en/ihl-treaties/hague-conv-ii-1899>.

to the Geneva Conventions of 1977 both reaffirmed this clause, demonstrating its continued significance in IHL.¹⁸⁹

The Hague Peace Conference in 1899 recognized that the existing legal structures were inadequate to accommodate all possible conflict circumstances, which led to the establishment of the Martens Clause.¹⁹⁰ The purpose of the Clause was to bridge these gaps by adding a moral and ethical protection that would guarantee that, even in the lack of specific legal measures, basic humanitarian standards would govern behavior during armed conflicts.¹⁹¹ This "historically determined foundation" has had a major influence on the development of international humanitarian law, putting moral principles at its center.

The principles of humanity and the dictates of public conscience have played a major role in shaping the development of IHL throughout the past century. These guiding principles have guided the application of IHL in a variety of unexpected situations, in addition to serving as a basis for treaty development.¹⁹² Consequently, the Martens Clause fulfills two functions: it influences the formation of new laws *de jure condendo* and serves as a normative framework for already-existing laws, guaranteeing that the humanitarian spirit of international humanitarian law always takes precedence.¹⁹³

¹⁸⁹ "Convention (IV) Respecting the Laws and Customs of War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land. The Hague, 18 October 1907.," accessed June 16, 2024, <https://ihl-databases.icrc.org/pt/ihl-treaties/hague-conv-iv-1907>.

¹⁹⁰ Maartje Abbenhuis, Christopher Ernest Barber, and Annalise R. Higgins, *War, Peace and International Order?: The Legacies of the Hague Conferences of 1899 and 1907*, vol. 23 (Taylor & Francis, 2017), <https://books.google.com/books?hl=en&lr=&id=PiklDwAAQBAJ&oi=fnd&pg=PP1&dq=1899+Hague+Peace+Confere+in+1899+MARTENS+CLAUSE+&ots=j8WFvm8anm&sig=uKrhtYeqXow4DHG2Ki8xmYFpDzY>.

¹⁹¹ Theodor Mero, "The Martens Clause, Principles of Humanity, and Dictates of Public Conscience," *American Journal of International Law* 94, no. 1 (2000): 78–89.

¹⁹² Michael Salter, "Reinterpreting Competing Interpretations of the Scope and Potential of the Martens Clause," *Journal of Conflict & Security Law* 17, no. 3 (2012): 403–37.

¹⁹³ Mitchell Stapleton-Coory, "The Enduring Legacy of the Martens Clause: Resolving the Conflict of Morality in International Humanitarian Law," *Adel. L. Rev.* 40 (2019): 471.

The Martens Clause's allusion to public conscience and humanitarian ideals highlights IHL's deep moral obligations. Given that IHL is flexible enough to accommodate extra-positive law—that is, rules drawn from moral and natural law principles—this link is especially important. The philosophical foundation is in line with the views of natural-law scholars who support the incorporation of ethical considerations into legal systems. Therefore, the Martens Clause strengthens the moral underpinnings of IHL by acting as a link between legal positivism and natural law.

3.4.1 Martens Clause legal review

Several states, non-governmental organizations (NGOs), and academics have regularly cited the Martens Clause in discussions about AWS in order to argue against the implementation of such systems. States that emphasize the moral ramifications of AWS and its possible clash with the values of humanity and public conscience, including Australia, Brazil, and Sri Lanka, have used the Clause.¹⁹⁴ These appeals, which represent a comprehensive understanding of the Clause as a moral compass in international law, frequently do not distinguish between moral and legal grounds.

The Martens Clause is another argument used by NGOs like Human Rights Watch (HRW) and the International Committee for Robot Arms Control (ICRAC) to oppose AWS.^{195,196} They contend that morality, which ought to direct the creation and application of AWS, is intrinsically tied to human values and public consciousness. The International Committee of the Red Cross

¹⁹⁴ Jeffrey L. Caton, "Autonomous Weapon Systems: A Brief Survey of Developmental, Operational, Legal, and Ethical Issues," 2015, <https://press.armywarcollege.edu/monographs/304/>.

¹⁹⁵ Matthew Bolton and Cayman Mitchell, "When Scientists Become Activists: The International Committee for Robot Arms Control and the Politics of Killer Robots," 2020, 27–58, https://doi.org/10.1007/978-3-030-27611-9_2.

¹⁹⁶ "Submission to the United Nations Secretary-General on Autonomous Weapons Systems | Human Rights Watch," May 6, 2024, <https://www.hrw.org/news/2024/05/06/submission-united-nations-secretary-general-autonomous-weapons-systems>.

(ICRC) has delineated that these principles provide as a link between moral obligations and legal requirements, implying that AWS may give rise to moral questions that require legal clarification¹⁹⁷.

International players have been instrumental in highlighting the importance of the Clause, especially NGOs and the ICRC. Particularly the ICRC believes that while morality and public conscience are fundamentally related to each other, they are separate from positive legislation.¹⁹⁸ According to the ICRC, these guidelines might act as a "portal" that links ethical concerns with legal requirements, so affecting the normative framework that oversees AWS. Legal experts disagree on how the Martens Clause should be used when evaluating AWS. Some contend that because positive IHL already addresses the difficulties brought up by AWS, the Clause has little normative importance. According to critics like Evans, fear-mongering language rather than sound legal reasoning is frequently promoted by invoking the ideals of humanity and public conscience. On the other hand, other academics argue that autonomous killing is intrinsically at odds with the values of humanity and public conscience, connecting ideas like human dignity to these ideals. According to this viewpoint, the Clause emphasizes the moral need for human consideration before using lethal force, which means it is against completely autonomous weapon systems that run independently of human oversight.

3.4.2 *Normative Status and Ethical Implications*

The normative significance of the Martens Clause is still up for discussion. Some perceive it as merely a moral precept rather than a rigid legal requirement, but others see it as an essential

¹⁹⁷ Diego Mauri, "The Holy See's Position on Lethal Autonomous Weapons Systems: An Appraisal through the Lens of the Martens Clause," *Journal of International Humanitarian Legal Studies* 11, no. 1 (2020): 116–47.

¹⁹⁸ Jørgen Agil T. Steinholt, "Autonomous Weapons Systems: The ICRC's Recommendations and Its Implications for International Humanitarian Law" (Master's Thesis, UiT Norges arktiske universitet, 2022), <https://munin.uit.no/handle/10037/25890>.

part of the IHL framework that serves as a roadmap for the creation of new legal standards¹⁹⁹. According to the ICRC, the Clause can provide moral concerns legal weight, guaranteeing that moral considerations influence how AWS is treated legally.²⁰⁰

The Martens clause, which bridges the gap between natural law and positive law and is essential to the discussion of autonomous weapon systems (AWS). Positive law pertains to explicit state-agreed statutes and treaties that establish unambiguous legal frameworks. Natural law, on the other hand, is the embodiment of universal moral principles—often unwritten—that guide moral behavior and fairness. By invoking the "principles of humanity" and the "dictates of public conscience," the Martens Clause grounds judicial standards in more general moral principles.²⁰¹ Because it draws attention to the conflict between ethical restraints and technological progress, this dual grounding is especially pertinent to AWS. Positive legislation, on the one hand, mandates that AWS adhere to current IHL standards, guaranteeing that their use does not result in needless suffering or indiscriminate harm.²⁰² However, the natural law viewpoint—which is highlighted by the Martens Clause—demands that any use of AWS be consistent with humanity's fundamental moral principles, calling for a level of morality that transcends simple legal compliance.²⁰³ This confluence of moral and legal factors implies that, even insofar as AWS complies with existing legal requirements, its creation and implementation must also meet more

¹⁹⁹ Rotem Giladi, "The Enactment of Irony: Reflections on the Origins of the Martens Clause," *European Journal of International Law* 25, no. 3 (2014): 847–69.

²⁰⁰ Bruno de Oliveira Biazatti and Gustavo Carvalho de Mesquita Vasconcellos, "The Martens Clause: A Study of Its Function and Meaning," *Revista Eletrônica de Direito Internacional* 16 (2015), <https://www.academia.edu/download/43290909/Artigo-Bruno-Biazatti-e-Gustavo-Vasconcellos-The-Martens-Clause.pdf>.

²⁰¹ Salter, "Reinterpreting Competing Interpretations of the Scope and Potential of the Martens Clause."

²⁰² Mark C. Murphy, *Natural Law in Jurisprudence and Politics* (Cambridge University Press, 2006), https://books.google.com/books?hl=en&lr=&id=hnZ9nakMHjYC&oi=fnd&pg=PR1&dq=martens+clause+bridge+between+natural+law+and+positive+law+&ots=I5Z6Weehxc&sig=MWozyvOclaQmuLu-Er78_MTkGo8.

²⁰³ Michael A. Newton, "Back to the Future: Reflections on the Advent of Autonomous Weapons System," *Case W. Res. J. Int'l L.* 47 (2015): 5.

general ethical requirements, guaranteeing that they do not compromise the core humanitarian ideals that form the basis of IHL.

For compliance with the ethical and moral principles embodied in Martens Clause The designers of AWS must make sure that these systems have strong moral frameworks that can mimic human judgment while upholding moral standards and public conscience.²⁰⁴ To ensure that AWS can function inside the confines of IHL, this requires a great deal of testing and validation. Second, it is imperative that the Martens Clause be incorporated into AWS's legal review procedures. To guarantee adherence to IHL and the Martens Clause, states and developers need to perform comprehensive evaluations of AWS, taking proactive measures to remedy any possible infractions.²⁰⁵ Third, these technologies can be brought into line with social values and ethical norms by interacting with the public and upholding transparency around the creation and implementation of AWS. This strategy guarantees that AWS are built and utilized ethically in addition to fostering trust.

3.5 Concluding Remarks:

In order for AWS to be consistent with IHL, they should be developed in compliance with Weapons Law and deployed in compliance with the Targeting Law. In the foregoing, it has been demonstrated that autonomous killing performed via Algorithmic Target Construction (ATC) does not inherently conflict with IHL; rather, it is conceivable that technology will advance to ensure adequate – and therefore acceptable – levels of compliance with IHL rules. The days of the 'technological' argument seem numbered.

²⁰⁴ Mero, “The Martens Clause, Principles of Humanity, and Dictates of Public Conscience.”

²⁰⁵ Andrieta Rafaela Arifin, “Martens Clause: Filling the Gaps for International Humanitarian Law in Regulating Autonomous Weapons Systems” (PhD Thesis, Universitas Pelita Harapan, 2021), <http://repository.uph.edu/13883/>.

AWS raise significant issues of categorization within IHL: should they be considered weapons, thus regulated by Weapons Law, or should they be treated like combatants, thus falling under Targeting Law? The majority of commentators firmly support the Weapons Law model, viewing AWS as tools or instruments rather than autonomous combatants.²⁰⁶ Another perspective suggests that both analogies between AWS and weapons or combatants are misleading and restrictive. This view advocates for the creation of new laws specifically tailored to regulate these 'unconventional warfighters' and calls for an ad hoc treaty on AWS.

Some contend, however, that these systems' superior AI capabilities turn them into "robot-combatants," undermining the existing legal standards outlined in API Article 36. With weapons that can make judgments without human input, the line between the "master" (the combatant) and the "tool" (the weapon) becomes less clear.²⁰⁷ According to this research, AWS can no longer be viewed as merely a tool because it performs the crucial tasks of choosing and interacting with targets, taking on a role that was previously exclusive to humans. Therefore, this notion will allow for a sufficient debate of the legal issues surrounding accountability.

Another argument emerged in discussions around AWS, claiming that the Martens Clause's humane concept and autonomous killing are irreconcilable. This argument has broad support from a variety of actors and solid moral foundations.²⁰⁸ The argument's legal significance is less evident, though, because natural law and legal positivism continue to clash. The notion that something can be made illegal just because it is immoral is rejected by many legal experts. Because of this, people

²⁰⁶ Schmitt and Widmar, "The Law of Targeting."

²⁰⁷ Sparrow, "Killer Robots."

²⁰⁸ Arifin, "Martens Clause."

who are against autonomous killing frequently support an ad hoc treaty that would specifically forbid AWS, believing that a simple restatement of extra-positive law would suffice.

In conclusion, it is critical that autonomous weapon systems (AWS) be strictly regulated within the current frameworks of IHL, weapons law, and targeting law, even though it may not be feasible to outright forbid AWS. The Martens Clause offers a noteworthy ethical framework that emphasizes the values of humanity and the standards of public conscience that AWS is required to follow. Therefore, robust accountability mechanisms need to be established, to make sure that AWS operates within these moral and legal bounds rather than the creation of new conventions or laws that target the smart machines directly. This will require comprehensive legal reviews, ongoing oversight, and transparent decision-making processes and a bridge to some form of human oversight to guarantee that the deployment and use of AWS remain consistent with IHL and uphold the fundamental values of human dignity and ethical warfare.

Chapter 4

REGULATING AWS IN LAW ENFORCEMENT: HUMAN RIGHTS AND RESPONSIBILITY

4.1 Introduction

Scholars and policymakers are increasingly focusing on the influence of AWS on International Human Rights Law (IHRL). Although AWS's development is primarily driven by military purposes, there is an increasing acknowledgment that these systems will also be utilized in law enforcement operations, where IHRL is the only relevant set of rules²⁰⁹. Previous iterations of AWS, such as weaponized unmanned aerial vehicles, are currently being employed regularly for the purposes of managing crowds, monitoring borders, and carrying out targeted assassinations across national boundaries.²¹⁰ It is anticipated that these systems will accumulate substantial data for future analysis to determine whether to employ lethal force by conducting initial screenings of their surroundings, objects, and individuals.²¹¹ The sophisticated sensors and advanced algorithms that are capable of processing immense quantities of data in real-time are utilized in these preliminary assessments. Haas and Fischer in their research deliberate upon other indicators, biometric information, and movement patterns are among the data that can be collected to assist the system in making informed judgments regarding potential hazards.²¹² These systems generate

²⁰⁹ Christof Heyns, "Human Rights and the Use of Autonomous Weapons Systems (AWS) during Domestic Law Enforcement," *Human Rights Quarterly* 38, no. 2 (2016): 350–78.

²¹⁰ Jeremy Straub, "Unmanned Aerial Systems: Consideration of the Use of Force for Law Enforcement Applications," *Technology in Society* 39 (2014): 100–109.

²¹¹ Regina Surber, "Artificial Intelligence: Autonomous Technology (AT), Lethal Autonomous Weapons Systems (LAWS) and Peace Time Threats," *ICT4Peace Foundation and the Zurich Hub for Ethics and Technology (ZHET)* p 1 (2018): 21.

²¹² Michael Carl Haas and Sophie-Charlotte Fischer, "The Evolution of Targeted Killing Practices: Autonomous Weapons, Future Conflict, and the International Order," in *The Transformation of Targeted Killing and International Order* (Routledge, 2020), 107–32, <https://www.taylorfrancis.com/chapters/edit/10.4324/9780429060298->

exhaustive profiles and scenarios that influence their decision-making processes as they accumulate and analyze this data.

Consequently, it is inevitable that future law enforcement operations will endure a substantial digital transformation, incorporating state-of-the-art technologies into routine operations. This transition will render automated data processing and mass surveillance essential components of contemporary policing strategies.²¹³ Advanced surveillance systems will be capable of continuously monitoring vast areas, distinguishing and tracing individuals and objects with unparalleled precision.²¹⁴ These systems will not only improve the efficacy of law enforcement agencies but also raise significant ethical and legal concerns regarding the potential for technology misuse, data security, and privacy.²¹⁵ Therefore, the integration of autonomous systems into law enforcement will necessitate a careful equilibrium between the protection of ethical principles and legal norms and the utilization of technological advancements. In this analysis, we will examine how AWS operates in situations similar to those managed by unmanned systems, especially those that involve targeted executions.

4.1.1 Theoretical underpinning of Natural Law

The concept of natural law theory, which is fundamental to both philosophical and legal traditions, asserts that there are certain rights and ethical standards that are intrinsic to human nature and may be determined by rational thinking.²¹⁶ These principles promote the values of

5/evolution-targeted-killing-practices-autonomous-weapons-future-conflict-international-order-michael-carl-haas-sophie-charlotte-fischer.

²¹³ Ica Karina et al., “Implications of Digital Technology for Criminal Law Enforcement: Challenges and Opportunities in the Age of Digitalization,” *UNES Law Review* 6, no. 4 (2024): 10039–47.

²¹⁴ Eliza Watt, “The Right to Privacy and the Future of Mass Surveillance,” *The International Journal of Human Rights* 21, no. 7 (September 2, 2017): 773–99, <https://doi.org/10.1080/13642987.2017.1298091>.

²¹⁵ Stephen Rushin, “The Judicial Response to Mass Police Surveillance,” *U. Ill. JL Tech. & Pol’y*, 2011, 281.

²¹⁶ Finnis, *Natural Law and Natural Rights*.

equity, equality, and safeguarding fundamental human rights, thereby establishing the foundation for legal and moral standard.²¹⁷ Natural law is a critical ethical framework that prioritizes the absolute preservation of human dignity and the fundamental right to life within the domain of AWS in law enforcement.

The underlying concepts of natural law emphasize the need for AWS to function within a structure that honors human rights and maintains justice. The fundamental worth and value of each person, as supported by the principles of natural law, necessitates the meticulous regulation of any application of force, particularly when carried out by autonomous systems, in order to avoid arbitrary or unfair actions.²¹⁸ This is consistent with the norms of IHRL, which aim to guarantee that all actions taken by states, including those involving AWS, are carried out while upholding human rights and basic freedoms.

Furthermore, the emphasis of natural law on rationality and fairness strengthens the need for human supervision in AWS operations.²¹⁹ Human oversight guarantees that the implementation and behaviors of AWS comply with ethical principles and legal requirements, reflecting the logical and moral considerations that are fundamental to natural law.²²⁰ This omission is essential for upholding responsibility and avoiding possible misconduct that may result from completely independent systems.

²¹⁷ Finnis.

²¹⁸ Eberhard Schockenhoff, *Natural Law & Human Dignity: Universal Ethics in an Historical World* (CUA Press, 2003), <https://books.google.com/books?hl=en&lr=&id=zii783wQE3sC&oi=fnd&pg=PR9&dq=natural+law+and+ethics&ots=CYtPjP9dz1&sig=qMx7wcajOedrnqzqyxt3gneXf6U>.

²¹⁹ Duncan MacIntosh, "Autonomous Weapons and the Nature of Law and Morality: How Rule-of-Law-Values Require Automation of the Rule of Law," *Temp. Int'l & Comp. LJ* 30 (2016): 99.

²²⁰ Nehal Bhuta, Susanne Beck, and Hin-Yan Liu, *Autonomous Weapons Systems: Law, Ethics, Policy* (Cambridge University Press, 2016), <https://books.google.com/books?hl=en&lr=&id=9x-nDAAAQBAJ&oi=fnd&pg=PR8&dq=natural+law+and+autonomous+weapons+&ots=Lf3soCnXSA&sig=wZSPfNMfMTyeUJvCtVti5VZp21o>.

To summarize, natural law serves as a fundamental ethical standpoint that strengthens the principles of IHRL in governing the governance of Artificial Intelligence and Autonomous Systems (AWS).²²¹ It promotes the safeguarding of human dignity, the entitlement to life, and the imperative of human supervision to guarantee fair and responsible law enforcement procedures. An ethical foundation is crucial for dealing with the intricate issues presented by the incorporation of AWS into law enforcement activities.²²²

4.2 The Evolution of Warfare and Use of Weapons Beyond Armed Conflict

The landscape of warfare and weapon use has significantly evolved, extending beyond traditional armed conflicts to include various forms of conflict that is below the threshold of armed conflict under IHL.²²³ Modern conflicts are increasingly stealthy and ambiguous, making it challenging to categorize them strictly under the established frameworks of IHL. These new forms of conflict often seek to circumvent the applicability of IHL, necessitating a reevaluation of the legal and ethical frameworks governing the use of AWS.²²⁴

4.2.1 Applicability in Anti-terrorism and Non-armed Conflict Situations

In scenarios where the criteria for armed conflict are not met, such as areas geographically outside of traditional battlefields and without a direct connection to an armed conflict, the

²²¹ Stephen Hall, "The Persistent Spectre: Natural Law, International Order and the Limits of Legal Positivism," *European Journal of International Law* 12, no. 2 (2001): 269–307.

²²² Susan H. Bitensky, "The Role of International Human Rights Law and Comprehensive Historical Methodology in Resolving the Conflict between Positive Law and Natural Law Theories," *J. Juris* 19 (2013): 219.

²²³ Emily Crawford, "From Inter-State and Symmetric to Intra-State and Asymmetric: Changing Methods of Warfare and the Law of Armed Conflict in the 100 Years Since World War One," in *Yearbook of International Humanitarian Law Volume 17, 2014*, ed. Terry D. Gill et al., vol. 17, Yearbook of International Humanitarian Law (The Hague: T.M.C. Asser Press, 2016), 95–118, https://doi.org/10.1007/978-94-6265-091-6_7.

²²⁴ David Turns, "At the Vanishing Point of International Humanitarian Law: Methods and Means of Warfare in Non-International Armed Conflicts," *German YB Int'l L.* 45 (2002): 115.

deployment of AWS would be governed exclusively by IHRL.²²⁵ Armed drones have already been utilized in such contexts over the past decade, and AWS may similarly be deployed. These such situations should be regarded as law enforcement operations governed by IHRL and international law enforcement standards, rather than by IHL.²²⁶

4.2.2 *Domestic Law Enforcement*

When AWS are employed in domestic law enforcement, human rights law is the applicable legal framework. It is conceivable that military forces, equipped with AWS, could be deployed for law enforcement operations. Additionally, domestic law enforcement officials may eventually deploy AWS armed with lethal or non-lethal weapons. In these scenarios, the application of force is unequivocally governed by IHRL.²²⁷ The burgeoning industry around AWS is already producing systems specifically designed for domestic law enforcement. Marketing literature from companies in this sector envisions AWS applications in crowd control, using armored robotic platforms and launchers to disperse crowds using tear gas or rubber bullets, deliver electrical shocks from the air, and mark individuals considered troublemaker. These systems can also be equipped with firearms or light weaponry.²²⁸

Other possible domestic uses of AWS, include apprehending specific types of individuals such as escaped prisoners or poachers, as well as offering perimeter security, for high-security

²²⁵ Terry Terriff, Aaron Karp, and Regina Karp, "Global Insurgency and the Future of Armed Conflict," *Debating Fourth-Generation Warfare*. Routledge, New York, 2008, <https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9780203089279&type=googlepdf>.

²²⁶ Peter Margulies, "The Fog of War Reform: Change and Structure in the Law of Armed Conflict after September 11," *Marq. L. Rev.* 95 (2011): 1417.

²²⁷ Heyns, "Human Rights and the Use of Autonomous Weapons Systems (AWS) during Domestic Law Enforcement."

²²⁸ Allied Market Research <https://www.alliedmarketresearch.com>, "Autonomous Weapons Market Share, Growth, Analysis by 2030," Allied Market Research, accessed July 2, 2024, <https://www.alliedmarketresearch.com/autonomous-weapons-market-A13132>.

areas like prisons or border zones, possibly with stationary systems that deploy tear gas.²²⁹ Additionally, AWS may be used to patrol pipelines or handle hostage situations, where their rapid response capabilities, such as using facial recognition to identify and neutralize threats, could be advantageous compared to human operators.²³⁰ Governments and private manufacturers are likely to distribute such technology worldwide, reflecting the growth of the private security industry.²³¹ This dissemination raises concerns about the acquisition and use of AWS by states or actors lacking the technological capacity or experience to manage such advanced systems responsibly.

4.3 Rights Other Than the Right to Life and Human Dignity

The utilization of AWS in law enforcement operations has significant ramifications for various human rights, extending beyond the well-documented concerns related to the right to life and human dignity.²³² This section investigates the broader human rights issues, assessing the potential impacts and difficulties presented by AWS. The examination will focus on the following rights: the right to privacy, the right to security of the person, the right to inhuman treatment, the right to just administrative action, and the right to a remedy.

The presence of AWS, which possess the capability to make independent decisions and carry out actions without direct human involvement, poses distinct problems to existing human

²²⁹ Sharkey, "Autonomous Weapons Systems, Killer Robots and Human Dignity."

²³⁰ Mattias Leppänen, "Autonomous Weapons Systems in Law Enforcement: Potential Threat towards the Most Fundamental of Human Rights?," 2021, <https://www.diva-portal.org/smash/record.jsf?pid=diva2:1558931>.

²³¹ Jaana Sild, "Digitalization Induced Privatization of Law," accessed July 2, 2024, <https://digikogu.taltech.ee/et/Download/076b623b-0db3-4288-b087-7a7d139477e4/Digitaalsestmuundumisesttingitudavaliketeenust.pdf>.

²³² Christof Heyns, "Autonomous Weapons in Armed Conflict and the Right to a Dignified Life: An African Perspective," *South African Journal on Human Rights* 33, no. 1 (January 2, 2017): 46–71, <https://doi.org/10.1080/02587203.2017.1303903>.

rights frameworks.²³³ The possibility of widespread surveillance, unjustifiable exercise of power, and absence of responsibility highlights the requirement for strict restrictions and supervision.²³⁴ Each of these rights, as safeguarded by IHRL, offers a crucial perspective to examine the utilization of AWS in law enforcement.

4.3.1 *Right to Privacy*

Various human rights accords, notably Article 17 of the International Covenant on Civil and Political Rights (ICCPR), safeguard the right to privacy. This article explicitly prohibits any unauthorized or illegal intrusion into an individual's privacy, family, home, or correspondence. It also encompasses any unlawful attacks on their honor and reputation.²³⁵ This protection encompasses multiple aspects of personal life, safeguarding individuals against excessive monitoring and gathering of information by government entities.²³⁶ The European Court of Human Rights (ECtHR) has been essential in establishing and upholding the limits of this entitlement, especially in response to the progress of surveillance technologies.²³⁷

An important and notable case in this context is Szabó and Vissy v. Hungary (2016). The applicants contested Hungarian legislation that authorized widespread covert surveillance in the interest of national security. The European Court of Human Rights (ECtHR) ruled that although governments may employ sophisticated monitoring technology to combat terrorism, these methods

²³³ Ángel Gómez De Ágreda, "Ethics of Autonomous Weapons Systems and Its Applicability to Any AI Systems," *Telecommunications Policy* 44, no. 6 (2020): 101953.

²³⁴ Elvira Rosert and Frank Sauer, "Prohibiting Autonomous Weapons: Put Human Dignity First," *Global Policy* 10, no. 3 (September 2019): 370–75, <https://doi.org/10.1111/1758-5899.12691>.

²³⁵ "International Covenant on Civil and Political Rights," OHCHR, accessed July 2, 2024, <https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-civil-and-political-rights>.

²³⁶ Kristian P. Humble, "Human Rights, International Law and the Right to Privacy," *Journal of Internet Law* 23, no. 12 (2020): 1–14.

²³⁷ Olha Oliinyk et al., "Protection of Personal Data in the Context of Human Rights: Experience and Relevance of ECtHR Decisions," 2023, <https://rep.btsau.edu.ua/handle/BNAU/8778>.

must not result in uncontrolled executive authority. The Court highlighted the importance of strong legal protections to avoid arbitrary or abusive invasions of privacy, emphasizing that any monitoring measure must be deemed "necessary in a democratic society" and proportionate to the legitimate goal being sought.^{238,239}

The possible implementation of Autonomous Weapon Systems (AWS) equipped with sophisticated surveillance capabilities greatly increases the likelihood of privacy infringements.²⁴⁰ AWS may be configured to do ongoing surveillance and data gathering, generating comprehensive profiles of persons by analyzing their activities, movements, and interactions.²⁴¹ This feature is especially alarming in the context of widespread monitoring, because large quantities of data can be gathered, processed, and examined mechanically without direct human supervision.

The consequences of such spying are significant. The methodical gathering and examination of individual data by AWS may result in extensive violations of privacy, especially in the absence of sufficient legal protections.²⁴² According to IHRL, the criteria of necessity and proportionality require that any breach of the right to privacy must be absolutely essential to achieve a valid objective and must be in proportion to that objective.²⁴³ To clarify, it is crucial to

²³⁸ PHRP, "Szabó and Vissy v. Hungary (37138/14)," Police and Human Rights Resources, January 1, 2016, <https://policehumanrightsresources.org/szabo-and-vissy-v-hungary-37138-14>.

²³⁹ Cole Mark D and Annelies Vandendriessche, "From Digital Rights Ireland and Schrems in Luxembourg to Zakharow and Szabo/Vissy in Strasbourg: What the ECtHR Made of the Deep Pass by the CJEU in the Recent Cases on Mass Surveillance," *European Data Protection Law Review (EDPL)* 2 (2016): 121.

²⁴⁰ Surber, "Artificial Intelligence."

²⁴¹ Armin Krishnan, *Killer Robots: Legality and Ethicality of Autonomous Weapons* (Routledge, 2016), <https://www.taylorfrancis.com/books/mono/10.4324/9781315591070/killer-robots-armin-krishnan>.

²⁴² Jai Galliot and Warren Reed, "Ethics and the Future of Spying," *Oxon: Routledge*, 2016, <https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9781315743912&type=googlepdf>.

²⁴³ David Bilchitz, "Necessity and Proportionality: Towards a Balanced Approach?," *Reasoning Rights (Edited by L. Lazarus, C. McCrudden and N. Bowles)(Hart, 2014, Forthcoming)*, 2012, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2320437.

control the use of AWS for surveillance to prevent it from surpassing the required extent to deal with the particular threat or objective.

For instance, in law enforcement, AWS could be utilized to surveil public areas for security reasons or to monitor persons who are suspected of engaging in criminal behavior.²⁴⁴ Nevertheless, in the absence of rigorous legal frameworks regulating their utilization, there is a potential danger that these systems may be exploited, resulting in indiscriminate surveillance and data gathering that violates the privacy rights of individuals.²⁴⁵ Furthermore, the automated nature of AWS surveillance could worsen these problems, since it may lack the subtle discernment needed to distinguish between legal targets of surveillance and ordinary persons going about their daily lives.²⁴⁶

In addition, the ECtHR has emphasized the significance of implementing measures to prevent the misuse of monitoring authority in various other instances. The Court, in the case of *Liberty and Others v. the United Kingdom* (2008), determined that the UK's system for intercepting communications did not have sufficient supervision and safeguards, leading to infringements of the right to privacy as outlined in Article 8 of the European Convention on Human Rights (ECHR).²⁴⁷ This case highlights the importance of having thorough legislative frameworks in place

²⁴⁴ Jane Vaynman, "Better Monitoring and Better Spying: The Implications of Emerging Technology for Arms Control (Fall 2021)," 2021, <https://repositories.lib.utexas.edu/items/b7ad0720-dad2-42ba-b221-659c83fd6a01>.

²⁴⁵ David Omand, "Examining the Ethics of Spying: A Practitioner's View," *Criminal Law and Philosophy*, October 20, 2023, <https://doi.org/10.1007/s11572-023-09704-5>.

²⁴⁶ Noel Sharkey, "Saying 'no!' to Lethal Autonomous Targeting," in *Military Ethics and Emerging Technologies* (Routledge, 2016), 132–46, <https://api.taylorfrancis.com/content/chapters/edit/download?identifierName=doi&identifierValue=10.4324/9781315766843-10&type=chapterpdf>.

²⁴⁷ *Liberty and Others v. the United Kingdom*, No. 58243/00 (ECtHR July 1, 2008).

to oversee the utilization of surveillance technologies, such as AWS, in order to safeguard individual privacy.²⁴⁸

4.3.2 *Right to Security of a Person*

Article 9(1) of the International Covenant on Civil and Political Rights (ICCPR) guarantees individuals the right to liberty and protection from arbitrary detention or imprisonment.²⁴⁹ This right encompasses the safeguarding against both potentially fatal and non-fatal injuries sustained during encounters with law enforcement officials.²⁵⁰ In General Comment No. 35, the Human Rights Committee emphasizes that the term "arbitrariness" should be given a wide interpretation. It encompasses not only behaviors that violate legal statutes, but also those that are unsuitable, unfair, or lack consistency, along with aspects of rationality, indispensability, and commensurateness.²⁵¹

Implementing Autonomous Weapon Systems (AWS) in law enforcement circumstances, especially where lethal or less-lethal force is used, presents substantial difficulties in guaranteeing adherence to Article 9.²⁵² AWS are engineered to function according to pre-determined algorithms, which allows them to potentially make immediate judgments regarding the application of force without direct human involvement.²⁵³ The ability of this autonomous decision-making

²⁴⁸ Jon Moran, "Myths and Misunderstandings about Security, Rights and Liberty in the United Kingdom," in *Counter-Terrorism, Human Rights and the Rule of Law* (Edward Elgar Publishing, 2013), 61–84, <https://www.elgaronline.com/downloadpdf/edcollchap/edcoll/9781781954461/9781781954461.00009.pdf>.

²⁴⁹ "International Covenant on Civil and Political Rights."

²⁵⁰ Dana Baldinger, "The 1966 International Covenant on Civil and Political Rights (Iccpr)," in *Vertical Judicial Dialogues in Asylum Cases* (Brill Nijhoff, 2015), 66–136, <https://brill.com/downloadpdf/book/9789004290723/B9789004290723-s004.pdf>.

²⁵¹ "OHCHR | General Comment No. 35 on Article 9, Liberty and Security of Person," OHCHR, accessed July 2, 2024, <https://www.ohchr.org/en/calls-for-input/general-comment-no-35-article-9-liberty-and-security-person>.

²⁵² Daniele Amoroso, *Autonomous Weapons Systems and International Law* (Nomos Verlagsgesellschaft mbH & Co. KG, 2020), <https://www.nomos-elibrary.de/10.5771/9783748909538/autonomous-weapons-systems-and-international-law?hitid=163054&page=1&l=de>.

²⁵³ Jack M. Beard, "Autonomous Weapons and Human Responsibilities," *Geo. J. Int'l L.* 45 (2013): 617.

raises significant concerns regarding the possibility of arbitrary infringements on freedom and safety.

An overriding issue is that AWS, if not effectively regulated, could result in inappropriate or disproportionate utilization of force. Unlike human officers, AWS do not possess the capacity to use discretion and judgment in intricate and swiftly changing circumstances.²⁵⁴ The lack of human supervision can lead to acts that fail to meet the required standards of rationality and necessity.²⁵⁵ For example, if an AWS is deployed to handle a demonstration, it may employ excessive force, so intensifying the situation and inflicting avoidable harm on victims.²⁵⁶ Engaging in such acts would violate the principles stated in Article 9, as they would not meet the necessary standards of proportionality and appropriateness, as stated in General Comment No. 35 by the Human Rights Committee.²⁵⁷

An illustrative example that highlights the significance of reasonableness and proportionality in the utilization of force by law enforcement is the *Bouyid v. Belgium* (2015) case. ECtHR has determined that police personnel are only permitted to use force if it is absolutely required and directly related to the objective they are trying to achieve. Furthermore, the level of force used must be reasonable to the situation at hand. The Court emphasized that any use of force that is unnecessary or is beyond what is necessary constitutes a breach of Article 3 of the ECHR, which forbids inhuman or degrading treatment²⁵⁸. When considering AWS, it becomes clear that

²⁵⁴ Dan Saxon, "A Human Touch: Autonomous Weapons, Directive 3000.09, and the" Appropriate Levels of Human Judgment over the Use of Force", *Georgetown Journal of International Affairs* 15, no. 2 (2014): 100–109.

²⁵⁵ Dalton Lee Davis, "Human Judgment and Autonomous Weaponry: What Does It Mean?," 2018, https://digitalcommons.bard.edu/cgi/viewcontent.cgi?article=1023&context=senproj_s2018.

²⁵⁶ Asaro, "On Banning Autonomous Weapon Systems."

²⁵⁷ "OHCHR | General Comment No. 35 on Article 9, Liberty and Security of Person."

²⁵⁸ "*Bouyid v. Belgium* [GC]," accessed July 3, 2024, <https://hudoc.echr.coe.int/eng#%7B%22itemid%22:%5B%22002-10837%22%5D%7D>).

any force exerted by autonomous systems must likewise comply with these strict requirements to prevent human rights breaches.

Furthermore, the implementation of AWS must take into account the ideas of responsibility and supervision. The absence of human supervision in AWS operations presents a substantial threat to accountability measures.²⁵⁹ Human rights law requires that law enforcement's use of force be carefully examined and held accountable to guarantee adherence to lawful standards.²⁶⁰ Attributing responsibility for violations that occur might be problematic due to the lack of direct human supervision over AWS.²⁶¹ The lack of accountability is especially worrisome considering the possibility for AWS to make independent judgments that may result in arbitrary violations of freedom and safety.

General Comment No. 35 of the Human Rights Committee provides additional provides details on the importance of predictability and the rule of law to prevent the state from engaging in arbitrary actions. The statement affirms that any restriction of freedom must be foreseeable and regulated by explicit legal structures.²⁶² For AWS, this means that its deployment must be regulated by strong legal norms that guarantee consistency and prevent random activities. It is imperative that the algorithms used by AWS are public and undergo thorough scrutiny to guarantee their adherence to standards for human rights.

²⁵⁹ Chengeta, "Accountability Gap."

²⁶⁰ Afonso Seixas-Nunes, "Autonomous Weapons Systems and the Procedural Accountability Gap," *Brook. J. Int'l L.* 46 (2020): 421.

²⁶¹ Chengeta, "Accountability Gap."

²⁶² "OHCHR | General Comment No. 35 on Article 9, Liberty and Security of Person."

4.3.3 *Right Against Inhuman Treatment*

Article 7 of the International Covenant on Civil and Political Rights (ICCPR) explicitly forbids the use of torture and any form of treatment or punishment that is cruel, inhuman, or degrading.²⁶³ The restriction is total and non-derogable, indicating that it cannot be suspended under any circumstances, even during periods of conflict or national crisis.²⁶⁴ The deployment of Autonomous Weapon Systems (AWS) in law enforcement, especially those armed with non-lethal weapons, gives rise to substantial issues over adherence to these rigorous criteria.

Stringent regulations must be implemented to ensure that AWS employs non-lethal force in a manner that avoids any instances of inhumane treatment. Even if the force that is deployed is non-lethal, it can still amount to be inhuman treatment, especially of the way and frequency of deploying that force is causing significant pain or suffering.²⁶⁵ With AWS, this risk can be worsened due to lack of empathy and human judgement.²⁶⁶ Machines are at the loss of compassion and discretion which can lead to use of force that is inflexible and severe.

When it comes to AWS, it is crucial to make sure that their utilization in law enforcement does not result in the Employment of undue or capricious force. that would breach the prohibition on inhuman treatment.²⁶⁷ For example, if an AWS is programmed to use non-lethal means such as tear gas or rubber bullets, it must possess the capability to assess the suitability and necessity of

²⁶³ "International Covenant on Civil and Political Rights."

²⁶⁴ Talal Asad, "On Torture, or Cruel, Inhuman, and Degrading Treatment," in *Social Suffering*, ed. Arthur Kleinman, Veena Das, and Margaret M. Lock (University of California Press, 1998), 285–308, <https://doi.org/10.1525/9780520353695-015>.

²⁶⁵ Hans Danelius, "Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment," *United National Audiovisual Library of International Law*, 2008, 1–4.

²⁶⁶ Benina Uotinen, "In the Absence of Mercy: The Role of the Right to Dignity in the Debate of the Legality of Autonomous Weapon Systems," 2024, <https://www.doria.fi/handle/10024/188780>.

²⁶⁷ Kjølsv Egeland, "Machine Autonomy and the Uncanny: Recasting Ethical, Legal, and Operational Implications of the Development of Autonomous Weapon Systems" (Master's Thesis, 2014), <https://www.duo.uio.no/handle/10852/41263>.

these actions in real-time.²⁶⁸ If AWS lacks this competence, there is a significant probability that it could cause excessive harm, thereby violating human rights standards.

The jurisprudence of ECtHR offers more understanding of how Article 7 is applied Concerning the notion of Autonomous Weapon Systems (AWS). In the *Ireland v. United Kingdom* (1978) decision, the Court determined that the utilization of "stress positions," hooding, and other methods of questioning by British authorities amounted to inhumane and degrading treatment.²⁶⁹ The aforementioned case emphasizes the significance of taking into account the physical as well as psychological consequences of a treatment in order to assess whether it qualifies as inhuman or humiliating treatment.²⁷⁰ Regarding AWS, it is essential to thoroughly examine their deployment not only for potential physical harm but also for the psychological effects it may have on persons.

The absence of human oversight in the use of force by machines raises serious concerns due to its intrinsic lack of empathy.²⁷¹ Machines are incapable of comprehending intricate human emotions and settings, which are frequently vital in law enforcement situations. It has been argued that the utilization of force by robots is fundamentally "inhuman" because of their absence of empathy and contextual comprehension.²⁷² This viewpoint implies that although the force employed by AWS may not cause death, if it is not applied in a way that considers the specific details of each circumstance, it could still be considered inhumane treatment.

²⁶⁸ Themistoklis Tzimas, "Legal Ramifications of the Use of AWS's- the Role of IHL and Human Rights," in *Legal and Ethical Challenges of Artificial Intelligence from an International Law Perspective*, by Themistoklis Tzimas, vol. 46, Law, Governance and Technology Series (Cham: Springer International Publishing, 2021), 167–98, https://doi.org/10.1007/978-3-030-78585-7_8.

²⁶⁹ *Ireland v. the United Kingdom*, No. 28584/14, 54775/14, 60599/14, 24103/15, 56915/15, 56978/15, 57506/15, 35981/17, 75580/17, 18908/18, 56458/18, 20279/19, 35678/19, 42029/19 (ECtHR January 18, 1978).

²⁷⁰ David Bonner, "Ireland v. United Kingdom," *International & Comparative Law Quarterly* 27, no. 4 (October 1978): 897–907, <https://doi.org/10.1093/iclqaj/27.4.897>.

²⁷¹ Thompson Chengeta, "Dignity, Ubuntu, Humanity and Autonomous Weapon Systems (AWS) Debate: An African Perspective," *Braz. J. Int'l L.* 13 (2016): 460.

²⁷² Uotinen, "In the Absence of Mercy."

4.3.4 *Right to Just Administrative Action and Remedy*

Legal systems globally acknowledge the entitlement to fair administrative action, which entails the stipulation that those impacted by executive decisions have the opportunity to present their case, and that a competent authority carefully considers the matter at issue.²⁷³ This notion is essential for ensuring that administrative decisions, particularly those involving the application of force, are accountable and equitable. The application of AWS in law enforcement poses a threat to this notion, as decisions are independently made by machines instead of humans.²⁷⁴ Within the framework of AWS, it is crucial to build procedures that guarantee human supervision and judgment in decision-making processes.²⁷⁵ Article 15 of the EU Directive 95/46/EC stipulates that persons possess the right to be exempt from decisions made only through automated data processing.²⁷⁶ This emphasizes the necessity of human participation in administrative decision-making. To ensure that AWS are utilized in a manner that aligns with fair administrative action, it is necessary to implement meticulous regulation and oversight to avoid arbitrary or unjust determinations.

According to Article 2(3) of the ICCPR, governments are required to guarantee a suitable solution for individuals whose rights or freedoms have been infringed upon.²⁷⁷ The absence of responsibility for transgressions, such as illegal homicides committed by AWS, may itself be

²⁷³ David Schuman, "The Right to a Remedy," *Temple L. Rev.* 65 (1992): 1197.

²⁷⁴ Jeremy McBride, "Damages as a Remedy for Unlawful Administrative Action," *The Cambridge Law Journal* 38, no. 2 (1979): 323–45.

²⁷⁵ Berkant Akkuş, "POSITIVE HUMAN RIGHTS OBLIGATION OF STATES AND THE USE OF AUTONOMOUS WEAPON SYSTEMS DURING LAW ENFORCEMENT OPERATIONS," *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, no. 36 (2022): 76–94.

²⁷⁶ "EUR-Lex - 31995L0046 - EN," text/html; charset=UTF-8, Official Journal L 281 , 23/11/1995 P. 0031 - 0050; (OPOCE), accessed July 3, 2024, <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A31995L0046>.

²⁷⁷ "International Covenant on Civil and Political Rights."

considered a breach of the entitlement to redress.²⁷⁸ It is essential to establish approaches to ensure accountability for individuals involved in the implementation and utilization of AWS accountable in order to protect this right.²⁷⁹ The case of *Opuz v. Turkey* serves as an example, in which the ECtHR determined that the state had not fulfilled its duty to safeguard the applicant from domestic violence and had also not provided a satisfactory solution to the issue.²⁸⁰ When using AWS, it is crucial to provide explicit accountability frameworks that enable appropriate actions to be taken in the event of violations arising from the use of AWS. This entails guaranteeing transparency in the decision-making procedures and offering channels for citizens to seek remedies.

4.3.5 *Implications for Accountability and Responsibility*

The application of Autonomous Weapon Systems in policing creates serious concerns regarding accountability and responsibility. The absence of human involvement in AWS's real-time decision-making process makes it more difficult to assign blame for any infringement of human rights.²⁸¹ Clearly defining the roles and duties of developers, programmers, and AWS operators within accountability frameworks is essential.²⁸² Academics like Peter Asaro contend that AWS provide important moral and legal issues that current frameworks might not be able to sufficiently handle. In order to guarantee responsibility and compliance with international human rights norms, Asaro highlights the necessity of thorough laws.²⁸³ On the other hand, advocates such as Ronald Arkin contend that AWS can be developed to adhere to moral standards and that

²⁷⁸ Paola Gaeta, "Who Acts When Autonomous Weapons Strike? The Act Requirement for Individual Criminal Responsibility and State Responsibility," *Journal of International Criminal Justice* 21, no. 5 (2023): 1033–55.

²⁷⁹ Beard, "Autonomous Weapons and Human Responsibilities."

²⁸⁰ *Opuz v. Turkey*, No. 33401/02 (ECtHR June 9, 2009).

²⁸¹ Gaeta, "Who Acts When Autonomous Weapons Strike?"

²⁸² Thompson Chengeta, "Autonomous Weapon Systems and the Inadequacies of Existing Law: The Case for a New Treaty," *Journal of Law & Cyber Warfare* 8 (2022 2020): 104.

²⁸³ Asaro, "On Banning Autonomous Weapon Systems."

its application may help minimize prejudice and human mistake in law enforcement.^{284,285} But as Katja Franko Aas points out, in order to avoid undermining human rights, the use of cutting-edge technology like AWS in law enforcement must be carefully considered.^{286,287} The accountability and responsibility frameworks need to be strong enough to handle the special difficulties that autonomous systems present, guaranteeing that their use does not conflict with core human rights ideals.

While AWS cannot be totally outlawed, they must be rigorously regulated under existing IHL and IHRL regulations.²⁸⁸ This research posits that, existing legal frameworks ought to change to include the usage of AWS, implementing these regimes comprehensively in every situation where they are deployed. The extensive body of scholarship developed over the past century provides the most viable means of regulating AWS, as they represent the future of warfare and law enforcement.²⁸⁹ Thus, their regulation should be rooted in extending human control and oversight. To ensure that AWS operate within ethical and legal boundaries, protecting human rights and maintaining public trust in law enforcement practices, robust accountability mechanisms are imperative.

²⁸⁴ Ronald C. Arkin, "The Case for Ethical Autonomy in Unmanned Systems," *Journal of Military Ethics* 9, no. 4 (December 2010): 332–41, <https://doi.org/10.1080/15027570.2010.536402>.

²⁸⁵ Arkin, "Accountability and Liability for the Deployment of Autonomous Weapon Systems."

²⁸⁶ Katja Franko Aas, "'Getting Ahead of the Game': Border Technologies and the Changing Space of Governance," in *Global Surveillance and Policing* (Willan, 2005).

²⁸⁷ Katja Franko Aas, Helene Oppen Gundhus, and Heidi Mork Lomell, *Technologies of InSecurity: The Surveillance of Everyday Life* (Routledge, 2008).

²⁸⁸ Heyns, "Human Rights and the Use of Autonomous Weapons Systems (AWS) during Domestic Law Enforcement."

²⁸⁹ Jörg Kammerhofer, "Hans Kelsen in Today's International Legal Scholarship," SSRN Scholarly Paper (Rochester, NY, September 30, 2012), <https://papers.ssrn.com/abstract=2154526>.

4.4 The Right to Life in International Human Rights Law

The inalienable right to life is predominantly hailed as 'preeminent right' and 'supreme right' and serves as receptacle from which all the other human rights are derived.²⁹⁰ This fundamental entitlement that one enjoys by virtue of being a 'human' is protected in the Universal Declaration of Human Rights (UDHR) and serves as a fundamental principle in significant international human rights agreements, such as the European Convention on Human Rights (ECHR), the International Covenant on Civil and Political Rights (ICCPR), the American Convention on Human Rights (ACHR), and the African Charter on Human and Peoples' Rights (AfCHPR).^{291,292,293,294} Due to its incontestable significance this right is considered of customary international law and is regarded as a fundamental rule that cannot be violated or disregarded, known as *jus cogens*.²⁹⁵

The concept of the right to life is often declared in grandiose and eloquent language by numerous treaty provisions and intellectuals.²⁹⁶ The right in question is considered to be fundamental, as the absence of this right renders other rights insignificant.²⁹⁷ The intrinsic essence of the right to life, as demonstrated in the UDHR, emphasizes its strong basis in both customary

²⁹⁰ Virginia A. Leary, "The Right to Health in International Human Rights Law," *Health and Human Rights* 1, no. 1 (1994): 24–56, <https://doi.org/10.2307/4065261>.

²⁹¹ United Nations, "Universal Declaration of Human Rights," United Nations (United Nations), accessed July 3, 2024, <https://www.un.org/en/about-us/universal-declaration-of-human-rights>.

²⁹² "European Convention on Human Rights - ECHR Official Texts - ECHR - ECHR / CEDH," ECHR, accessed July 3, 2024, <https://echr.coe.int/european-convention-on-human-rights>.

²⁹³ "American Convention on Human Rights, 'Pact of San Jose', Costa Rica," Refworld, accessed July 3, 2024, <https://www.refworld.org/legal/agreements/oas/1969/en/20081>.

²⁹⁴ "African Court on Human and Peoples' Rights," *African Court on Human and Peoples' Rights* (blog), accessed July 3, 2024, <https://www.african-court.org/wpafc/>.

²⁹⁵ W. Paul Gormley, "VII. The Right to Life and the Rule of Non-Derogability: Peremptory Norms of *Jus Cogens*" (Brill, 1985), https://doi.org/10.1163/9789004482296_012.

²⁹⁶ A. Redelbach, "IX. Protection of the Right to Life by Law and by Other Means" (Brill, 1985), https://doi.org/10.1163/9789004482296_014.

²⁹⁷ Gormley, "VII. The Right to Life and the Rule of Non-Derogability."

and non-statutory law.²⁹⁸ The right to life is distinguished by its utmost significance, which validates its status as an inalienable right. This implies that no exemption is allowed, even under extraordinary circumstances like armed conflicts or public emergencies.²⁹⁹ The ban is clearly stated by the ECHR, ICCPR, and ACHR, and indirectly by the AfCHPR.^{300,301,302} The justification for this restriction is rooted in the crucial importance of the right to life for both individuals and society as a collective entity.

Furthermore, the right to life is commonly regarded as inherently unconditional. Some legal interpretations propose that the right to life is not unconditional because there are certain conditions under which it can be legitimately taken away.³⁰³ However, other individuals contend regarding the unequivocal nature of right to life, indicating that human life can only be legally terminated under exceedingly restricted conditions that are in accordance with the right itself.³⁰⁴ This analysis underscores the importance of carefully examining exceptions to the fundamental entitlement to life. The right to life encompass the sine qua non obligation of states to refrain from proscribed actions that arbitrarily take away someone's life on one hand and actively ensure that all individuals can enjoy their lives, these are negative and positive duties respectively.³⁰⁵ The positive obligations encompassed within the broader duty to "ensure" the rights outlined in a treaty serve to fully and effectively satisfy the fundamental duty of abstaining

²⁹⁸ Elizabeth Wicks, "The Meaning of 'Life': Dignity and the Right to Life in International Human Rights Treaties," *Human Rights Law Review* 12, no. 2 (June 1, 2012): 199–219, <https://doi.org/10.1093/hrlr/ngs002>.

²⁹⁹ Gormley, "VII. The Right to Life and the Rule of Non-Derogability."

³⁰⁰ "European Convention on Human Rights - ECHR Official Texts - ECHR - ECHR / CEDH."

³⁰¹ "American Convention on Human Rights, 'Pact of San Jose', Costa Rica."

³⁰² "African Court on Human and Peoples' Rights."

³⁰³ Grégoire Webber, "Proportionality and Absolute Rights," SSRN Scholarly Paper (Rochester, NY, May 6, 2016), <https://doi.org/10.2139/ssrn.2776577>.

³⁰⁴ Webber.

³⁰⁵ J Crawford, "Revising the Draft Articles on State Responsibility," *European Journal of International Law* 10, no. 2 (January 1, 1999): 435–60, <https://doi.org/10.1093/ejil/10.2.435>.

from causing death.³⁰⁶ These affirmative or positive duties acts encompass the obligation to safeguard life and the responsibility to carry out inquiries following a loss of life.

Having clarified the right to life and its indispensable nature, attention may be directed towards the utilization of force. States have multifarious obligations to adhere compliance to when using lethal force against individuals, may it be domestic or international law enforcement situations.³⁰⁷ These responsibilities include refraining from taking action unless necessary and actively taking steps to protect their obligations. This field, if often referred to as 'The law of law enforcement,' is predominantly governed by international treaty law as interpreted by competent oversight agencies, in addition to customary norms and overarching legal concepts.³⁰⁸ The concepts mentioned are evident in measures such as 1979 Code of Conduct for Law Enforcement Officials and the 1990 Basic concepts on the Use of Force and Firearms by Law Enforcement Officials.^{309,310} While these documents do not have legal force in themselves, they have often been cited by monitoring bodies, leading to many of their provisions being customary in character.

The incorporation of Autonomous Weapon Systems (AWS) into law enforcement and military operations presents intricate difficulties regarding the preservation of the right to life. The autonomous decision-making capabilities of AWS, which include the ability to use lethal force, must be carefully reviewed within existing legal frameworks to guarantee adherence to the right

³⁰⁶ Dimitris Xenos, *The Positive Obligations of the State under the European Convention of Human Rights* (London: Routledge, 2011), <https://doi.org/10.4324/9780203807811>.

³⁰⁷ Crawford, "Revising the Draft Articles on State Responsibility."

³⁰⁸ James A. Conser, Rebecca Paynich, and Terry Gingerich, *Law Enforcement in the United States* (Jones & Bartlett Publishers, 2011).

³⁰⁹ "Code of Conduct for Law Enforcement Officials," OHCHR, accessed July 4, 2024, <https://www.ohchr.org/en/instruments-mechanisms/instruments/code-conduct-law-enforcement-officials>.

³¹⁰ "Basic Principles on the Use of Force and Firearms by Law Enforcement Officials," OHCHR, accessed July 4, 2024, <https://www.ohchr.org/en/instruments-mechanisms/instruments/basic-principles-use-force-and-firearms-law-enforcement>.

to life.³¹¹ When evaluating the effect of AWS on the right to life, it is essential to consider how these systems can adhere to the obligation of preventing unjustifiable loss of life and fulfilling the duty to safeguard life by conducting comprehensive investigations into any instances arbitrary violation of life.³¹² The shift to AWS and the introduction of AI in weapons demands that strict regulations are applied on the utilization of AWS to prevent any compromise on the essential safeguards provided by the right to life as outlined in IHRL.

This analysis will explore the precise legal obligations and precedents Concerning the right to life, exploring the possible integration of AWS into law enforcement and military operations while ensuring compliance with this fundamental right. The debate will examine the criteria of legality, necessity, and proportionality, and how AWS might be strategically planned and implemented to fulfill these infrangible requirements. This study will assess how well Autonomous Weapon Systems adhere to international human rights laws, highlighting the need for robust legal and regulatory frameworks to safeguard the right to life in the age of advanced autonomous technology.

4.4 Restraints: Legal Constraints on Deprivation of Life

4.4.1 Principle of Legality

The fundamental principle supporting a state's obligation to uphold the right to life is legality. This principle requires that any deprivation of life must be grounded in law, whether

³¹¹ Steven Umbrello, Phil Torres, and Angelo F. De Bellis, "The Future of War: Could Lethal Autonomous Weapons Make Conflict More Ethical?," *AI & SOCIETY* 35, no. 1 (March 1, 2020): 273–82, <https://doi.org/10.1007/s00146-019-00879-x>.

³¹² Spencer Kohn et al., "Supporting Ethical Decision-Making for Lethal Autonomous Weapons," *Journal of Military Ethics* 0, no. 0 (2024): 1–20, <https://doi.org/10.1080/15027570.2024.2366094>.

through domestic or international legal frameworks.³¹³ This requirement is explicitly stated in Article 6(1) of the ICCPR, Article 2(1) of the ECHR, and Article 4(1) of the ACHR.^{314,315,316} While the African Charter on Human and Peoples' Rights (AfCHPR) does not specifically articulate this condition, it is considered as an implicit understanding and an customary law.³¹⁷ There is a need for an elaborate regulatory structure to ensure that the application of force is done under legal constraints.

The UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials underscores the need of authorities responsible for enforcing the law to operate under a legal structure.³¹⁸ The framework of law must be comprehensive, should explicitly articulate the exact conditions in which certain types of weapons and means of inflicting lethal force are allowed.³¹⁹ Regional and universal monitoring bodies have consistently emphasized the empowering of providing law enforcement authorities with appropriate operative frameworks.

In the context of AWS, their deployment can align with the principle of legality as long as an appropriate normative framework is established by state authorities.³²⁰ This entails establishing legal and regulatory structures that explicitly target the implementation and practical utilization of AWS.³²¹ These frameworks should guarantee that AWS are utilized in accordance with current legislation and global norms, hence preventing any unjustified loss of life. These guidelines should

³¹³ Halûk A. Kabaalioglu, "VIII. The Obligations to 'Respect' and to 'Ensure' the Right to Life" (Brill, 1985), https://doi.org/10.1163/9789004482296_013.

³¹⁴ "European Convention on Human Rights - ECHR Official Texts - ECHR - ECHR / CEDH."

³¹⁵ "American Convention on Human Rights, 'Pact of San Jose', Costa Rica."

³¹⁶ "African Court on Human and Peoples' Rights."

³¹⁷ "African Charter on Human and Peoples' Rights ('Banjul Charter')," Refworld, accessed July 4, 2024, <https://www.refworld.org/legal/agreements/oau/1981/en/17306>.

³¹⁸ "Basic Principles on the Use of Force and Firearms by Law Enforcement Officials."

³¹⁹ Stuart Casey-Maslen, *Weapons under International Human Rights Law* (Cambridge University Press, 2014).

³²⁰ Kjølv Egeland, "Lethal Autonomous Weapon Systems under International Humanitarian Law," May 17, 2016, <https://doi.org/10.1163/15718107-08502001>.

³²¹ Crootof, "The Varied Law of Autonomous Weapon Systems."

clearly define the conditions for deploying AWS and the exact types of weapons and ammunition that are allowed.

4.4.2 *Principle of Necessity*

The principle of necessity regulates the application of force, requiring that lethal force be used only when it is strictly necessary to preserve life.³²² This principle is articulated in various human rights instruments, including Article 2(1) of the ECHR, which interprets necessity in the context of a strict and compelling test known as 'absolute necessity'.^{323,324} Necessity is based on two main foundations: the absence of viable less-lethal alternatives and the existence of a legitimate purpose for using lethal force.³²⁵ Law enforcement officials are required to exhaust all peaceful methods, such as negotiation and mediation, before resorting to lethal force.³²⁶ If these means prove ineffective, less-lethal options should be prioritized. Temporal factors also play a crucial role in assessing necessity, particularly in urgent situations where split-second decisions are required.³²⁷

Applying this principle to AWS raises questions about whether the absence of human decision-making at the moment of using force conflicts with the necessity requirement. Critics argue that AWS lack the capacity to interpret suspects' intentions, which is vital in making

³²² Lawrence Hill-Cawthorne, "The Role of Necessity in International Humanitarian and Human Rights Law," *Israel Law Review* 47, no. 2 (2014): 225–51.

³²³ "European Convention on Human Rights - ECHR Official Texts - ECHR - ECHR / CEDH."

³²⁴ Steven Greer, "Is the Prohibition against Torture, Cruel, Inhuman and Degrading Treatment Really 'Absolute' in International Human Rights Law?," *Human Rights Law Review* 15, no. 1 (2015): 101–37.

³²⁵ Cedric Ryngaert, "State Responsibility, Necessity and Human Rights," *Netherlands Yearbook of International Law* 41 (2010): 79–98.

³²⁶ Ryan P. Hatch, "Coming Together to Resolve Police Misconduct: The Emergence of Mediation as a New Solution," *Ohio St. J. on Disp. Resol.* 21 (2005): 447.

³²⁷ Janneke Gerards, "How to Improve the Necessity Test of the European Court of Human Rights," *International Journal of Constitutional Law* 11, no. 2 (2013): 466–90.

decisions about using force.³²⁸ However, if AWS are developed with advanced capabilities to assess intentions and comply with necessity standards, they could meet this requirement. This contention brings us to the previously discussed concepts of ‘absolute infallibility’³²⁹ and ‘technological objection’³³⁰, which aver that if technology is sophisticated enough to take into consideration the principle of necessity, then AWS can be absolutely comply with the principle of necessity. However, the research does not take AWS as faultless systems and this contention does not answer all the questions pertinent to criminal liability in cases of violation of law.

A relevant analogy can be drawn from the issue of surrender amidst armed conflict. If the goal of a law enforcement operation is maintaining public order and security, preventing and detecting crime, and providing assistance, and if resorting to lethal force is an ultimate ratio choice, negotiation plays a key role as it allows for preventing the commission of a crime without depriving the suspect of life.³³¹ The UN Basic Principles stress the importance of having authorities responsible for enforcing the law to be properly trained and educated in this sense.³³² If AWS are to replace human officers in such scenarios, they must be capable of performing these functions, including requesting and accepting surrender.

4.4.3 *Principle of Proportionality*

The principle of proportionality mandates that the use of force should be appropriate and proportional to the legitimate objective being pursued.³³³ This principle is intricately connected to

³²⁸ Asaro, “On Banning Autonomous Weapon Systems.”

³²⁹ Solovyeva and Hynek, “Going Beyond the ‘Killer Robots’ Debate.”

³³⁰ Crootof, “The Varied Law of Autonomous Weapon Systems.”

³³¹ Davis, “Human Judgment and Autonomous Weaponry.”

³³² “Basic Principles on the Use of Force and Firearms by Law Enforcement Officials.”

³³³ Thomas Cottier et al., “The Principle of Proportionality in International Law: Foundations and Variations,” *The Journal of World Investment & Trade* 18, no. 4 (2017): 628–72.

necessity, as The use of force is justifiable only when it is absolutely unavoidable.³³⁴ Proportionality necessitates the careful consideration of the force employed in relation to the gravity of the offense and the lawful goal pursued.

Human rights organizations have always asserted that law enforcement authorities should carefully assess and adjust their application of force based on the specific circumstances, ensuring that it is commensurate with the level of danger presented.³³⁵ ECtHR has ruled over several instances that pertain to the application of proportionality in law enforcement situations. For example, in instances applying deadly force is an only way of getting rid of an imminent danger, the Court has assessed whether the force used was essential and commensurate with the level of risk presented.³³⁶ Following the 2016 Orlando nightclub incident, there was a discussion over the applying the principle of proportionality to assess how law enforcement responded to the mass shooting.³³⁷ This involved examining whether the force used was necessary and appropriate given the amount of danger involved. The ECtHR case of *McCann and Others v. United Kingdom* demonstrates a comparable examination of proportionality in law enforcement.^{338,339} In this case, the court assessed whether the British forces' utilization of lethal force against suspected IRA members was commensurate with the perceived level of danger.³⁴⁰

³³⁴ Andrew Legg, *The Margin of Appreciation in International Human Rights Law: Deference and Proportionality* (OUP Oxford, 2012),

<https://books.google.com/books?hl=en&lr=&id=aEHVhFmn3KwC&oi=fnd&pg=PP1&dq=principle+of+proportionality+in+IHRL+&ots=bHQkskCnFW&sig=I79F5-GgN7aezo-zUic4pUqY-ZQ>.

³³⁵ Christopher Michaelson, "Human Rights as Limits for the Security Council: A Matter of Substantive Law or Defining the Application of Proportionality?," *Journal of Conflict and Security Law* 19, no. 3 (2014): 451–69.

³³⁶ Kristina Trykhlid, "The Principle of Proportionality in the Jurisprudence of the European Court of Human Rights," *EU and Comparative Law Issues and Challenges Series (ECLIC)* 4 (2020): 128–54.

³³⁷ Rupa Jose, E. Alison Holman, and Roxane Cohen Silver, "How Americans Feel about Guns after Mass Shootings: The Case of the 2016 Orlando Nightclub Massacre.," *Psychology of Violence* 11, no. 4 (2021): 354.

³³⁸ Peter Cumper, "When the State Kills-McCann and Others v. United Kingdom," *Nottingham LJ* 4 (1995): 207.

³³⁹ Tuğba Sarıkaya Güler, "Positive Obligations' Doctrine of the European Court of Human Rights: Is It Cogent or Obscure?," *European Journal of Multidisciplinary Studies* 2, no. 6 (2017): 358–64.

³⁴⁰ *McCann and Others v. the United Kingdom*, No. 18984/91 (ECtHR [GC] September 27, 1995).

When applying the notion of proportionality to AWS, it is necessary to evaluate the capacity of AWS to make nuanced decisions regarding the suitable amount of force that should be employed. The question is on the cognition and the sophistication of AI that is employed in the system, the cues they should measure to start an attack must be foolproof should be non-arbitrary when it comes to human life.³⁴¹ Consequently, AWS needs to be programmed to evaluate situations in a flexible manner and ascertain the appropriateness of its actions.³⁴² This requires the implementation of advanced decision-making algorithms and the ability to dynamically adjust to real-time changes.

Ultimately, the incorporation of AWS into law enforcement and military activities poses notable difficulties. However, by upholding the principles of legality, necessity, and proportionality, we can guarantee the preservation of the right to life.³⁴³ These principles offer a strong structure for assessing the use of deadly force and can direct the creation and implementation of AWS to prevent unjustifiable loss of life.

4.5 Responsibilities: Proactive Measures to Protect Life

4.5.1 Duty to Protect Life

The state has a duty to safeguard life by implementing thorough steps to prevent unjustifiable loss of life. This entails the establishment of unambiguous norms and guidelines for law enforcement operations, guaranteeing that officials receive sufficient training, and allocating

³⁴¹ Ronald Craig Arkin, Patrick Ulam, and Alan R. Wagner, "Moral Decision Making in Autonomous Systems: Enforcement, Moral Emotions, Dignity, Trust, and Deception," *Proceedings of the IEEE* 100, no. 3 (2011): 571–89.

³⁴² Nathan Reiting, "Algorithmic Choice and Superior Responsibility: Closing the Gap between Liability and Lethal Autonomy by Defining the Line between Actors and Tools," *Gonz. L. Rev.* 51 (2015): 79.

³⁴³ Kohn et al., "Supporting Ethical Decision-Making for Lethal Autonomous Weapons."

the appropriate resources to reduce the utilization of fatal force.³⁴⁴ The UN Basic Principles on the Use of Force and Firearms by Law Enforcement Authorities stress the significance of providing comprehensive training to law enforcement personnel, encompassing not only handgun proficiency but also alternative techniques to defuse potentially volatile situations.³⁴⁵ Effective training is essential to guarantee that officials are capable of managing diverse situations without resorting to needless or excessive force.³⁴⁶

When contemplating the implementation of AWS, Protecting human life requires the development and implementation of these systems with stringent safeguards.³⁴⁷ AWS should be programmed to give priority to non-violent methods and less-lethal alternatives and should only employ lethal force when it is absolutely essential.³⁴⁸ This entails doing thorough testing and validation of AWS capabilities to ensure their ability to make suitable judgments in intricate and ever-changing contexts.³⁴⁹ For instance, AWS should possess the ability to differentiate between armed dangers and non-threatening individuals, evaluating circumstances with the same level of thoroughness and prudence anticipated from human law enforcement officials.

AWS should be equipped with sophisticated algorithms that can effectively recognize and analyze human behavior, including gestures indicating surrender or other non-threatening

³⁴⁴ Laurens Lavrysen, "Protection by the Law: The Positive Obligation to Develop a Legal Framework to Adequately Protect ECHR Rights," in *Human Rights and Civil Liberties in the 21st Century*, ed. Yves Haeck and Eva Brems, vol. 30, *Ius Gentium: Comparative Perspectives on Law and Justice* (Dordrecht: Springer Netherlands, 2014), 69–129, https://doi.org/10.1007/978-94-007-7599-2_4.

³⁴⁵ "Basic Principles on the Use of Force and Firearms by Law Enforcement Officials."

³⁴⁶ Stuart Casey-Maslen, "Use of Force in Law Enforcement and the Right to Life: The Role of the Human Rights Council," 2016, https://repository.graduateinstitute.ch/record/295217/files/in-brief6_WEB.pdf.

³⁴⁷ Jonathan David Herbach, "Into the Caves of Steel: Precaution, Cognition and Robotic Weapon Systems under the International Law of Armed Conflict," *Amsterdam LF 4* (2012): 3.

³⁴⁸ Erich Riesen, "The Moral Case for the Development and Use of Autonomous Weapon Systems," *Journal of Military Ethics* 21, no. 2 (April 3, 2022): 132–50, <https://doi.org/10.1080/15027570.2022.2124022>.

³⁴⁹ Stanislav Abaimov and Maurizio Martellini, "Artificial Intelligence in Autonomous Weapon Systems," in *21st Century Prometheus*, ed. Maurizio Martellini and Ralf Trapp (Cham: Springer International Publishing, 2020), 141–77, https://doi.org/10.1007/978-3-030-28285-1_8.

acts.³⁵⁰³⁵¹ This necessitates advanced programming and ongoing software changes to accommodate changing standards and situations.³⁵² Moreover, the implementation of AWS should be backed by strong supervision measures to assess their efficiency and guarantee adherence to international human rights norms.³⁵³ Conducting routine audits and evaluations of AWS operations can assist in detecting possible deficiencies or prejudices in their decision-making procedures, enabling prompt rectifications and enhancements.

4.5.2 *Duty to Investigate Loss of Life*

The state also bears the responsibility of carrying out comprehensive investigations into any instances where ends up in unlawful end of life.³⁵⁴ This responsibility entails taking into account the justification of the application of force in a particular case and ensuring that those who are responsible for any unlawful deprivation of life are held accountable.³⁵⁵ Efficient investigations should be conducted promptly, autonomously, and have the ability to ascertain the truth and determine the individuals accountable.³⁵⁶ The significance of such investigations is highlighted by various international human rights documents and legal precedents, which stress the necessity of holding individuals responsible and ensuring fairness.³⁵⁷

³⁵⁰ De Ágreda, "Ethics of Autonomous Weapons Systems and Its Applicability to Any AI Systems."

³⁵¹ Rory Lewis, "Autonomous Intelligence for FMV ISR Sensors With A Human In The Loop Decision Support System," in *Proceedings of the 2nd International Conference on Vision, Image and Signal Processing, ICVISP 2018* (New York, NY, USA: Association for Computing Machinery, 2018), 1–6, <https://doi.org/10.1145/3271553.3271572>.

³⁵² Sai Rishi Katari, "From Algorithms to Accountability: Regulating Autonomous Weapon Systems in the Face of Ethical and Legal Challenges," *Jus Corpus LJ* 3 (2022): 95.

³⁵³ Beard, "Autonomous Weapons and Human Responsibilities."

³⁵⁴ Vera Rusinova, "4. The Duty To Investigate The Death Of Persons Arrested And/Or Detained By Public Authorities," in *The Right to Life* (Brill Nijhoff, 2010), 65–82, https://brill.com/downloadpdf/book/edcoll/9789004189652/Bej.9789004183919.i-424_005.pdf.

³⁵⁵ Annelen Micus, "The Duty of States to Investigate and Prosecute under International Law," in *The Inter-American Human Rights System as a Safeguard for Justice in National Transitions* (Brill Nijhoff, 2015), 7–46, <https://brill.com/downloadpdf/book/9789004289734/B9789004289734-s003.pdf>.

³⁵⁶ Naomi Roht-Arriaza, "State Responsibility to Investigate and Prosecute Grave Human Rights Violations in International Law," *Calif. L. Rev.* 78 (1990): 449.

³⁵⁷ Crawford, "Revising the Draft Articles on State Responsibility."

Within the framework of AWS, guaranteeing accountability necessitates the implementation of methods to track and evaluate the acts performed by these systems.³⁵⁸ It is necessary for AWS to have capabilities that document and report their decision-making procedures, enabling examination after an incident. This level of openness is essential to ascertain the justification of the application of force and to rectify any flaws or errors in the system.³⁵⁹ One possible design element for AWS is the implementation of a "black box" functionality, much to those utilized in aviation, which would record and document all system choices and activities performed during an operation.³⁶⁰ Human investigators can subsequently evaluate this data to determine the suitability of AWS's activities.

Furthermore, it is essential that the responsibility to conduct an investigation includes the obligation to keep well-organized and easily accessible documentation that may be thoroughly examined in the case of an occurrence.³⁶¹ This entails recording the programming and operational specifications of the AWS, together with any subsequent upgrades or alterations made to the system.³⁶² Maintaining transparency and accountability requires the regular updating and independent evaluation of documents.

It is essential that AWS can only be held legally responsible for conduct if there is clear involvement of a human. Despite their sophistication, autonomous systems operate in accordance

³⁵⁸ Crootof, "War Torts," 2016 2015.

³⁵⁹ Matthew T. Miller, "Command Responsibility: A Model for Defining Meaningful Human Control," *J. Nat'l Sec. L. & Pol'y* 11 (2020): 533.

³⁶⁰ Nicholas Diakopoulos, "Algorithmic Accountability Reporting: On the Investigation of Black Boxes," 2014, <https://doi.org/10.7916/D8ZK5TW2>.

³⁶¹ Danaë Metaxa et al., "Auditing Algorithms: Understanding Algorithmic Systems from the Outside In," *Foundations and Trends® in Human-Computer Interaction* 14, no. 4 (2021): 272–344.

³⁶² Adriano Koshiyama et al., "Towards Algorithm Auditing: A Survey on Managing Legal, Ethical and Technological Risks of AI, ML and Associated Algorithms," 2021, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3778998.

with the programming and instructions provided by humans.³⁶³ Therefore, accountability systems should prioritize the personnel who are responsible for the design, programming, deployment, and supervision of AWS.³⁶⁴ This assigns the primary responsibility for ensuring that AWS functions within legal and ethical boundaries to human operators and commanders. The legal system ensures that an individual is consistently responsible for the actions of an AWS by ensuring the presence of a human factor in criminal responsibility, thereby protecting the values of justice and human rights.

4.5.3 Duty to Educate and Train Law Enforcement Officials

Safeguarding the right to life is contingent upon the obligation to educate and train law enforcement officials. This responsibility necessitates not only initial training but also ongoing education regarding the changing standards and practices associated with the use of force.³⁶⁵ The UN Basic Principles underscore the necessity of providing individuals who are responsible for law enforcement with comprehensive training in human rights, police ethics, and alternative methods to the use of force.³⁶⁶ These training programs should be developed to foster a profound comprehension of the significance of proportionate and necessary responses in law enforcement situations and the value of human life.

In the context of AWS, this obligation is manifested through the necessity of rigorous programming and ongoing updates to guarantee that these systems comply with human rights

³⁶³ Daniele Amoroso and Guglielmo Tamburrini, "In Search of the 'Human Element': International Debates on Regulating Autonomous Weapons Systems," *The International Spectator* 56, no. 1 (January 2, 2021): 20–38, <https://doi.org/10.1080/03932729.2020.1864995>.

³⁶⁴ Schwarz, "Autonomous Weapons Systems, Artificial Intelligence, and the Problem of Meaningful Human Control."

³⁶⁵ George H. Brereton, "The Importance of Training and Education in the Professionalization of Law Enforcement," *The Journal of Criminal Law, Criminology, and Police Science* 52, no. 1 (1961): 111–21.

³⁶⁶ "Basic Principles on the Use of Force and Firearms by Law Enforcement Officials."

regulations. Although AWS does not learn in the same manner as humans, they must be equipped with the most sophisticated algorithms that adhere to the most recent legal and ethical standards.³⁶⁷ These systems must be updated and recalibrated on a regular basis to guarantee that they remain effective and can adjust to emerging challenges.

The protection of the right to life can also be substantially improved by providing training to the programmers, developers, and coders who are responsible for the development of AWS regarding the complexities of human rights and law.³⁶⁸ Although these systems are predominantly designed to inflict injury while minimizing harm, they can and should be designed with a emphasis on ensuring the dignity of human life and the creation of humane weapons.³⁶⁹ Technologists can be more effectively prepared to incorporate these standards into the algorithms and functionalities of AWS by mandating courses and ongoing education in human rights law, police ethics, and proportionality and necessity.³⁷⁰ This method guarantees that the individuals responsible for the design and maintenance of AWS are not only cognizant of but also actively integrating legal and ethical considerations into their work. Consequently, technological advancements should align with the highest standards of human rights and dignity standards.

³⁶⁷ Erika Steinholt Mortensen, "Autonomous Weapon Systems That Decide Whom to Kill. How International Humanitarian Law and International Human Rights Law Regulate the Development and Use of Offensive Autonomous Weapon Systems during International Armed Conflicts" (Master thesis, UiT Norges arktiske universitet, 2016), <https://munin.uit.no/handle/10037/9931>.

³⁶⁸ Esther Chavannes, Klaudia Klonowska, and Tim Sweijs, "Governing Autonomous Weapon Systems," *The Hague: The Hague Centre For Strategic Studies*, 2020, <https://hcss.nl/wp-content/uploads/2021/01/HCSS-Governing-AWS-final.pdf>.

³⁶⁹ Rosert and Sauer, "Prohibiting Autonomous Weapons."

³⁷⁰ Leonard Kahn, "Lethal Autonomous Weapon Systems and Respect for Human Dignity," *Frontiers in Big Data* 5 (2022): 999293.

4.5.4 *Duty to Provide Just Administrative Action*

A key element of the state's responsibilities under human rights law is the guarantee of equitable administrative action. This obligation requires that individuals who are impacted by executive decisions, particularly those that involve the application of force, are treated fairly and with due process.³⁷¹ In the context of AWS, this implies that the decisions made by these systems must be subject to evaluation and oversight by human authorities.³⁷² The right to just administrative action necessitates that those affected by AWS decisions have access to avenues for recourse and that these decisions are made in a transparent and accountable manner.

4.5.5 *Duty to Prevent Discrimination*

The prohibition of discrimination is a fundamental principle of IHRL, as evidenced by both customary practice and treaty obligations.³⁷³ The risks of discrimination associated with emergent technologies, particularly algorithms, have been extensively discussed in legal scholarship.³⁷⁴ It is imperative that these systems are designed and implemented in a manner that guarantees there is no racial or discriminatory bias when these concerns are applied to AWS.³⁷⁵ In order to guarantee that all individuals are treated equally under the law, the programming of AWS must include safeguards that prohibit any form of discrimination.

³⁷¹ Toscano, "Friend of Humans."

³⁷² Beard, "Autonomous Weapons and Human Responsibilities."

³⁷³ Frédéric Edel, *Prohibition of Discrimination Under the European Convention on Human Rights*, vol. 22 (Council of Europe, 2010), https://books.google.com/books?hl=en&lr=&id=UX_C4PWaRLMC&oi=fnd&pg=PA7&dq=prohibition+of+discrimination+human+rights+&ots=Go9sYM3bb6&sig=iGuyZd2SoQBJWX5fHg9cGgH4v_k.

³⁷⁴ Christof Heyns, "Autonomous Weapons in Armed Conflict and the Right to a Dignified Life: An African Perspective," *South African Journal on Human Rights* 33, no. 1 (January 2, 2017): 46–71, <https://doi.org/10.1080/02587203.2017.1303903>.

³⁷⁵ Paul Scharre, "Centaur Warfighting: The False Choice of Humans vs. Automation," *Temp. Int'l & Comp. LJ* 30 (2016): 151.

4.5.6 *Duty to Avoid Inhuman Treatment*

Acts of torture and treatment or punishment that are cruel, inhuman, or degrading are explicitly prohibited by Article 7 of the ICCPR.³⁷⁶ Law enforcement uses both lethal and non-lethal force; this prohibition applies to both. It is imperative that AWS be programmed to prevent the use of force that could be deemed inhuman or dehumanizing.³⁷⁷ This entails the strict observance of international standards and the implementation of robust ethical guidelines in the design and deployment of these systems.

In summary, the proactive measures necessary to safeguard life encompass a wide variety of responsibilities that states must fulfill to guarantee that AWS operate in accordance with international human rights law.³⁷⁸ These measures encompass the establishment of exhaustive legal frameworks, the provision of rigorous training and oversight, and the maintenance of accountability through transparent administrative processes and thorough investigations.³⁷⁹ States can mitigate the risks associated with AWS and preserve the fundamental right to life by adhering to these proactive measures.

4.6 Non-Arbitrariness and the Question of Arbitrariness in AWS

IHRL particularly in relation to the right to life, is predicated on the principle of non-arbitrariness. The concept of non-arbitrariness necessitates that any deprivation of life be not only

³⁷⁶ Baldinger, "The 1966 International Covenant on Civil and Political Rights (Iccpr)."

³⁷⁷ Gwendelynn Bills, "LAWS unto Themselves: Controlling the Development and Use of Lethal Autonomous Weapons Systems," *Geo. Wash. L. Rev.* 83 (2014): 176.

³⁷⁸ Daniel N. Hammond, "Autonomous Weapons and the Problem of State Accountability," *Chi. J. Int'l L.* 15 (2014): 652.

³⁷⁹ Gregory P. Noone and Diana C. Noone, "The Debate over Autonomous Weapons Systems," *Case W. Res. J. Int'l L.* 47 (2015): 25.

lawful, but also just, reasonable, and necessary.³⁸⁰ Arbitrary deprivations of life are those that occur without sufficient legal justification, proportionality, or necessity.³⁸¹ These systems are at an increased risk of taking arbitrary decisions by virtue of their autonomous nature. A significant concern is that AWS may make life-or-death decisions based on algorithms that might be defective, or due to an occurrence of error or glitch in the system.³⁸²

It is imperative that AWS operations incorporate a degree of human control, particularly in the context of critical decisions that involve the application of lethal force, to mitigate these risks. Human oversight can guarantee that AWS's decisions are consistent with the principles of proportionality, necessity, and legality.³⁸³ This oversight can be accomplished by employing mechanisms such as "human-in-the-loop" or "human-on-the-loop" systems, which allow human operators to evaluate and override decisions when necessary or intervene in the decision-making process.³⁸⁴

Human oversight is crucial for the preservation of accountability and transparency in the context of just administrative action and investigation. Human administrators can ensure that each decision can be reviewed and justified by providing a necessary check on the actions of AWS.³⁸⁵ This is essential for post-incident investigations, as it is essential to comprehend the rationale

³⁸⁰ Christine N. Cimini, "Principles of Non-Arbitrariness: Lawlessness in the Administration of Welfare," *Rutgers Law Review* 57 (2005 2004): 451.

³⁸¹ Oscar M. Garibaldi, "General Limitations on Human Rights: The Principle of Legality," *Harvard International Law Journal* 17 (1976): 503.

³⁸² Peter Asaro, "Algorithms of Violence: Critical Social Perspectives on Autonomous Weapons," *Social Research: An International Quarterly* 86, no. 2 (2019): 537–55.

³⁸³ Dustin A. Lewis, Gabriella Blum, and Naz K. Modirzadeh, "War-Algorithm Accountability" (arXiv, September 12, 2016), <http://arxiv.org/abs/1609.04667>.

³⁸⁴ Alex Leveringhaus and Tjerk de Greef, "Keeping the Human 'in-the-Loop': A Qualified Defence of Autonomous Weapons," in *Precision Strike Warfare and International Intervention* (Routledge, 2014).

³⁸⁵ Kevin Neslage, "Does Meaningful Human Control Have Potential for the Regulation of Autonomous Weapon Systems," *University of Miami National Security and Armed Conflict Law Review* 6 (2016 2015): 151.

behind each action in order to ascertain its legality and appropriateness.³⁸⁶ The legal regimes can be maintained by incorporating human oversight, ensuring that AWS operations adhere to international human rights standards and that any deviations are promptly addressed and rectified. This method maintains the principle of non-arbitrariness and guarantees that the use of force is transparent and accountable.

4.7 Legal Recourse and Human Control

To mitigate these risks, it is crucial to develop a human oversight mechanism that builds upon existing legal frameworks and can be applied to AWS. The idea of meaningful human control guarantees that human operators have the ability to supervise, intervene in, and stop AWS actions if deemed essential.³⁸⁷ Human oversight is crucial for upholding accountability and ensuring that AWS operations adhere to IHRL requirements.

1. AWS shall comply with the established legal standards as defined by international human rights treaties, including the ICCPR, ECHR, ACHR, and AfCHPR. These treaties establish explicit principles about the acceptable application of force, highlighting the significance of legality, necessity, and proportionality.³⁸⁸ By conforming to these established guidelines, AWS may guarantee that their acts are legally justified and in line with international standards.

2. Training and Protocols: Law enforcement professionals receive training on the use of force in accordance with established protocols. It is important to have consistent training and

³⁸⁶ Swati Malik, "Autonomous Weapon Systems: The Possibility and Probability of Accountability," *Wisconsin International Law Journal* 35 (2018 2017): 609.

³⁸⁷ Mikolaj Firlej and Araz Taeihagh, "Regulating Human Control over Autonomous Systems," *Regulation & Governance* 15, no. 4 (October 2021): 1071–91, <https://doi.org/10.1111/rego.12344>.

³⁸⁸ Mi Hwa Hong, "Legal Commitments to United Nations Human Rights Treaties and Higher Monitoring Standards in the Universal Periodic Review," *Journal of Human Rights* 17, no. 5 (October 20, 2018): 660–73, <https://doi.org/10.1080/14754835.2018.1432342>.

practices for AWS to ensure that these systems are programmed and operated in accordance with established standards.³⁸⁹ This entails giving priority to non-lethal methods, resorting to lethal action only when all other options have been exhausted, and guaranteeing comprehensive recording and reporting of all instances where force is used.

3. Establish measures to guarantee openness and accountability in AWS operations. This encompasses functionalities that capture and document the decision-making procedures of AWS, enabling comprehensive analysis after an incident to ascertain the legality of their actions.³⁹⁰ This topic has previously been discussed in relation to the constraints of human control, namely in terms of epistemic, cognitive, and temporal factors. It is crucial to properly address and mitigate these limitations.

4.8 Absolute Infallibility and Human Oversight in AWS

The previous chapters of this research have examined the concept of absolute infallibility, which suggests that AWS, due to their sophisticated technological capabilities, are commonly seen as unable of committing errors.³⁹¹ This perception is founded on the conviction that the existing problems with AWS are mainly attributable to technological deficiencies and that, in the future, these computers would attain perfection, fully adhering to the norms of IHL and IHRL.³⁹² Nevertheless, this notion is inherently erroneous. The unwavering faith in the complete infallibility of AWS implies that forthcoming technological progress will eliminate any possible faults and

³⁸⁹ Beard, "Autonomous Weapons and Human Responsibilities."

³⁹⁰ Diakopoulos, "Algorithmic Accountability Reporting."

³⁹¹ Riesen, "The Moral Case for the Development and Use of Autonomous Weapon Systems."

³⁹² Rebecca Crootof, "The Killer Robots Are Here: Legal and Policy Implications," *Cardozo Law Review* 36 (2015): 1837.

ethical dilemmas.³⁹³ This presupposes that Algorithmic Target Control (ATC) systems would be flawlessly engineered to strictly adhere to the standards of legality, necessity, and proportionality as outlined in IHL and IHRL.³⁹⁴ Although technical advancements can undoubtedly increase the performance and dependability of AWS, it is impractical to expect them to attain absolute perfection.

This research contends that AWS are intrinsically susceptible to technical constraints and probable inaccuracies, irrespective of their level of advancement. Regardless of their level of sophistication, machines are unable to consider all the variables present in dynamic and complicated settings.³⁹⁵ Due to the possibility of software defects, hardware failures, and unforeseen events, AWS has the ability to commit errors that may result in unlawful consequences.³⁹⁶ These errors may include the failure to recognize surrender signals, misinterpreting contextual indications, or misidentifying targets.³⁹⁷ The current legal systems are significantly challenged by the concept of completely autonomous AWS, which is devoid of human supervision, in light of these constraints. A comprehensive restructuring of current legal frameworks and the creation of new legislation within the existing framework of law to accommodate this change would be necessary if AWS were to operate autonomously. This situation would profoundly change the notions of accountability and fair administrative action as we currently comprehend them.

³⁹³ Stephanie Mae Pedron, "The Future of Wars: Artificial Intelligence (AI) and Lethal Autonomous Weapon Systems (LAWS)," n.d.

³⁹⁴ Brehm, "Defending the Boundary."

³⁹⁵ Horowitz, "When Speed Kills."

³⁹⁶ Paul Scharre, "Autonomous Weapons and Operational Risk," n.d.

³⁹⁷ Egeland, "Machine Autonomy and the Uncanny."

In order for any system of accountability to operate efficiently, there must be a subject who is accountable at the end of the chain. An entirely automated system, devoid of any human supervision, hinders the accountability framework by eliminating the essential human element required for fair administrative action.³⁹⁸ The existing legal systems depend on the capacity to hold individuals responsible for their acts, and eliminating human decision-makers from the process weakens this principle. The absence of human supervision renders it virtually impossible to ensure that the actions of AWS can be thoroughly analyzed, evaluated, and held accountable by a specific entity.³⁹⁹ This research contends that it is imperative to ensure a certain level of human oversight over the deployment and operation of AWS to guarantee adherence to IHL and IHRL. This may entail human supervision either in the backend or the frontend of AWS operations. Human operators have the responsibility of configuring operating parameters, evaluating crucial decisions, and intervening in circumstances where AWS may fail to make accurate judgments. This hybrid model guarantees that while AWS can operate independently to a certain degree, there is consistently a human element present to supervise, verify, and rectify their actions as needed.

4.9 Concluding Remarks

This chapter has examined the integration of Autonomous Weapon Systems (AWS) within the framework of IHRL, underscoring the critical necessity of regulatory supervision to guarantee that these systems operate within legal and ethical frameworks. Safeguarding the right to life is contingent upon the application of fundamental principles, including legality, necessity, and proportionality. The analysis underscores that the notion of AWS's absolute infallibility is

³⁹⁸ Chengeta, "Accountability Gap."

³⁹⁹ Lieutenant Colonel Alessandro Nalin and Paolo Tripodi, "Future Warfare and Responsibility Management in the AI-Based Military Decision-Making Process," *Journal of Advanced Military Studies* 14, no. 1 (2023): 83–97.

profoundly flawed, despite the fact that technological advancements can improve their capabilities. Robust legal and regulatory frameworks are required to mitigate risks and uphold human rights, as AWS are inherently subject to technical limitations and potential errors.

The ICCPR, ECHR, ACHR, and AfCHPR are among the international legal frameworks that currently exist and serve as a strong foundation for the regulation of AWS. These frameworks underscore the significance of proportionality, necessity, and legality in the application of force, thereby guaranteeing that AWS operations are transparent and accountable. The complete autonomy of AWS presents substantial obstacles to accountability and equitable administrative action. In order to guarantee that AWS decisions are scrutinized, reviewed, and held accountable, human oversight is indispensable. Mechanisms such as "human-in-the-loop" or "human-on-the-loop" systems can be employed to accomplish this oversight.

States are responsible for creating clear protocols, allocating necessary resources, and training law enforcement officials to minimize the use of lethal force. AWS must be programmed with rigorous safeguards, prioritizing non-violent methods and less-lethal alternatives, and equipped with features that facilitate exhaustive decision-making and post-incident analysis. AWS's absolute infallibility is an unrealistic assumption. AWS will perpetually be susceptible to technical constraints and potential errors. Consequently, the legal frameworks must be modified to incorporate rigorous regulations and human supervision in order to guarantee adherence to IHRL and IHL. It is imperative to establish explicit accountability frameworks that ensure that developers, programmers, and operators of AWS are held accountable for their activities. It is imperative to maintain accountability and uphold human rights standards through exhaustive documentation and transparent decision-making processes. Ultimately, while it may be impractical to completely ban the utilization of AWS, it is imperative to impose stringent regulations on their

implementation in alignment with the existing frameworks of IHL and IHRL. In order to guarantee the incorporation of AWS into law enforcement and military activities while upholding fundamental human rights, it is crucial to establish proactive procedures that protect life, comply with legal standards, and retain human supervision.

Chapter 5

PENAL RESPONSIBILITY IN IHL AND IHRL VIOLATIONS VIA AWS UNDER INTERNATIONAL CRIMINAL LAW

5.1 Introduction

International Criminal Law (ICL) is a subset of public international law that seeks to protect all the law regimes by establishing legal responsibility for individuals who violate international norms severely.⁴⁰⁰ The onset of this legal regime is rooted in the Nuremberg and Tokyo Tribunals, which were established following the ravages of World War II.⁴⁰¹ These tribunals were tasked with prosecuting major war criminals for their roles in crimes against peace, war crimes, and crimes against humanity. These tribunals set forth key principles of individual accountability and the prohibition of specific inhumane actions, thereby establishing the foundation for contemporary international criminal justice.⁴⁰²

ICL's origins are multifaceted, encompassing academic literature, court rulings, universally acknowledged legal principles, customary international law, and treaties. The International Criminal Court (ICC) was established as the world's first permanent international criminal tribunal by the Rome Statute, a significant treaty.⁴⁰³ ICC is authorized to prosecute individuals for the most severe international crimes.⁴⁰⁴ Customary international law, which is established through extensive

⁴⁰⁰ Roger O'Keefe, *International Criminal Law* (Oxford University Press, 2015).

⁴⁰¹ Dr Joshua N. Aston, "Genesis of International Criminal Law," SSRN Scholarly Paper (Rochester, NY, August 10, 2011), <https://doi.org/10.2139/ssrn.1928908>.

⁴⁰² William Eduard Adjei, "THE DEVELOPMENT OF INDIVIDUAL CRIMINAL RESPONSIBILITY UNDER INTERNATIONAL LAW: LESSONS FROM NUREMBERG AND TOKYO WAR CRIMES TRIALS," *Journal of Legal Studies "Vasile Goldiş"* 25, no. 39 (2020): 69–97.

⁴⁰³ "Rome Statute of the International Criminal Court."

⁴⁰⁴ David Scheffer and Ashley Cox, "The Constitutionality of the Rome Statute of the International Criminal Court," *Journal of Criminal Law and Criminology* 98 (2008 2007): 983.

and consistent practice that is acknowledged as legally binding, has a substantial impact on ICL.⁴⁰⁵ ICL has experienced significant growth in the past few decades as a result of the establishment of specialized tribunals like ICTY and ICTR.⁴⁰⁶ These tribunals have a fundamental role in contributing towards the advancement of ICL, particularly in the context of individual criminal responsibility and the diverse methods by which an individual may be held accountable for their actions.

International Criminal Law (ICL) is inextricably linked with IHL and IHRL.⁴⁰⁷ The principles IHL regulate the behavior during armed conflicts, safeguarding the well-being of individuals who are not actively involved in the fighting. On the other hand, IHRL is designed to safeguard the basic rights and freedoms of individuals at all times, as previously explained in the preceding chapters. ICL serves as a protective measure for both IHL and IHRL by establishing mechanisms to ensure that persons are held responsible for the most severe breaches of these legal frameworks.⁴⁰⁸ Examples of serious breaches of IHL, such as intentional killing, torture, or cruel treatment of prisoners of war, are legally pursued as war crimes ICL.⁴⁰⁹ Additionally, ICL incorporates severe violations of IHRL, such as genocide and crimes against humanity.⁴¹⁰ The implementation of ICL by means of international courts and tribunals, such as the International

⁴⁰⁵ Władysław Czapliński, "Customary International Law as a Basis of an Individual Criminal Responsibility" (Brill, 2016), https://doi.org/10.1163/9789004323667_003.

⁴⁰⁶ Lilian A. Barria and Steven D. Roper, "How Effective Are International Criminal Tribunals? An Analysis of the ICTY and the ICTR," *The International Journal of Human Rights* 9, no. 3 (September 1, 2005): 349–68, <https://doi.org/10.1080/13642980500170782>.

⁴⁰⁷ Juan E. Méndez, "Chapter 7 International Human Rights Law, International Humanitarian Law, and International Criminal Law and Procedure: New Relationships" (Brill, 2000), https://doi.org/10.1163/9789004479746_010.

⁴⁰⁸ Jeremy Sarkin, "The Historical Origins, Convergence and Interrelationship of International Human Rights Law, International Humanitarian Law, International Criminal Law and Public International Law and Their Application since the Nineteenth Century," *Human Rights & International Legal Discourse* 1 (2007): 125.

⁴⁰⁹ Joanna Frivet, "Expanding IHL through ICL: How Prosecutorial Opportunism and Judicial Activism Redefined Intra-Party SGBV Crimes at the ICC," *Humanitäres Völkerrecht: Journal of International Law of Peace and Armed Conflict* 2, no. 1/2 (2019): 53–66.

⁴¹⁰ Alain Zysset, "The Common Core between Human Rights Law and International Criminal Law: A Structural Account," *Ratio Juris* 32, no. 3 (2019): 278–300, <https://doi.org/10.1111/raju.12254>.

Criminal Court (ICC), the International Criminal Tribunal for the former Yugoslavia (ICTY), and the International Criminal Tribunal for Rwanda (ICTR), has played a significant role in ensuring that victims of severe human rights violations are not deprived of the chance to receive justice and in preventing impunity.

The Rome Statute's implementation resulted in the establishment of the International Criminal Court (ICC), which was a significant advancement in the field of international justice.⁴¹¹ It created an enduring framework for the legal pursuit and penalty of individuals who are accountable for genocide, war crimes, and crimes against humanity. ICC is empowered to investigate and prosecute offenses that occur when national legal systems are either unwilling or unable to do so.⁴¹² This reinforces the standards of IHL and IHRL. The interaction between different legal systems highlights the extensive structure created to safeguard human dignity and uphold global peace and security.

The emergence of AWS operated by Artificial Intelligence (AI) has posed significant obstacles to the subject of International Criminal Law (ICL) in recent times. Autonomous Weapon Systems (AWS) have the capability to identify and engage targets without human intervention, which raises important concerns regarding responsibility and the implementation of ICL in relation to their deployment.⁴¹³ The use of artificial intelligence (AI) into battle has the capacity to revolutionize military activities, however it also presents significant legal and ethical quandaries. An essential consideration is whether the current legal frameworks are sufficient to handle the intricacies brought about by AWS. The ideas of traditional ICL are founded on human agency,

⁴¹¹ "Rome Statute of the International Criminal Court."

⁴¹² Gioia Greco, "Victims' Rights Overview under the ICC Legal Framework: A Jurisprudential Analysis," January 1, 2007, <https://doi.org/10.1163/156753607X204301>.

⁴¹³ Stuart Casey-Maslen, "Chapter 8 Autonomous Weapons Systems and International Criminal Law" (Brill, 2018), 8, https://doi.org/10.1163/9789004363267_010.

intent, and accountability, which may not be directly relevant to autonomous systems.⁴¹⁴ The implementation of AWS requires a reevaluation of fundamental principles in ICL, such as personal criminal liability and the assignment of criminal actions.⁴¹⁵ Due of AWS's high level of autonomy, choosing the appropriate party to hold accountable for their acts becomes intricate. Possible scenarios encompass the potential for holding the human operators, commanders, or even the designers and producers of AWS responsible. Alternatively, there is the option of creating new legal frameworks to tackle the distinct issues presented by these systems, which might be practically impossible or may not be viable and applicable currently as the developments in autonomous technology are taking place at a breakneck pace.

Given the clear link between ICL and human action and intent, it may be necessary to make certain modifications in this situation. This chapter will assess the necessity of improving particular aspects of the legal system through several methods, such as establishing new agreements, superseding traditional traditions, or judicially interpreting current regulations in response to emerging technology advancements. This method would mirror the historical 'incremental' evolution of ICL, which has continuously adjusted to incorporate new improvements in weapons.⁴¹⁶ In order to keep up with the advancements in technology, it is necessary to update and improve international criminal law (ICL) to face the unique issues presented by autonomous weapons systems (AWS), just as legal frameworks have been adapted in the past to deal with

⁴¹⁴ Guido Acquaviva, "Autonomous Weapons Systems Controlled by Artificial Intelligence: A Conceptual Roadmap for International Criminal Responsibility," June 10, 2022, <https://doi.org/10.4337/mlwr.2022.01.06>.

⁴¹⁵ Guido Acquaviva, "Crimes without Humanity? Artificial Intelligence, Meaningful Human Control, and International Criminal Law," SSRN Scholarly Paper (Rochester, NY, May 30, 2023), <https://doi.org/10.2139/ssrn.4652554>.

⁴¹⁶ Neringa Mickeviciute, "Lessons from the Past for Weapons of the Future," *International Comparative Jurisprudence* 2, no. 2 (2016): 99–106.

chemical weapons, nuclear weaponry, and drones.^{417,418} The legal system must adapt to incorporate these emerging advancements, guaranteeing that responsibility and fairness persist in light of swiftly progressing military technologies.

5.1.1 *Theoretical Underpinning of Natural Law*

The application of natural law theory is essential for the interpretation of ICL in relation to AWS in this particular situation. The theory asserts, as previously mentioned, that specific ethical principles and rights are innate and universally applicable to all individuals, forming the foundation for legal norms that surpass particular legal systems and jurisdictions.⁴¹⁹ When applied to AWS, natural law theory underscores the importance of harmonizing the utilization of these sophisticated technologies with core human principles, including justice, morality, and the safeguarding of human dignity.⁴²⁰ Despite the technological sophistication and autonomy of AWS, it is essential for these systems to work within ethical and legal limitations defined by human society. This viewpoint emphasizes the significance of guaranteeing that the design, implementation, and functioning of AWS are directed by principles that protect human rights and adhere to international law, hence upholding responsibility and preventing misuse. From this perspective, natural law theory strengthens the need for strong legal standards and oversight systems to regulate AWS, guaranteeing that they make a beneficial contribution to human well-being and global justice.

⁴¹⁷ Theodore T. Richard, "Nuclear Weapons Targeting: The Evolution of Law and U.S. Policy," *Military Law Review* 224 (2016): 862.

⁴¹⁸ Alexander Kelle, "The International Regime Prohibiting Chemical Weapons and Its Evolution," in *Regulating Global Security : Insights from Conventional and Unconventional Regimes*, ed. Nik Hynek, Ondrej Ditrych, and Vit Stritecky (Cham: Springer International Publishing, 2019), 115–41, https://doi.org/10.1007/978-3-319-98599-2_7.

⁴¹⁹ Robert Cryer and Albert Nell, "Chapter 8: The Philosophy of International Criminal Law," 2020, <https://www.elgaronline.com/edcollchap/edcoll/9781788116701/9781788116701.00016.xml>.

⁴²⁰ Ernst Bloch, *Natural Law and Human Dignity* (MIT Press, 1986).

5.2 *Mens Rea* Requirements for Crimes Involving Autonomous Weapons Systems (AWS)

The primary point of contention with respect to AWS is the extent to which the *mens rea* requirements for each offense are met under international criminal law. The mental conditions that are required for criminal responsibility are delineated in Article 30 of the Rome Statute. A person is criminally responsible and subject to punishment for a crime only if the material elements are executed with intent and awareness, unless otherwise specified, as per Article 30(1).⁴²¹

A person has intent regarding their conduct when they aim to carry out the action, as specified in Article 30(2)(a). Article 30(2)(b) extends this to consequences, stating that a person has intent when they intend to bring about a specific consequence or recognize that it will likely occur in the normal course of events.⁴²² This "means to cause" clause can generally be equivalent with direct intent, or *dolus directus* in the first degree. Awareness that a consequence will result in the normal course of events is generally regarded as oblique intent, or *dolus indirectus* in the second degree.⁴²³ Knowledge is defined in Article 30(3) as "awareness that a circumstance exists or a consequence will occur in the ordinary course of events."⁴²⁴ In the Katanga case, the ICC Trial Chamber ruled that the second alternative of Article 30(3) mandates "virtual certainty" – the person must know that their actions will inevitably lead to the consequence in question, unless interrupted by unforeseen interventions.⁴²⁵

⁴²¹ "Rome Statute of the International Criminal Court."

⁴²² Johan D. Van der Vyver, "The International Criminal Court and the Concept of Mens Rea in International Criminal Law," *University of Miami International & Comparative Law Review* 12 (2004): 57.

⁴²³ Iryna Marchuk, "Evolution of the Mens Rea Doctrine in International Criminal Law," in *The Fundamental Concept of Crime in International Criminal Law: A Comparative Law Analysis*, ed. Iryna Marchuk (Berlin, Heidelberg: Springer, 2014), 115–57, https://doi.org/10.1007/978-3-642-28246-1_5.

⁴²⁴ "Rome Statute of the International Criminal Court."

⁴²⁵ "Katanga | International Criminal Court," accessed July 5, 2024, <https://www.icc-cpi.int/drc/katanga>.

Article 30 of the Rome Statute excludes negligence from being considered under criminal responsibility.⁴²⁶ Recklessness or *dolus eventualis* is also insufficient for establishing individual criminal responsibility for pertinent war crimes as defined by the Rome Statute, although it was sufficient under the jurisprudence of the ICTY and the ICTR.⁴²⁷ Exceptions to the *mens rea* requirements set by Article 30 are those crimes that establish a distinct threshold for liability. However, such crimes, such as the war crime of using, conscripting, or enlisting children, are generally irrelevant in the context of AWS.

The Rome Statute does not explicitly provide definitions for the terms "conduct" and "consequence.", Nor does the statute outline how these terms should be classified. The Elements of Crimes document specifies a *mens rea* for some crimes that reflects an application of Article 30 rather than a special form of intent.⁴²⁸ In recent case law is pertinent to Palestine issue, the application of *mens rea* has been scrutinized in the context of assaults on civilian populations. For example, ICC has assessed whether the accused intentionally targeted civilian populations, intended for civilians to be the target of the attacks, were cognizant of the the civilian status of the population, and were aware of the factual circumstances that indicate the presence of an armed conflict when evaluating potential war crimes committed during the Gaza conflicts.⁴²⁹

⁴²⁶ "Rome Statute of the International Criminal Court."

⁴²⁷ Mohamed Elewa Badar, "The Mental Element In The Rome Statute Of The International Criminal Court: A Commentary From A Comparative Criminal Law Perspective," *Criminal Law Forum* 19, no. 3 (December 1, 2008): 473–518, <https://doi.org/10.1007/s10609-008-9085-6>.

⁴²⁸ Valérie V. Suhr, "Interpretation of the Rome Statute," in *Rainbow Jurisdiction at the International Criminal Court: Protection of Sexual and Gender Minorities Under the Rome Statute*, ed. Valérie V. Suhr (The Hague: T.M.C. Asser Press, 2022), 53–128, https://doi.org/10.1007/978-94-6265-483-9_3.

⁴²⁹ "Statement of ICC Prosecutor Karim A.A. Khan KC: Applications for Arrest Warrants in the Situation in the State of Palestine | International Criminal Court," accessed July 6, 2024, <https://www.icc-cpi.int/news/statement-icc-prosecutor-karim-aa-khan-kc-applications-arrest-warrants-situation-state>.

ICC has established that the perpetrator must have intentionally murdered one or more individuals in order to be charged with the war crime of murder. This intent can be demonstrated if the individual either acted knowingly with deliberate intent or failed to act in a manner that would lead to death, with the knowledge that such an outcome would occur in the normal course of events.⁴³⁰ The perpetrator must have also been cognizant of the factual circumstances that determined the victims' status as protected persons under international law.⁴³¹ The Rome Statute's *mens rea* requirements pose substantial obstacles to the prosecution of individuals for offenses involving AWS. The complexity of attributing criminal responsibility in cases where autonomous systems operate with minimal human intervention is underscored by the necessity of proving intent and knowledge, as defined by the statute. This necessitates a potential reevaluation and refinement of ICL to address the distinctive challenges presented by the emerging military or the retention of human intent and human agency in lethal decision making.

5.3 Product Liability and Legal Challenges for AWS

Implementing product liability for AWS could be a vital means of ensuring accountability and improving the safety and dependability of these systems. By imposing liability on technologists, such as developers, roboticists, programmers, engineers, and manufacturers, for flaws and carelessness, there would be a powerful motivation to uphold rigorous standards in the design, manufacturing, and implementation of AWS.⁴³² This has the potential to enhance testing,

⁴³⁰ Iryna Marchuk, "The Concept of Crime in International Criminal Law," in *The Fundamental Concept of Crime in International Criminal Law: A Comparative Law Analysis*, ed. Iryna Marchuk (Berlin, Heidelberg: Springer, 2014), 69–114, https://doi.org/10.1007/978-3-642-28246-1_4.

⁴³¹ M. Cherif Bassiouni, "The Subjects of International Criminal Law: Ratione Personae" (Brill, 2014), https://doi.org/10.1163/9789004231696_003.

⁴³² Daniele Amoroso and Benedetta Giordano, "Who Is to Blame for Autonomous Weapons Systems' Misdoings?," in *Use and Misuse of New Technologies: Contemporary Challenges in International and European Law*, ed. Elena Carpanelli and Nicole Lazzerini (Cham: Springer International Publishing, 2019), 211–32, https://doi.org/10.1007/978-3-030-05648-3_11.

improve quality control, and conduct comprehensive risk assessments, ultimately leading to a safer AWS.

In nations such as the United States and Germany, customers possess the legal entitlement to initiate civil litigation against businesses for any injury resulting from products they have produced or sold. Product liability lawsuits generally arise from many types of carelessness, such as manufacturing faults, design flaws, failure to exercise sufficient care or prevent foreseeable dangers, and failing to offer adequate warnings or instructions.⁴³³ Expanding this paradigm to AWS would entail imposing strict requirements on technologists, guaranteeing that all aspects of the AWS platform are thoroughly examined for potential risks and hazards, from the initial design to the final deployment.

Enforcing product responsibility for AWS may incentivize technologists to embrace rigorous safety measures and conduct thorough testing to minimize any risks linked to the autonomous features of these systems.⁴³⁴ One example is to implement stringent quality control procedures to identify and correct any flaws prior to deploying the AWS in the field. In addition, it may be necessary to enforce comprehensive risk assessments, which would oblige technologists to anticipate and mitigate potential situations of misuse, therefore diminishing the probability of inadvertent or deliberate harm.⁴³⁵

Moreover, product liability may result in the creation of enhanced training programs for individuals responsible for operating and maintaining AWS. This would ensure that they possess comprehensive awareness of the systems' capabilities and limitations. Enhanced awareness and

⁴³³ W. Kip Viscusi, "Does Product Liability Make Us Safer," *Regulation* 35 (2013 2012): 24.

⁴³⁴ Neha Jain, "Autonomous Weapons Systems: New Frameworks for Individual Responsibility," in *Autonomous Weapons Systems* (Cambridge University Press, 2016), 303–24, <https://doi.org/10.1017/CBO9781316597873.013>.

⁴³⁵ Caton, "Autonomous Weapon Systems."

education can further reduce the likelihood of misuse or malfunction.⁴³⁶ Nevertheless, in reality, private weapon makers are not held accountable for the actions of individuals or governments who use their weapons. This is especially true if manufacturers provide customers with a clear explanation of any potential defects or risks.⁴³⁷ Deterring companies from manufacturing and selling inherently dangerous weapons would be facilitated by the application of product liability to AWS, as they would be cognizant of the potential legal repercussions of any violation of IHL and IHRL or other relevant laws. The possibility of facing significant legal responsibility has the potential to hinder progress and growth in the AWS industry.

Victims of product liability can initiate suitable legal proceedings in civil courts. However, it is equally impractical to anticipate that civilian casualties of war would be able to initiate legal proceedings against a foreign producer, even if the legal regulations permit them to obtain monetary compensation. This is especially accurate because the civilian casualties of war are frequently destitute and geographically displaced.⁴³⁸ Moreover, the task of maneuvering through unfamiliar legal systems in foreign countries and the expenses linked to international legal proceedings present substantial obstacles to achieving justice for these victims.

Despite providing comprehensive risk disclosures, the intricate and frequently unforeseeable characteristics of AWS pose challenges for manufacturers to anticipate all possible instances of misuse or malfunction.⁴³⁹ The intricacy of the situation undermines the concept of holding manufacturers responsible under conventional product liability frameworks, which depend

⁴³⁶ Robert R. Hoffman et al., “Myths of Automation and Their Implications for Military Procurement,” *Bulletin of the Atomic Scientists* 74, no. 4 (July 4, 2018): 255–61, <https://doi.org/10.1080/00963402.2018.1486615>.

⁴³⁷ Walter David et al., “AI-Powered Lethal Autonomous Weapon Systems in Defence Transformation. Impact and Challenges,” in *Modelling and Simulation for Autonomous Systems*, ed. Jan Mazal, Adriano Fagiolini, and Petr Vasik (Cham: Springer International Publishing, 2020), 337–50, https://doi.org/10.1007/978-3-030-43890-6_27.

⁴³⁸ Pontillo Matthew, “Suing Gun Manufacturers: A Shot in the Dark,” *St. John’s Law Review* 74 (2000): 1167.

⁴³⁹ Cass, “Autonomous Weapons and Accountability.”

on simpler cause-and-effect connections.⁴⁴⁰ AWS is a highly advanced and intricate system created by numerous teams of technologists from various firms. These systems comprise several subsystems built by extensive networks that involve military and political entities, domestic and international enterprises, multinational corporations, and academic institutions.⁴⁴¹ Assigning individual accountability to the technicians involved in a fault in the AWS, whether intentional or unintentional, would probably be highly challenging. Pinpointing the primary culprit behind the actions that contribute to war crimes can sometimes present difficulties.⁴⁴²

The scope of product liability is necessarily restricted when considering the utilization of AWS. The main concern arises from the fact that the maker is not the actual perpetrator, but rather the individual or entity responsible for deploying the weapon.⁴⁴³ Victims of injuries caused by AWS are unlikely to file a lawsuit against the private maker. Instead, it is more typical to hold responsible the leaders or officials in the command and control structure who authorized the use of the weapon.⁴⁴⁴ By implementing product responsibility procedures, there is a chance that those accountable for war crimes could evade being held accountable. This is because the attention would be redirected onto the manufacturers rather than those who made the strategic and operational choices.

An illustrative instance is the recent application for the release of arrest warrants of Benjamin Netanyahu and Yoav Gallant. Based on the gathered and analyzed evidence, the Office

⁴⁴⁰ Marcus Schulzke, "Autonomous Weapons and Distributed Responsibility," *Philosophy & Technology* 26, no. 2 (June 1, 2013): 203–19, <https://doi.org/10.1007/s13347-012-0089-0>.

⁴⁴¹ Isaac Taylor, "Who Is Responsible for Killer Robots? Autonomous Weapons, Group Agency, and the Military-Industrial Complex," *Journal of Applied Philosophy* 38, no. 2 (2021): 320–34, <https://doi.org/10.1111/japp.12469>.

⁴⁴² Celia Wells, *Corporations and Criminal Responsibility* (Oxford University Press, 2001).

⁴⁴³ Danwood Mzikenge Chirwa, "The Doctrine of State Responsibility as a Potential Means of Holding Private Actors Accountable for Human Rights," *Melbourne Journal of International Law* 5 (2004): 1.

⁴⁴⁴ Allegra Carroll Carpenter, "The International Criminal Court and the Crime of Aggression," *Nordic Journal of International Law* 64 (1995): 223.

of the Prosecutor has sufficient justification to believe that Benjamin Netanyahu, the Prime Minister of Israel, and Yoav Gallant, the Minister of Defense of Israel, are criminally accountable for war crimes and crimes against humanity committed in the State of Palestine (specifically in the Gaza strip) starting from October 8, 2023.⁴⁴⁵ This case illustrates the responsibility of top-ranking officials, rather than weapon manufacturers, for the deployment and utilization of weapons that lead to these violations. The international legal system ensures that the individuals responsible for using AWS and making strategic decisions are held accountable for their actions and brought to justice.⁴⁴⁶ If product liability were the main means of addressing suffering caused by AWS, it might enable individuals such as Netanyahu and Gallant to avoid accountability, thereby undercutting the quest for justice for victims of war crimes.

5.4 Forms of Participation for Individual Criminal Responsibility in the Context of Autonomous Weapons Systems (AWS)

The Rome Statute's Article 25 distinguishes between a variety of modes of participation that may amount to an individual's criminal liability.⁴⁴⁷ It is essential for the Court to comprehend these documents in order to determine the most suitable sentences. These distinctions are particularly relevant in the context of AWS, as they aid in the determination of the appropriate level of responsibility for situations in which autonomous systems are involved in the perpetration of crimes.⁴⁴⁸

⁴⁴⁵ "Statement of ICC Prosecutor Karim A.A. Khan KC."

⁴⁴⁶ Chirwa, "The Doctrine of State Responsibility as a Potential Means of Holding Private Actors Accountable for Human Rights."

⁴⁴⁷ "Rome Statute of the International Criminal Court."

⁴⁴⁸ Jain, "Autonomous Weapons Systems."

The tangible or material criminal acts are the immediate responsibility of a direct perpetrator. In the context of AWS, the direct perpetrator is the an individual who actively participates in the commission of a crime by programming, deploying, or operating the autonomous system. For example, a programmer could be directly responsible for the war crimes that occur when deliberately programming an AWS to specifically target civilians.⁴⁴⁹ The individual's direct involvement indicates that they had the intention and understanding to carry out the unlawful conduct using the AWS, as outlined in Article 30 of the Rome Statute.⁴⁵⁰

A co-perpetrator is an individual who collaboratively engages in criminal activity with another person, thereby sharing equal authority over the offense. In situations involving AWS, co-perpetration may occur when military commanders and engineers work together to create and use AWS for illegal activities.⁴⁵¹ The coordinated actions of the parties can be used to infer the presence of a shared plan or agreement to use AWS for criminal purposes.⁴⁵² Leaders and organizers who do not physically commit the criminal acts but contribute essential duties may also be considered co-perpetrators. This encompasses individuals who are aware that the AWS systems will be employed to commit international offenses and who plan, coordinate, and supervise the deployment of the systems.⁴⁵³

Indirect perpetration is the act of utilizing another individual to perpetrate a crime, even if that individual is not criminally responsible. In the context of AWS, this could occur if a

⁴⁴⁹ Marta Bo, "Are Programmers In or 'Out of' Control? The Individual Criminal Responsibility of Programmers of Autonomous Weapons and Self-Driving Cars," SSRN Scholarly Paper (Rochester, NY, July 1, 2022), <https://papers.ssrn.com/abstract=4159762>.

⁴⁵⁰ Amoroso and Giordano, "Who Is to Blame for Autonomous Weapons Systems' Misdoings?"

⁴⁵¹ Lachezar D. Yanev, *Theories of Co-Perpetration in International Criminal Law* (BRILL, 2018).

⁴⁵² Taylor, "Who Is Responsible for Killer Robots?"

⁴⁵³ Johannes Himmelreich, "Responsibility for Killer Robots," *Ethical Theory and Moral Practice* 22, no. 3 (June 1, 2019): 731–47, <https://doi.org/10.1007/s10677-019-10007-9>.

commander instructs the use of an AWS with the knowledge that it will act in an unlawful manner.⁴⁵⁴ The *mens rea* requirements outlined in Article 30 of the Rome Statute must be satisfied by the principal, who must also exercise control over the crime.⁴⁵⁵ This form of liability is essential in situations where AWS operate autonomously, but their deployment and utilization are regulated by human commanders.⁴⁵⁶ This implies that commanders who indirectly supervise AWS operations through automated systems or subordinates may be held accountable if they were aware of or should have been aware of the unlawful use of these systems.

Support is provided by an aider or abettor to facilitate the commission of a crime with the intention of enabling it. This could entail technicians or developers who maintain and enhance the systems with knowledge of their intended illegal use for AWS.⁴⁵⁷ The aider and abettor's conduct necessitate the demonstration of specific intent to facilitate the crime, whereas the principal crime necessitates only general intent.⁴⁵⁸ This emphasizes the necessity of identifying and prosecuting individuals who provide technical or logistical support for AWS that is utilized in the commission of crimes, thereby ensuring that the entire chain of command and support is held accountable.

Individuals who collude in the commission of a crime by a group with a common goal are subject to this form of liability. This could encompass a team of military personnel and developers

⁴⁵⁴ Yordan Gunawan et al., "Command Responsibility of Autonomous Weapons under International Humanitarian Law," *Cogent Social Sciences* 8, no. 1 (December 31, 2022): 2139906, <https://doi.org/10.1080/23311886.2022.2139906>.

⁴⁵⁵ "Rome Statute of the International Criminal Court."

⁴⁵⁶ Peter Margulies, "Chapter 13: Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts," 2017, 13, <https://www.elgaronline.com/edcollchap/edcoll/9781784716981/9781784716981.00024.xml>.

⁴⁵⁷ Oona A. Hathaway et al., "Aiding and Abetting in International Criminal Law," *Cornell Law Review* 104 (2019 2018): 1593.

⁴⁵⁸ Stefano Manacorda and Chantal Meloni, "Indirect Perpetration versus Joint Criminal Enterprise: Concurring Approaches in the Practice of International Criminal Law?," *Journal of International Criminal Justice* 9, no. 1 (March 1, 2011): 159–78, <https://doi.org/10.1093/jicj/mqq074>.

collaborating to deploy AWS in violation of international laws in the context of AWS.⁴⁵⁹ In order for the contribution to be considered valid, it must be significant and made with full awareness of the group's purpose to carry out the illegal act. This type of engagement highlights the shared responsibility of groups that organize and carry out operations utilizing AWS, emphasizing the need for thorough legal frameworks that define the obligations of all parties involved.⁴⁶⁰

Military and civilian superiors are held accountable for the offenses committed by subordinates under their control through the concept of command responsibility.⁴⁶¹ For AWS, this implies that military commanders who authorized or failed to avert the unlawful utilization of autonomous systems may be held accountable. To prevent or suppress the commission of offenses by AWS, commanders must maintain viable control over their subordinates and take all necessary measures.⁴⁶² This encompasses the timely resolution and rectification of any misuse of AWS in compliance with IHL. Now, different actors in the AWS command and control will be evaluated according to the principles of ICL.

5.4.1 Responsibility of Technologist for Proscribed Acts Committed by AWS

This thesis will use the term technologist to encompass developers, roboticists, programmers, engineers, and manufacturers. These individuals define the behavior of an Autonomous Weapon System (AWS), including the general profile of the target. However, they do not activate the AWS on the battlefield. According to this definition, technologists cannot be

⁴⁵⁹ Miles Jackson, "The Attribution of Responsibility and Modes of Liability in International Criminal Law," *Leiden Journal of International Law* 29, no. 3 (September 2016): 879–95, <https://doi.org/10.1017/S0922156516000352>.

⁴⁶⁰ Schulzke, "Autonomous Weapons and Distributed Responsibility."

⁴⁶¹ Vivek Sehrawat, "Autonomous Weapon System and Command Responsibility," *Florida Journal of International Law* 31 (2020 2019): 315.

⁴⁶² Marta Bo, "Autonomous Weapons and the Responsibility Gap in Light of the Mens Rea of the War Crime of Attacking Civilians in the ICC Statute," *Journal of International Criminal Justice* 19, no. 2 (May 1, 2021): 275–99, <https://doi.org/10.1093/jicj/mqab005>.

considered direct perpetrators, as they do not physically carry out the crime themselves.⁴⁶³ Their role is limited to the preparation of a proscribed physical act. A significant challenge is the high level of sophistication and complexity of AWS, which are frequently developed by numerous teams of technologists from various organizations.⁴⁶⁴ Currently, sophisticated weapon systems are composed of hundreds or thousands of subsystems that are assembled by extensive networks that include academic institutions, domestic, foreign, and multinational corporations, as well as military and governmental entities.⁴⁶⁵ It would be exceedingly challenging to assign individual culpability to the participating technologists for a flaw in the AWS, regardless of whether it was intentional or unintentional. Furthermore, it can be exceedingly difficult to identify the individual who is most accountable for the behaviors that result in war crimes.⁴⁶⁶ It is nearly impossible for the technologist to restrict the potential uses or harms that AWS may cause due to the environment in which they are deployed and the context in which they are used. Identifying the individual most responsible for behaviors that lead to war crimes is also challenging, especially considering the unpredictable environment and context in which AWS operate. Discussed below are different ways, a technologist responsibility can be contextualized in AWS

Manufacturers/technologist may be held accountable under domestic law if they produce AWS that are intended to contravene IHRL, IHL, or other pertinent laws.⁴⁶⁷ For example, a

⁴⁶³ Yordan Gunawan, Mohammad Haris Aulawi, and Andi Rizal Ramadhan, "Command Responsibility of Autonomous Weapons Systems under International Humanitarian Law," *Jurnal Cita Hukum* 7, no. 3 (December 18, 2019): 351–68, <https://doi.org/10.15408/jch.v7i3.11725>.

⁴⁶⁴ Eliav Liebllich and Eyal Benvenisti, "The Obligation to Exercise Discretion in Warfare: Why Autonomous Weapon Systems Are Unlawful," SSRN Scholarly Paper (Rochester, NY, August 13, 2014), <https://doi.org/10.2139/ssrn.2479808>.

⁴⁶⁵ Taylor, "Who Is Responsible for Killer Robots?"

⁴⁶⁶ Patrick Taylor Smith, "Just Research into Killer Robots," *Ethics and Information Technology* 21, no. 4 (December 1, 2019): 281–93, <https://doi.org/10.1007/s10676-018-9472-6>.

⁴⁶⁷ Armand de Mestral and Evan Fox-Decent, "Rethinking the Relationship between International and Domestic Law," *McGill Law Journal* 53 (2008): 573.

manufacturer may be held accountable if they intentionally create an AWS that is unable to differentiate in civilians and combatants or causes unnecessarily severe suffering.⁴⁶⁸ However, most AWS components have dual-use applications, making it challenging to mandate that states impose stringent regulations on their design. AWS are not currently illegal by treaty law or customary international law. Even if they become illegal in the future, manufacturers would only be criminally accountable if penal sanctions accompany the ban.⁴⁶⁹ Manufacturers are not typically punished for how their products are used, especially if they disclose potential risks upfront.⁴⁷⁰ Applying product liability to AWS would likely deter companies from producing such inherently dangerous weapons. When international treaties prohibit the sale and transfer of certain weapons, states must ensure compliance by natural and legal persons.⁴⁷¹ Manufacturers acting inconsistently with international obligations, such as arms embargos, could face domestic sanctions, including criminal liability, reparations, termination of operation licenses, or company deregistration.⁴⁷² For example, Turkey's deployment of STM Kargu-2 lethal autonomous weapon systems to Libya violated UN Security Council Resolution 1970 (2011), highlighting potential sanctions against the manufacturer.⁴⁷³

In the event that manufacturers intentionally, program AWS to perpetrate crimes, they may be regarded as indirect perpetrators. Nevertheless, substantiating this assertion is a difficult task

⁴⁶⁸ Michelle Lesh, "Accountability for Targeted Killing Operations: International Humanitarian Law, International Human Rights Law and the Relevance of the Principle of Proportionality," in *Accountability for Violations of International Humanitarian Law* (Routledge, 2015).

⁴⁶⁹ Asaro, "On Banning Autonomous Weapon Systems."

⁴⁷⁰ Cass, "Autonomous Weapons and Accountability."

⁴⁷¹ Jordan J. Paust, "Controlling Prohibited Weapons and the Illegal Use of Permitted Weapons," *McGill Law Journal* 28 (1983 1982): 608.

⁴⁷² Gary Clyde Hufbauer and Barbara Oegg, "From Blunt Weapons to Smart Bombs: The Evolution of US Sanctions. | Global Dialogue | EBSCOhost," July 1, 2000, <https://openurl.ebsco.com/contentitem/gcd:56659967?sid=ebsco:plink:crawler&id=ebsco:gcd:56659967>.

⁴⁷³ Hitoshi Nasu, "The Kargu-2 Autonomous Attack Drone: Legal & Ethical Dimensions," Lieber Institute West Point, June 10, 2021, <https://lieber.westpoint.edu/kargu-2-autonomous-attack-drone-legal-ethical/>.

due to the autonomous nature of AWS, which may not behave as intended in every situation.⁴⁷⁴ For a manufacturer to be held accountable as an indirect perpetrator, they must have control over the offense through another individual, such as the deployer. Nevertheless, the attribution of responsibility is frequently complicated by the deployer's limited control over AWS actions once they are activated.⁴⁷⁵

AWS manufacturers/technologist are unable to foresee the specific outcomes of AWS deployments, which is a challenge to satisfy the knowledge element required by Article 30 of the Rome Statute (virtual certainty that actions will bring about the consequence).⁴⁷⁶ Consequently, it is unconvincing to hold manufacturers accountable as indirect perpetrators for the offenses committed by AWS.

Manufacturers/technologist must also be considered as aiders and abettors if they facilitate the commission of a crime with the intention of enabling it. This necessitates the knowledge and intent that their support would likely result in illicit activity.⁴⁷⁷ Nevertheless, the autonomous decision-making capabilities of AWS present a challenge in substantiating this connection. Manufacturers typically do not have the necessary awareness of the specific criminal outcomes that might result from their programming.⁴⁷⁸ Manufacturers could be liable if they contribute to a group with a common criminal purpose, such as deploying AWS to commit war crimes.⁴⁷⁹

⁴⁷⁴ Heather M. Roff and David Danks, "'Trust but Verify': The Difficulty of Trusting Autonomous Weapons Systems," *Journal of Military Ethics* 17, no. 1 (January 2, 2018): 2–20, <https://doi.org/10.1080/15027570.2018.1481907>.

⁴⁷⁵ Hin-Yan Liu, "From the Autonomy Framework towards Networks and Systems Approaches for 'Autonomous' Weapons Systems," June 9, 2019, <https://doi.org/10.1163/18781527-01001010>.

⁴⁷⁶ "Rome Statute of the International Criminal Court."

⁴⁷⁷ Hathaway et al., "Aiding and Abetting in International Criminal Law."

⁴⁷⁸ Nehal Bhuta, Susanne Beck, and Robin Geiß, "Present Futures: Concluding Reflections and Open Questions on Autonomous Weapons Systems," in *Autonomous Weapons Systems: Law, Ethics, Policy* (Cambridge University Press, 2016), 347–83, <https://doi.org/10.1017/CBO9781316597873.015>.

⁴⁷⁹ Kenneth Anderson, "The Rise of International Criminal Law: Intended and Unintended Consequences," *European Journal of International Law* 20, no. 2 (April 1, 2009): 331–58, <https://doi.org/10.1093/ejil/chp030>.

Nevertheless, this necessitates a substantial contribution to the offense and an understanding of the group's intentions. Proving this liability is challenging because of the self-operating nature of AWS and the absence of a direct connection between programming and specific actions.

Military and civilian superiors who neglect to prevent or penalize crimes committed by their subordinates are subject to the concept of command responsibility as defined in Article 28 of the Rome Statute.⁴⁸⁰ For AWS, this means that commanders authorizing or failing to prevent the unlawful use of autonomous systems could be held responsible.⁴⁸¹ Nevertheless, programmers and manufacturers generally lack the material ability or power to prevent or repress AWS offenses, nor do they have effective control over AWS operations due to temporal and cognitive limitations. It is difficult to hold manufacturers, developers, roboticists, and programmers criminally liable under current ICL frameworks due to the complex chain of responsibility involved in the development and deployment of AWS and the autonomous character of the platform. This complexity requires a reassessment of the current legal principles or placement of responsibility on state or on the decision-making individual in the leadership or command and control, although any kind of legal liability is contingent upon the viability of tangible human control and human agency in these systems.

5.4.2 Deployer/Operator Responsibility in the Use of AWS

Although other authors may employ the term "operator," which is equivalent to "deployer" in the context of AWS, the term "deployer" will be employed in this research. The AWS is activated on the battlefield by the deployer, but they might not be under their control. Once the AWS is

⁴⁸⁰ "Rome Statute of the International Criminal Court."

⁴⁸¹ Gunawan, Aulawi, and Ramadhan, "Command Responsibility of Autonomous Weapons Systems under International Humanitarian Law."

activated, it is impossible for a human to override the AWS actions, as the actions of the AWS are unforeseen to the deployer.⁴⁸²

The physical or material illicit acts are immediately the responsibility of the direct perpetrators. Consequently, the AWS deployer cannot be considered a primary perpetrator. It may be challenging, if not impossible, to establish the *mens rea* (mental state) of the deployer, as the deployer is either unaware that the consequence will occur or does not intend to cause it in the normal course of events, or under an obligation by the higher authorities to carry out a certain operation.⁴⁸³ The deployer is also unaware of the existence of a circumstance or the likelihood of a consequence occurring under typical circumstances, as mandated by Article 30(2)(b) and Article 30(3) of the Rome Statute.⁴⁸⁴

The deployer cannot be perceived as an indirect perpetrator either. According to the Rome Statute, indirect perpetration necessitates the commission of a crime "through another person." AWS cannot be regarded as an individual. Consequently, the deployer does not perpetrate the crime through another individual if the AWS commits a crime.⁴⁸⁵ Current law does not permit an analogous application of alternative 3 of Article 25(3)(a). It is also difficult to establish the material elements for war crimes, such as intentionally directing an attack against civilians, because the deployer only activates the system and does not have control over it. The deployer lacks the

⁴⁸² Ahmad Khalil and S. Anandha KRISHNA Raj, "DEPLOYMENT OF AUTONOMOUS WEAPON SYSTEMS IN THE WARFARE: ADDRESSING ACCOUNTABILITY GAPS AND REFORMULATING INTERNATIONAL CRIMINAL LAW," *Balkan Social Science Review* 23, no. 23 (June 22, 2024): 261–85.

⁴⁸³ Valeria Chiappini Koscina, "Prosecuting Killer Robots: Allocating Criminal Responsibilities for Grave Breaches of International Humanitarian Law Committed by Lethal Autonomous Weapon Systems," in *Law and Artificial Intelligence: Regulating AI and Applying AI in Legal Practice*, ed. Bart Custers and Eduard Fosch-Villaronga (The Hague: T.M.C. Asser Press, 2022), 149–67, https://doi.org/10.1007/978-94-6265-523-2_8.

⁴⁸⁴ "Rome Statute of the International Criminal Court."

⁴⁸⁵ Suhr, "Interpretation of the Rome Statute."

requisite awareness or intent to be held culpable as an indirect perpetrator.⁴⁸⁶ The case of Sergey Viktorovich Dubinsky, who was charged by Dutch prosecutors for his role in the downing of Malaysia Airlines Flight MH17, illustrates the complexities and challenges of attributing indirect perpetration or command responsibility in situations involving sophisticated technology. Dubinsky, although not physically present at the launch site, was accused of coordinating the transport and deployment of the Buk missile system that shot down the civilian airliner, resulting in the deaths of all 298 passengers and crew on board. This case is pertinent because it highlights the prosecution's focus on Dubinsky's active participation and significant control over the deployment and operation of the missile system.⁴⁸⁷ In contrast, the deployer of AWS might lack the necessary direct control and intent to be similarly held accountable under current legal frameworks such as the Rome Statute, where the deployer merely activates the system without exercising control over its operations. This distinction underscores the difficulty in establishing the material elements required for war crimes, such as intent and direct control, when dealing with autonomous systems.

Under Article 25(3)(c) of the Rome Statute, the deployer can also be regarded as an aider and abettor. An aider and abettor must act with the intention of facilitating the crime, be aware that they are carrying out their actions, and have knowledge of their actions.^{488,489} The deployer must also know that the crime will happen under normal circumstances or "mean to cause" the commission of the crime. The deployer of an AWS is incognizant of the fundamental elements of

⁴⁸⁶ Eugene Holstein, "Accountability for Crimes Committed by Autonomous Weapon Systems under International Criminal Law," 2022, <http://dspace.lu.lv/dspace/handle/7/59370>.

⁴⁸⁷ Titus Corlăţean, "International Law and Fundamental Human Rights - Ensuring Accountability for the Downing of Flight MH 17," in *Proceedings of the 16th International RAIS Conference on Social Sciences and Humanities* (Scientia Moralitas Research Institute, 0), 9–17, <https://www.ceeol.com/search/chapter-detail?id=884536>.

⁴⁸⁸ "Rome Statute of the International Criminal Court."

⁴⁸⁹ Hathaway et al., "Aiding and Abetting in International Criminal Law."

the offense as a result due to the disconnect between the programming or command data and the specific actions performed by the AWS. As a result, it is unlikely that the deployer can be held responsible as an accomplice.

If there is evidence of a shared illegal objective between the manufacturer and the deployer, deployers may be considered contributors to a group acting with a common purpose. The deployer's substantial contribution would be the activation of the AWS, which subsequently selects and engages targets. This contribution has an impact on the crime's occurrence and/or the manner in which it was committed.⁴⁹⁰ Nevertheless, a substantial issue exists: in order for this form of liability to be justified, there should be explicit evidence of the illicit intent of the deployer, which is hard to establish in the case of Autonomous weapons, because their complex operations give significant room to perpetrators to plead non-guilty. The self-operating nature of these systems can obscure the chain of command and decision-making processes, making it difficult to attribute clear intent and culpability to the deployer.

Marauhn posits that the deployer is on the brink of achieving "effective command and control" and, as a result, should be held accountable under Article 28 of the Rome Statute.⁴⁹¹ Nevertheless, the deployer lacks the practical capacity or authority to prevent and address the commission of offenses. The AWS is activated by the deployer solely in accordance with the instructions of a commander or superior regarding the location and time of deployment.⁴⁹² The deployer is not obligated to halt ongoing criminal activities or to penalize forces after they have

⁴⁹⁰ Gunawan, Aulawi, and Ramadhan, "Command Responsibility of Autonomous Weapons Systems under International Humanitarian Law."

⁴⁹¹ Thilo Marauhn, "An Analysis of the Potential Impact of Lethal Autonomous Weapons Systems on Responsibility and Accountability for Violations of International Law," n.d.

⁴⁹² Gunawan, Aulawi, and Ramadhan, "Command Responsibility of Autonomous Weapons Systems under International Humanitarian Law."

committed crimes. Additionally, they lack the authority to refer matters to the appropriate authorities. Consequently, the deployer is unlikely to be held accountable under Article 28 as a result of the absence of effective command and control.⁴⁹³

In summary, the deployer of AWS is critical in the activation of these systems; however, their liability under International Criminal Law is restricted. It is challenging to hold deployers accountable as direct or indirect perpetrators, aiders and abettors, or contributors to a group with a common purpose due to the inability to control the AWS once it is activated and the challenges in proving intent and knowledge. Instead, accountability mechanisms that are effective must concentrate on the individuals who are responsible for designing, programming, and deploying AWS.

5.4.3 Command/Superior Responsibility in the Use of AWS

Commanders who take imprudent decisions regarding the use of AWS can also be held accountable under international criminal law. The deployer is instructed by commanders to activate the AWS, which includes the location and time of deployment. The hierarchical command structures and the degree of control that military leaders have over AWS are called into question by this responsibility.⁴⁹⁴ Identification of the forces or subordinates under the commander's supervision who committed the war crimes is a critical aspect of command responsibility. The crimes may be perceived as being committed by AWS's subordinates; however, AWS is not subject to criminal penalties.⁴⁹⁵ A treaty should be interpreted in good faith, considering the ordinary meaning of its terms within their context and in light of its object and purpose, as stated in Article

⁴⁹³ "Rome Statute of the International Criminal Court."

⁴⁹⁴ Margulies, "Chapter 13."

⁴⁹⁵ James Kraska, "Command Accountability for AI Weapon Systems in the Law of Armed Conflict," *International Law Studies* 97, no. 1 (January 28, 2021), <https://digital-commons.usnwc.edu/ils/vol97/iss1/22>.

31(1) of the Vienna Convention on the Law of Treaties (VCLT).⁴⁹⁶ 'Force' according to the Cambridge Dictionary is defined as a military group that is organized and trained in a military context.⁴⁹⁷ Article 28 of the Rome Statute characterizes subordinates as natural persons, despite the fact that AWS may be a component of a structured and trained military unit.⁴⁹⁸ Consequently, AWS do not classify as forces that are under the commander's effective command, control, or authority as per the Article 28(a) of the Rome Statute.

The principle of rigorous interpretation, as outlined in Article 22(2) of the Rome Statute, which prohibits the extension of definitions by analogy, may not be upheld if an analogy is used to include AWS under the term "forces" in Article 28(a). Consequently, AWS are not considered forces under Article 28(a) nor are they entitled to be subordinates under Article 28(b), which also pertains to natural persons.⁴⁹⁹

A significant obstacle in holding commanders liable for the actions of AWS lies in determining their awareness of potential or ongoing war crimes as stipulated by Article 28(a)(i) and (b)(i) of the Rome Statute.⁵⁰⁰ Despite the independent functioning of AWS, which reacts to stimuli through pre-programmed sensors, commanders can still be held responsible if they are found negligent in their oversight duties. Commanders must possess constructive knowledge, meaning they should have known about their subordinates' illicit behavior or potential for such behavior. This includes general information that should prompt further inquiry or investigation. To meet this criterion, it must be demonstrated that commanders were aware of past illicit actions or

⁴⁹⁶ "Vienna Convention on the Law of Treaties (1969)," n.d.

⁴⁹⁷ "FORCE | English Meaning - Cambridge Dictionary," accessed July 6, 2024, <https://dictionary.cambridge.org/dictionary/english/force>.

⁴⁹⁸ "Rome Statute of the International Criminal Court."

⁴⁹⁹ Suhr, "Interpretation of the Rome Statute."

⁵⁰⁰ "Rome Statute of the International Criminal Court."

the potential for such actions by AWS of the same make, model, or programming. The complexity and unpredictability of AWS actions do not absolve commanders from responsibility; instead, these factors underscore the necessity for rigorous oversight and preventive measures.⁵⁰¹

According to Article 28(a)(ii) and (b)(iii) of the Rome Statute, commanders are obligated to implement all reasonable and necessary steps within their capability to prevent offenses, manage their occurrence, or forward cases to appropriate authorities for investigation and prosecution. This includes thorough testing of AWS before deployment, verifying the system's ability to distinguish between military targets and civilian objects, and ensuring commitment to the principles of proportionality and distinction.

It is also necessary for commanders to assess the conditions under which the AWS will be deployed to ensure that the system functions properly. Commanders are obligated to prevent the continuation of criminal activities and, in theory, to penalize AWS following the incident.⁵⁰² Nevertheless, AWS cannot be penalized in the same way as natural persons, and the destruction of AWS does not serve the essential functions of retribution and general deterrence that are essential for international crimes. Consequently, commanders are limited to the prevention of ongoing criminal activities and are unable to penalize AWS in the conventional sense.

In the context of AWS, effective control encompasses the practical capacity or authority to prevent and address offenses, which involves the ability to stop or suppress crimes or refer the matter to competent authorities. Commanders likely possess the material capacity to prevent offenses by either refraining from utilizing AWS or ensuring that the capabilities of AWS are

⁵⁰¹ Chantal Meloni, "Command Responsibility: Mode of Liability for the Crimes of Subordinates or Separate Offence of the Superior?," *Journal of International Criminal Justice* 5, no. 3 (July 1, 2007): 619–37, <https://doi.org/10.1093/jicj/mqm029>.

⁵⁰² Miller, "Command Responsibility."

thoroughly tested and reviewed. In spite of possessing theoretical authority over AWS, the non-human nature of AWS restricts the practical application of punishment and accountability.⁵⁰³

The conviction of Jean-Pierre Bemba by ICC is a germane case that illustrates command responsibility. Bemba, a military commander, was held accountable for the crimes committed by his soldiers in the Central African Republic. He was found guilty on the grounds that he was aware of the offenses, or should have been aware of them, and did not take the requisite and appropriate steps to prevent or suppress them, or to report the matter to the appropriate authorities.⁵⁰⁴ This case highlights the importance of leadership responsibility in ensuring that war crimes are accounted for, even if the crimes were carried out by subordinates under the commander's control. To summarize, command responsibility for AWS deployment entails complex deliberations regarding control, awareness, and precautionary measures. To prevent AWS from engaging in war crimes and to assure its compliance with international legal standards, commanders must establish and enforce strict oversight, testing, and accountability processes.

5.5 Legal Elements of AWS under International Criminal Law (ICL)

5.5.1 The First Premise: Human Accountability and intent is fundamental to accountability in ICL

According to the prevailing viewpoint among international attorneys, it is widely believed that only individuals, in their capacity as human beings, may be legally accountable for any actions that qualify as international crimes involving AWS and AI.⁵⁰⁵ This position is evident in the

⁵⁰³ Chiappini Koscina, "Prosecuting Killer Robots."

⁵⁰⁴ Clay Anthony, "In the Case of the Prosecutor v. Jean-Pierre Bemba Gombo: Cementing Sexual Violence and Command Responsibility within International Criminal Law," *Tulane Journal of International and Comparative Law* 25 (2017 2016): 403.

⁵⁰⁵ Ilse Verdiesen, "Agency Perception and Moral Values Related to Autonomous Weapons" (Brill, 2021), https://doi.org/10.1163/9789004449084_002.

Principles established by the Group of Governmental Experts on Emerging Technologies in the Field of Lethal Autonomous Weapons Systems, which were officially endorsed in 2019.⁵⁰⁶ the importance of a responsible hierarchy of human command and control is emphasized by the fourth principle.⁵⁰⁷ Also, evidenced in the force and subordinates argument in the previous topic. This notion implies that AWS should be considered instruments rather than independent entities with legal liability for criminal activities.⁵⁰⁸ Consequently, discussions concerning criminal liability are centered on the individuals who develop, implement, and deploy AWS, which are analogous to other weapons or even animals that are employed for military purposes.

Philosophical discussions of moral responsibility emphasize that individuals can be held responsible by virtue of their capacity to comprehend and regulate their behavior, in accordance with prevailing moral norms in society.⁵⁰⁹ In criminal law, persons are held responsible for their intentions (*mens rea*) and actions (*actus reus*) that are under their control, emphasizing the need for human agency in causing events.⁵¹⁰ Nevertheless, AWS, with its capacity for independent decision-making, presents distinctive obstacles to this paradigm.

The level of unpredictability inherent in AWS is markedly distinct from the unpredictability typically caused by external variables or weapon malfunctions. AWS, or autonomous systems, are specifically engineered to independently accomplish objectives established by humans. Intricate

⁵⁰⁶ Caitlin Mitchell, "When Laws Govern Laws: A Review of the 2018 Discussions of the Group of Governmental Experts on the Implementation and Regulation of Lethal Autonomous Weapons Systems," *Santa Clara High Technology Law Journal* 36 (2020 2019): 407.

⁵⁰⁷ Arthur Thomas O'Reilly, "Command Responsibility: A Call to Realign Doctrine with Principles," *American University International Law Review* 20 (2005 2004): 71.

⁵⁰⁸ Alex Leveringhaus, "Human Agency and Artificial Agency in War," in *Ethics and Autonomous Weapons*, ed. Alex Leveringhaus (London: Palgrave Macmillan UK, 2016), 89–117, https://doi.org/10.1057/978-1-137-52361-7_4.

⁵⁰⁹ Hendrik Huelss, "Norms Are What Machines Make of Them: Autonomous Weapons Systems and the Normative Implications of Human-Machine Interactions," *International Political Sociology* 14, no. 2 (June 1, 2020): 111–28, <https://doi.org/10.1093/ips/olz023>.

⁵¹⁰ "Rome Statute of the International Criminal Court."

and incomprehensible principles are frequently incorporated into their decision-making procedures. Accountability for the outcomes of AWS actions is challenging to enforce on individuals due to the inherent unpredictability of these interactions, as the repercussions of these interactions are frequently beyond human comprehension.⁵¹¹ Furthermore, the task of identifying individuals for criminal prosecution is complicated by the dispersion of decision-making power among the numerous individuals involved in the designing, programming, and use of AWS.⁵¹²

The involvement of a multitude of individuals in the creation and implementation of AWS complicates the assignment of criminal responsibility to any individual for a specific decision. The system autonomously takes judgments based on loosely coded parameters set by humans, resulting in difficulties in comprehending and forecasting any mal-behavior by AWS. The inherent uncertainty of AWS's behavior complicates the determination of *mens rea*, making it challenging to show the defendant's intention or awareness of the possible harm produced by AWS.

ICL superior responsibility typically involves a link between two individuals. For the superior to be held accountable, the subordinate must either have already committed a crime or be on the verge of doing so.⁵¹³ However, this method is significantly impeded when the subordinate is an AWS. The inherent volatility of AWS in the execution of tasks presents obstacles in the establishment of a commander's knowledge or awareness of criminal activities conducted by the AWS. The capacity to designate responsibility to commanders for specific damages is less viable and significantly impeded by the lack of predictability in the actions of AWS, particularly when

⁵¹¹ John Williams, "Locating LAWS: Lethal Autonomous Weapons, Epistemic Space, and 'Meaningful Human' Control," *Journal of Global Security Studies* 6, no. 4 (August 11, 2021): ogab015, <https://doi.org/10.1093/jogss/ogab015>.

⁵¹² Schulzke, "Autonomous Weapons and Distributed Responsibility."

⁵¹³ Timothy Wu and Yong-Sung (Jonathan) Kang, "Criminal Liability for the Actions of Subordinates-The Doctrine of Command Responsibility and Its Analogues in United States Law," *Harvard International Law Journal* 38 (1997): 272.

there is no continuous pattern of behavior, the kind of pattern or behaviors that is inherent to human subordinates.

While the current legal framework may not be adequate to address the challenges posed by AI and AWS, there are potential modifications that should be taken into account within the existing framework of law. One approach is to adjust the existing intention standards to account for the inherent unpredictability of artificial intelligence. For instance, the implementation of a "wilful blindness" criterion or the authorization of *dolus eventualis* could be a viable solution to the unique obstacles presented by AWS, this can also debate the temporal, epistemic and cognitive limits to human control discussed in the introduction.⁵¹⁴ One possible approach would be to establish a distinct set of rules and regulations for artificial intelligence (AI) in context of armed conflict and law enforcement. This might be achieved by interpreting Rome Statute in cases where subordinates are not humans and integrating certain regulations which should attain the status of customary law.

An alternative course of action would be for the United Nations Security Council to officially approve a legally binding resolution, in accordance with Chapter VII of the United Nations Charter. This resolution would specifically designate the employment of AWS without human oversight as a menace to global peace and security. This resolution can aim to establish principles and regulations for assigning culpability in cases when AWS are implemented in contravention of these established criteria. Implementing such measures would guarantee that those responsible for the implementation of AWS are held liable within an adapted International Criminal Law (ICL) framework that takes into account the distinct attributes of Artificial Intelligence (AI) and AWS.

⁵¹⁴ Kristin M. Hagen, "Eyes Wide Shut: Induced Patent Infringement and the Willful Blindness Standard," *Marquette Intellectual Property Law Review* 17 (2013): 305.

Implementing these modifications presents substantial problems, such as the need to achieve consensus among governments and incorporate new norms into preexisting legal structures. Advancements in legal principles could be utilized to interpret current regulations in order to tackle difficulties associated to artificial intelligence, while revisions to global agreements such as the Rome Statute could offer a more organized method. The ultimate objective is to ensure that the legal framework can efficiently remedy the damage caused by AWS, while upholding accountability and protecting the interests safeguarded by ICL.

To summarize, the integration of AWS and AI poses intricate obstacles to the existing legal framework of ICL. However, there are significant opportunities for adjustment and modification. These actions encompass altering intention standards, establishing distinct frameworks for AI, and implementing enforceable global resolutions to guarantee responsibility for the damage created by AWS. This perspective contends that successful application of ICL to AWS is contingent upon human activity. It underscores the necessity of establishing rigorous legal standards and accountability mechanisms to oversee their utilization. This approach fortifies the fundamental principles of natural law theory by ensuring the preservation of justice and the protection of human dignity.

5.5.2 The Second Premise: Autonomous Weapon Systems (AWS) as 'Persons' Subject to Individual Criminal Responsibility

To address the accountability gap in the use of AWS, one radical approach is to contemplate the establishment of criminal or criminal-like responsibility for these AI-endowed entities themselves.⁵¹⁵ This method proposes that the behavior of autonomous systems be explicitly

⁵¹⁵ Argyro Karanasiou and Dimitris Pinotsis, "Towards a Legal Definition of Machine Intelligence: The Argument for Artificial Personhood in the Age of Deep Learning," in *Proceedings of the 16th Edition of the International*

attributed to the systems themselves, rather than solely to the humans who deploy or use them.⁵¹⁶ Proponents contend that AWS should be considered to possess a form of legal personhood similar to humans who perform the same operations if they accomplish a certain degree of autonomy and perform complex tasks related to their deployment.⁵¹⁷

The absence of a legal foundation is a persistent criticism of attributing criminal responsibility to AWS. Legal persons, which are generally understood to be human beings or entities explicitly conferred legal status by law, such as corporations, are subject to current laws. There is no precedent in international law for the recognition of machines or AI systems as legal entities.⁵¹⁸ The definition and treatment of legal personality in domestic legal systems are subject to variation; however, the fundamental principle is that legal personality is reserved for entities that are capable of assuming rights and responsibilities.⁵¹⁹

Criminal responsibility is traditionally reserved for entities that are capable of self-reflection, learning from errors, and comprehending their actions within a societal context from a philosophical perspective.⁵²⁰ These human attributes are not possessed by AI systems, including AWS. A fundamental principle of moral and legal accountability is challenged by the notion of holding AI criminally culpable. Despite the fact that AI systems are capable of simulating human

Conference on Artificial Intelligence and Law, ICAIL '17 (New York, NY, USA: Association for Computing Machinery, 2017), 119–28, <https://doi.org/10.1145/3086512.3086524>.

⁵¹⁶ Toscano, “Friend of Humans.”

⁵¹⁷ Lawrence B. Solum, “Legal Personhood for Artificial Intelligences,” in *Machine Ethics and Robot Ethics* (Routledge, 2017).

⁵¹⁸ Gerhard Wagner, “Robot, Inc.: Personhood for Autonomous Systems?,” *Fordham Law Review* 88 (2020 2019): 591.

⁵¹⁹ John-Stewart Gordon, “Artificial Moral and Legal Personhood,” *AI & SOCIETY* 36, no. 2 (June 1, 2021): 457–71, <https://doi.org/10.1007/s00146-020-01063-2>.

⁵²⁰ Lawrence A. Locke, “Personhood and Moral Responsibility,” *Law and Philosophy* 9 (1990): 39.

decision-making processes, they are devoid of the consciousness and moral awareness that are the foundation of human criminal responsibility.⁵²¹

The enforcement of criminal sanctions against a machine is a practical challenge, even if the law were to be amended to grant legal personhood to AWS. Non-sentient entities are not subject to the conventional objectives of punishment, including rehabilitation, retribution, and deterrence.⁵²² The concept of reprogramming a machine as a form of rehabilitation is devoid of the moral and corrective dimensions that are inherent in human punishment, as machines are unable to experience punishment in the same manner as humans.

The individuals who design, deploy, and supervise these systems should bear the primary responsibility for the actions of AWS.⁵²³ AWS's complexity and unpredictability do not relieve human operators and commanders of their responsibility to guarantee adherence to ICL and IHL. The necessity for rigorous supervision and control mechanisms to prevent unlawful actions by AWS is further emphasized by the imposition of accountability on humans.

Although there have been historical changes in the recognition of legal personhood, such as the transition from viewing slaves as property to recognizing their human rights, these changes were based on the recognition of intrinsic human qualities. The extension of legal personhood to AI systems results in the confluence of human moral and ethical considerations with artificial operational capabilities.⁵²⁴ In contrast to corporations, which are composed of human stakeholders

⁵²¹ Stephen J. Morse, "Criminal Responsibility and the Disappearing Person," *Cardozo Law Review* 28 (2007 2006): 2545.

⁵²² Monika Simmler and Nora Markwalder, "Guilty Robots? – Rethinking the Nature of Culpability and Legal Personhood in an Age of Artificial Intelligence," *Criminal Law Forum* 30, no. 1 (March 1, 2019): 1–31, <https://doi.org/10.1007/s10609-018-9360-0>.

⁵²³ Beard, "Autonomous Weapons and Human Responsibilities."

⁵²⁴ Pedro Miguel Freitas, Francisco Andrade, and Paulo Novais, "Criminal Liability of Autonomous Agents: From the Unthinkable to the Plausible," in *AI Approaches to the Complexity of Legal Systems*, ed. Pompeu Casanovas et al. (Berlin, Heidelberg: Springer, 2014), 145–56, https://doi.org/10.1007/978-3-662-45960-7_11.

and decision-makers, AWS operates on the basis of programmed algorithms that lack the ability to make moral judgments.⁵²⁵

A critical distinction is overlooked by the suggestion that AI systems could be held criminally responsible, similar to how Facebook was scrutinized for its role in disseminating hate speech in Myanmar.⁵²⁶ The misuse of the platform was ultimately the responsibility of human executives and decision-makers in the Facebook case. In the same vein, the human developers, administrators, and commanders who manage and deploy these systems should be accountable for AWS.

Despite the potential for an innovative solution to the accountability gap by attributing criminal responsibility to AWS as legal persons, this concept is beset by legal, philosophical, and practical obstacles. The main goal should be to ensure that individuals are accounted for the planning, implementation, and supervision of AWS, thus guaranteeing strict adherence to the principles of ICL and IHL. The intricacies of artificial intelligence (AI) and AWS require the development of legal frameworks and processes to ensure responsibility. Nevertheless, ascribing humanity and criminal liability to robots is both impractical and futile.

5.6 Concluding remarks

This chapter examined the intricacies of penal responsibility in the context of AWS and their intersection with ICL, IHL and IHRL. The primary discoveries underscore numerous

⁵²⁵ Robert van den Hoven van Genderen, “Do We Need New Legal Personhood in the Age of Robots and AI?,” in *Robotics, AI and the Future of Law*, ed. Marcelo Corrales, Mark Fenwick, and Nikolaus Forgó (Singapore: Springer, 2018), 15–55, https://doi.org/10.1007/978-981-13-2874-9_2.

⁵²⁶ Stein Tønnesson, Min Zaw Oo, and Ne Lynn Aung, “Pretending to Be States: The Use of Facebook by Armed Groups in Myanmar,” *Journal of Contemporary Asia* 52, no. 2 (March 15, 2022): 200–225, <https://doi.org/10.1080/00472336.2021.1905865>.

obstacles and essential modifications. The emergence of AWS requires a reevaluation of extant principles, despite the fact that the evolving framework of ICL has established robust mechanisms for individual accountability. The autonomous nature of AWS presents substantial challenges in the context of traditional *mens rea* requirements for determining criminal responsibility. The application of the Rome Statute to AWS presents complexities in terms of direct and indirect perpetration, aiding and abetting, and command responsibility, necessitating a nuanced comprehension of the responsibilities of developers, operators, and commanders. In order to prevent war crimes, commanders must guarantee that AWS undergoes rigorous supervision and testing. The autonomy of AWS makes it difficult to establish effective control and knowledge of their actions, necessitating the implementation of more robust accountability mechanisms.

Product liability for AWS has the potential to improve safety, but its application is restricted. The complexity and unpredictability of AWS present substantial challenges in the context of holding technologists accountable. The concept of assigning criminal liability to AWS as legal entities is beset by philosophical, legal, and practical complications. The current legal framework does not acknowledge machines as legal entities, and the primary objective should be to ensure that humans are held accountable.

It is imperative to modify legal frameworks to accommodate the obstacles posed by AWS. This encompasses the potential amendment and re-interpretation of the Rome Statute, the creation of specific AI regimes, and the modification of *mens rea* standards. In order to prevent AWS from engaging in unlawful activities, it is imperative to establish robust oversight and accountability mechanisms, which include rigorous testing and adherence to IHL and IHRL principles. Technologists must receive comprehensive training on the legal and ethical implications of their work to ensure the responsible developing and deploying AWS. International collaboration is

essential for the development and implementation of effective legal frameworks for AWS. This necessitates states to collaborate in order to share best practices and ensure a unified approach to AWS regulation.

In summary, the regulation of AWS under International Criminal Law is a difficult task; however, it should be pursued through an incremental approach within the current legal frameworks. Some actors may be granted impunity by waiting for the formulation of new laws. New regulations should be incorporated into the robust legal framework that has been established over the years to resolve the intricacies of AWS. Nevertheless, it is imperative to assure the presence of human agency in order to maintain the efficacy of these frameworks and close the responsibility divide. This method will facilitate the adaptation to technological advancements while maintaining accountability and justice.

Chapter 6

MEANINGFUL HUMAN CONTROL AND RESPONSIBILITY IN AWS: A WAY FORWARD

6.1 Introducing and Deconstructing the Term MHC

Due to its increasing autonomy, the proliferation of Artificial Intelligence (AI) has led to profound and revolutionary advancements in a variety of fields, as well as the emergence of ethical dilemmas. Autonomous Weapon Systems (AWS) are a critical area in which machine autonomy has raised significant ethical and practical concerns.⁵²⁷ The concept of Meaningful Human Control (MHC) has become a vital framework in the field of AI ethics. Its purpose is to guarantee that human supervision remains essential in the functioning of AI-powered systems, especially those that possess lethal potential.⁵²⁸ Meaningful Human Control (MHC) is a complex notion that necessitates analyzing its three fundamental elements: 'meaningful', 'human', and 'control'. Every component has a crucial function in comprehending the extent and implementation of MHC in AWS and wider AI environments.

The term 'meaningful' conveys the idea that not all types of control or involvement hold the same value or significance. The statement implies that the control that is exercised should be substantial and meaningful, ensuring that human engagement is not merely symbolic but has a substantial impact. This distinction is of the uttermost importance in situations where the ethical and practical implications of artificial intelligence (AI) determinations are substantial, particularly

⁵²⁷ Horowitz, "The Ethics & Morality of Robotic Warfare."

⁵²⁸ Steven Umbrello, "Coupling Levels of Abstraction in Understanding Meaningful Human Control of Autonomous Weapons: A Two-Tiered Approach," *Ethics and Information Technology* 23, no. 3 (September 1, 2021): 455–64, <https://doi.org/10.1007/s10676-021-09588-w>.

when the use of deadly force is involved.⁵²⁹ The term 'meaningful' might also be dependent on the context in which it is used. In the context of medical AI, meaningful control refers to the requirement that AI diagnoses and interventions are exclusively supervised by experts with medical training.⁵³⁰ Meaningful control in autonomous vehicles could be achieved by guaranteeing that drivers have the ability to override AI judgments during crucial circumstances. The situational aspect of significance emphasizes the necessity for customized strategies in delivering MHC in various fields.⁵³¹

In the context of MHC, the term 'human' acts as a modifier to indicate that the control should be specifically human or resembling human control. This prompts inquiries into the ability of machines to demonstrate control that closely resembles human decision-making processes, especially in ethical and moral situations.⁵³² The term 'human' can also encompass the individuals who are in charge of overseeing and managing AI systems. These individuals may be creators, operators, or subjects who are impacted by judgments made by artificial intelligence.⁵³³ Each of these roles carries distinct responsibilities and consequences for sustaining significant authority.

⁵²⁹ Marco Almada, "Human Intervention in Automated Decision-Making: Toward the Construction of Contestable Systems," in *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law, ICAIL '19* (New York, NY, USA: Association for Computing Machinery, 2019), 2–11, <https://doi.org/10.1145/3322640.3326699>.

⁵³⁰ Riikka Koulu, "Proceduralizing Control and Discretion: Human Oversight in Artificial Intelligence Policy," *Maastricht Journal of European and Comparative Law* 27, no. 6 (December 1, 2020): 720–35, <https://doi.org/10.1177/1023263X20978649>.

⁵³¹ Ben Shneiderman, "Human-Centered Artificial Intelligence: Reliable, Safe & Trustworthy," *International Journal of Human-Computer Interaction* 36, no. 6 (April 2, 2020): 495–504, <https://doi.org/10.1080/10447318.2020.1741118>.

⁵³² Bert Olivier, "Artificial Intelligence (AI) and Being Human : What Is the Difference?," *Acta Academica* 49, no. 1 (June 30, 2017): 2–21, <https://doi.org/10.18820/24150479/aa49i1.1>.

⁵³³ Elisabeth Hildt, "What Sort of Robots Do We Want to Interact With? Reflecting on the Human Side of Human-Artificial Intelligence Interaction," *Frontiers in Computer Science* 3 (July 5, 2021), <https://doi.org/10.3389/fcomp.2021.671012>.

For example, designers control the initial parameters and capabilities of AI systems, while operators are responsible for their deployment and real-time decision-making.

Control, in the context of AI, typically pertains to the capacity to effectively govern and exert influence over the outcomes produced by AI systems. Direct control refers to the immediate intervention and decision-making in a situation, while indirect control involves creating strong frameworks and norms that regulate the functioning of AI systems.⁵³⁴ Both sorts of regulation are necessary for guaranteeing that AI acts conform to human values and ethical standards. In addition to direct intervention, control can also involve the governance and integration of AI systems into society.⁵³⁵ This involves establishing legal and ethical limitations for AI applications, guaranteeing that they function within acceptable constraints and do not compromise human autonomy or societal standards. Governments and regulatory agencies have a vital role in this wider understanding of control.

The concept of Meaningful Human Control is a fundamental principle in the ethical implementation of AI systems, particularly in critical domains such as AWS. To comprehend and apply MHC, one must thoroughly examine its fundamental elements, namely 'meaningful', 'human', and 'control', and their ramifications in different situations. This introduction establishes the foundation for further investigation into how MHC (Machine Human Collaboration) might address the lack of accountability and expand the reach of current legal frameworks, thereby preventing AI progress from compromising human supervision and ethical norms.

⁵³⁴ Koulu, "Proceduralizing Control and Discretion."

⁵³⁵ John Zysman and Mark Nitzberg, "Governing AI: Understanding the Limits, Possibility, and Risks of AI in an Era of Intelligent Tools and Systems," SSRN Scholarly Paper (Rochester, NY, August 26, 2020), <https://doi.org/10.2139/ssrn.3681088>.

6.2 Normative and Philosophical Framework of Meaningful Human Control

MHC is a concept that extends beyond the operational and technical components of autonomous weapon systems (AWS). It encompasses ethical, legal, and moral dimensions that are founded on IHL, IHRL and ICL. This comprehensive strategy highlights the crucial importance of human discernment and responsibility in the implementation and utilization of AI-powered harmful technology.⁵³⁶ The justification for using a normative framework is closely connected to the values and principles of the study, as well as the fundamental research questions and theoretical frameworks. This research primarily investigates the legal, moral, and ethical aspects of AWS. It aims to develop a full understanding of the suggested solution to the problem of responsibility gap, known as MHC.

The core of the normative framework is the ethical obligation to uphold human dignity and moral autonomy. Scholars such as Sharkey emphasize that the use of deadly force should not be entirely delegated to machines when making critical decisions, as MHC elucidates.⁵³⁷ In order to comply with ethical principles, it is essential for human beings to possess substantial authority, which guarantees that decisions regarding the use of force and targeting are made with deliberate moral consideration. This control requires direct and engaged human involvement, the use of specialized judgment based on the situation, and the capability to intervene with effectiveness.⁵³⁸ In ethical terms, this implies that human operators must possess the ability to assess the

⁵³⁶ W. David Holford, “‘Design-for-Responsible’ Algorithmic Decision-Making Systems: A Question of Ethical Judgement and Human Meaningful Control,” *AI and Ethics* 2, no. 4 (November 1, 2022): 827–36, <https://doi.org/10.1007/s43681-022-00144-w>.

⁵³⁷ Sharkey, “Autonomous Weapons Systems, Killer Robots and Human Dignity.”

⁵³⁸ Neslage, “Does Meaningful Human Control Have Potential for the Regulation of Autonomous Weapon Systems.”

appropriateness, essentiality, and differentiation of every operation, while adhering to the norms of just war theory and ethical behavior in conflict.

IHL puts strict obligations on the behavior in armed conflicts, and specifically concentrates on safeguarding civilians and the imperative to differentiate between individuals engaged in fighting and those who are not.⁵³⁹ According to the MHC normative framework, human control is necessary to guarantee adherence to fundamental principles of IHL, and should have a ‘Meaningful Human Command’.⁵⁴⁰ Human operators are required to make immediate decisions regarding the legality of attacks, evaluate the possibility of unintended harm, and ensure that their activities comply with mandates set by IHL. The inclusion of meaningful human interaction is necessary to prevent illegal actions that may occur when autonomous systems operate without sufficient supervision.

IHL emphasizes the significance of Meaningful Human Control by safeguarding persons' fundamental rights in times of war and peacetime activities. According to the normative understanding of MHC, it is necessary for human agents to supervise AI systems in order to avoid infringements on rights such as the right to life, liberty, and security.⁵⁴¹ This segment of this research emphasizes the importance of human control in ensuring that the deployment of AWS does not result in arbitrary or disproportionate applications of force. Human operators can ensure that any use of force is justified and assessed by maintaining effective oversight and upholding the criteria of necessity and proportionality.

⁵³⁹ Rantanen, “Are Individuals in an Armed Conflict Developing into Zeroes and Ones?”

⁵⁴⁰ Susannah Kate Devitt, “Meaningful Human Command: Advance Control Directives as a Method to Enable Moral and Legal Responsibility for Autonomous Weapons Systems” (arXiv, August 3, 2023), <https://doi.org/10.48550/arXiv.2303.06813>.

⁵⁴¹ Steven Umbrello, “Editorial for the Special Issue on Meaningful Human Control and Autonomous Weapons Systems,” *Information* 13, no. 5 (May 2022): 215, <https://doi.org/10.3390/info13050215>.

ICL contributes a crucial element to the normative framework of Meaningful Human Control by specifically addressing the responsibility of individuals who use and manage Autonomous Weapon Systems (AWS). According to ICL, people, such as military leaders and operators, can face criminal liability for committing war crimes, crimes against humanity, and other grave breaches of international law.⁵⁴² According to the normative concept of MHC, it is necessary for human agents to take responsibility for the decisions made by AI systems. This is supported by the findings of the previous chapter. This entails maintaining the capacity to manage and stop acts carried out by self-governing systems, guaranteeing that any violations of International Criminal Law (ICL) can be ascribed to particular individuals who may be held accountable (Chengeta, 2016).

The normative framework of Meaningful Human Control incorporates ethical mandates, legal responsibilities, and methods for accountability to guarantee that the utilization of autonomous weapon systems complies with the most stringent requirements for human supervision. This framework seeks to ensure the preservation of human dignity, the safeguarding of fundamental rights, and the upholding of international legal norms by incorporating MHC into the principles of IHL, IHRL, and ICL.⁵⁴³ This complete approach emphasizes the crucial significance of human participation in the implementation of AI-powered deadly technologies, guaranteeing that choices related to life and death stay firmly under human control.

An exploration of theories of moral responsibility, namely compatibilism, can enhance the philosophical foundations of MHC. Incompatibilists contend that moral responsibility hinges on

⁵⁴² Gaeta, "Who Acts When Autonomous Weapons Strike?"

⁵⁴³ Taís Fernanda Blauth, "Chapter 16: Autonomous Weapons Systems in Warfare: Is Meaningful Human Control Enough?," 2023, <https://www.elgaronline.com/edcollchap/book/9781800887374/book-part-9781800887374-29.xml>.

individuals possessing a distinct ability to make decisions that are independent of any causal circumstances.^{544,545} Nevertheless, when it comes to AWS, this perspective has difficulties since it rejects the potential for harmonizing causality and moral accountability. However, individuals who are skeptical about free will reject the idea of unique human autonomy and perceive behaviors as indistinguishable from natural occurrences.

Compatibilists, including Frankfurt (1971), Fischer and Ravizza (1998), present a more nuanced perspective. They contend that moral responsibility is not contingent on evading causal forces, but rather depends on rational agency and the capacity to act according to internal motivations without external compulsion.^{546,547} The notion of "guidance control" proposed by Fischer and Ravizza in 1998 is highly influential. It posits that moral responsibility relies on the ability to exert control over acts through rational reflection.

A viable paradigm for understanding MHC in AWS is provided by the current form of compatibilism, which prioritizes rational control. Compatibilists are distinguished from incompatibilist libertarians in that they do not establish moral responsibility on a supernatural force, thereby allowing humans to exert substantial control over autonomous systems. This method acknowledges that human agents must be able to intervene rationally and be held responsible for their actions, despite the fact that machines can assist in decision-making. 'Rational control' and present-day compatibilism will be further developed through the research.

⁵⁴⁴ Peter Van Inwagen, *An Essay on Free Will* (New York: Oxford University Press, 1983).

⁵⁴⁵ David Hodgson, *Rationality+ Consciousness= Free Will* (Oxford University Press, 2012).

⁵⁴⁶ Harry Frankfurt, "Freedom of the Will and the Concept of a Person," in *Agency And Responsibility* (Routledge, 2001).

⁵⁴⁷ John Martin Fischer and Mark Ravizza, *Responsibility and Control: A Theory of Moral Responsibility* (Cambridge university press, 1998),

https://books.google.com/books?hl=en&lr=&id=KfEjxO0V7rEC&oi=fnd&pg=PP11&dq=%22Responsibility+and+Control:+A+Theory+of+Moral+Responsibility.%22+Cambridge+University+Press.&ots=wT4WBABuYw&sig=KCvw_sumEw-DbGIOefCnmYbaJA4.

6.3 Varying Interpretations of Meaningful Human Control

It is challenging to establish a universally agreed-upon definition of MHC within the realm of AWS due to the broad range of interpretations that have been sparked by the concept. Although the diversity in interpretation fosters widespread consensus, it presents challenges when examining MHC from a normative perspective. MHC's greatest asset is its adaptability; however, it also presents a vulnerability, particularly in the context of legal and ethical evaluations.⁵⁴⁸ The different interpretations of MHC can be categorized into two primary categories: 'narrow' and 'wide' understandings. The distinction between these categories typically depends on the level of human reasoning necessary for each specific use of force.

6.3.1 Viewing MHC from Narrow lens; Deep Human Involvement

The concept of MHC, was initially introduced by Article36, a non-governmental organization based in the United Kingdom. This occurred in a 2013 report that discussed UK policy in relation to AWS, or Autonomous Weapons Systems.⁵⁴⁹ During the 2014 Meeting of Experts (MoE), Article36 highlighted the significance of safeguarding "deliberative moral reasoning, conducted by human beings, in relation to individual attack decisions."⁵⁵⁰ The strict interpretation of MHC necessitates human commanders to assess the legality of each strike individually, guaranteeing that human engagement is dynamic, context-dependent, and centered on specific decisions pertinent to the application of force. According to this perspective, MHC implies that

⁵⁴⁸ Connal Parsley, "Automating Authority: The Human and Automation in Legal Discourse on the Meaningful Human Control of Lethal Autonomous Weapons Systems," in *Routledge Handbook of International Law and the Humanities* (Routledge, 2021).

⁵⁴⁹ Article36, "Killer Robots: UK Government Policy on Fully Autonomous Weapons" (Article36, April 2013), 36, https://article36.org/wp-content/uploads/2013/04/Policy_Paper1.pdf.

⁵⁵⁰ "Remarks to the CCW on Autonomous Weapons Systems, 13 May 2014 - Article36," accessed July 7, 2024, <https://article36.org/updates/remarks-to-the-ccw-on-autonomous-weapons-systems-13-may-2014/>.

human intervention cannot be only symbolic; it must be significant and prompt, giving human operators enough time to intervene effectively in the process.

Human Rights Watch (HRW) has expressed agreement with this limited interpretation, arguing that there must always be meaningful human control (MHC) in making decisions about targeting and killing in every specific attack on humanity.⁵⁵¹ This position restricts the use of MHC to only target human entities, hence barring situations where the targets are military objects. In the same vein, the Campaign to Stop Killer Robots (CSKR) underscores the significance of maintaining MHC in the context of attack and targeting decisions.⁵⁵² ICRC underscores the significance of preserving humanitarian control over the fundamental functions of armament, despite its less stringent approach to regulating individual attacks.⁵⁵³

Distinguished academics and specialists, such as computer scientist Noel Sharkey, endorse a focused MHC strategy. According to Sharkey, it is essential for human agents to possess comprehensive contextual and situational awareness regarding specific attacks.⁵⁵⁴ They should be able to detect unforeseen changes in conditions, retain the ability to halt or cancel attacks, and have sufficient time for thoughtful consideration of the importance of targets. He proposes that despite a computer program offering a list of targets, human operators must carefully consider each target before commencing an attack. The necessity of real-time human assessment and approval for every

⁵⁵¹ “Killer Robots and the Concept of Meaningful Human Control | Human Rights Watch,” April 11, 2016, <https://www.hrw.org/news/2016/04/11/killer-robots-and-concept-meaningful-human-control>.

⁵⁵² “Stopping Killer Robots: Country Positions on Banning Fully Autonomous Weapons and Retaining Human Control,” Stop Killer Robots, August 18, 2020, <https://www.stopkillerrobots.org/resource/stopping-killer-robots/>.

⁵⁵³ “ICRC Position on Autonomous Weapon Systems.”

⁵⁵⁴ Amanda Sharkey and Noel Sharkey, “Sunlight Glinting on Clouds: Deception and Autonomous Weapons Systems,” *Counter-Terrorism, Ethics and Technology: Emerging Challenges at the Frontiers of Counter-Terrorism*, 2021, 35–47.

instance of using force sets a higher standard for MHC, guaranteeing that human oversight is substantial rather than just procedural.

6.3.2 *Viewing MHC from a Boarder Lens; Adaptable Human Oversight*

On the other hand, a more expansive understanding of MHC permits a more adaptable approach to human participation in the application of force. An example of this is the US Department of Defense's Directive 3000.09, which mandates the employment of "appropriate levels of human judgment" when employing force.^{555,556} This action allows for a more extensive application of human control, potentially obviating the need for human judgement in every instance of lethal force application. As an alternative, human governance can be established by prioritizing the design, programming, and operational dependability and predictability of AI systems. The mere existence of humans overseeing the weapon system, without directly intervening in individual assaults, is sufficient to satisfy the criteria of MHC from a broader perspective.

Arguments that underscore the potential for human fallibility serve to reinforce the expansive interpretation. Some experts contend that a limited comprehension of MHC neglects to recognize that humans, including purported specialists, are susceptible to diverse errors.⁵⁵⁷ This viewpoint implies that depending too much on human operators can result in less than ideal results, such as mistakenly targeting the wrong individuals. Therefore, powerful consequentialist

⁵⁵⁵ Saxon, "A Human Touch."

⁵⁵⁶ "DOD DIRECTIVE 3000.09 AUTONOMY IN WEAPON SYSTEMS" (Office of the Under Secretary of Defense for Policy, January 25, 2023).

⁵⁵⁷ P. A. Hancock and M. H. Chignell, "8. Adaptive Control in Human-Machine Systems," in *Advances in Psychology*, ed. Peter A. Hancock, vol. 47, Human Factors Psychology (North-Holland, 1987), 305–45, [https://doi.org/10.1016/S0166-4115\(08\)62312-2](https://doi.org/10.1016/S0166-4115(08)62312-2).

arguments support larger MHC conceptions that stress efficiency and effectiveness above strict and micro-level human involvement.⁵⁵⁸

The wide range of understandings of MHC illustrates the intricate moral and practical difficulties presented by progressively independent technology. Although there is a widespread agreement regarding the significance of preserving MHC, the absence of a universally acknowledged definition adds complexity to the discussion and legislative initiatives.⁵⁵⁹ The limited interpretation underscores the imperative of direct, immediate human engagement in every instance of employing force, whereas the broad view permits the use of more adaptable control systems based on design, coding and programming.

The difference in interpretation has important consequences for global discourse and regulatory structures. The current debate in forums like the Convention on Certain Conventional Weapons (CCW) underscores the challenge of harmonizing these differing viewpoints.⁵⁶⁰ One benefit of focusing on MHC is that it promotes extensive consensus and cooperation among many stakeholders, such as governments, intergovernmental organizations, researchers, and policy actors. However, the absence of clear definition and agreement on the definition of MHC can impede the establishment of specific normative guidelines and efficient regulatory actions.

Meaningful Human Control is a crucial idea in discussions about autonomous weapon systems, representing the ethical obligation to provide human supervision and responsibility in the use of AI-powered technologies. The argument between the narrow and broad meanings of MHC

⁵⁵⁸ Chiara Cimini et al., “A Human-in-the-Loop Manufacturing Control Architecture for the next Generation of Production Systems,” *Journal of Manufacturing Systems* 54 (2020): 258–71.

⁵⁵⁹ Daniele Amoroso and Guglielmo Tamburrini, “Toward a Normative Model of Meaningful Human Control over Weapons Systems,” *Ethics & International Affairs* 35, no. 2 (July 2021): 245–72, <https://doi.org/10.1017/S0892679421000241>.

⁵⁶⁰ Riebe, Schmid, and Reuter, “Meaningful Human Control of Lethal Autonomous Weapon Systems.”

highlights the conflict between guaranteeing effective human involvement and adapting to the practical constraints of technological progress. As the conversation progresses, it is essential to pursue a fair and equitable approach that upholds ethical principles while also acknowledging the potential advantages of AI. To achieve this equilibrium, continuous communication, thorough examination, and flexible regulatory structures are necessary to effectively tackle the ever-changing environment of AI and autonomous systems.

6.4 Meaningful Human Control as a Mechanism for Extending Legal Accountability in Autonomous Weapon Systems

It is legitimate to argue that the success of a concept like Meaningful Human Control (MHC) lies in its ability to navigate and mitigate conceptual and political challenges through its strategic ambiguity.⁵⁶¹ In the ongoing debate on AWS, MHC is often employed by opponents to argue against autonomous killing and has played a crucial role in advocating for a ban on such systems.⁵⁶² In the same vein, the Campaign to Stop Killer Robots (CSKR) underscores the significance of maintaining MHC in the context of attack and targeting decisions.⁵⁶³ ICRC underscores the significance of preserving humanitarian control (MHC) over the fundamental functions of armament, despite its less stringent approach to regulating individual attacks.⁵⁶⁴ Therefore, it is fundamental to establish a clear framework for assigning responsibility should AWS result in the violation of pertinent norms. The ethical and legal rationale is clear: if the nature of a weapon makes it impossible to assign responsibility for its outcomes, its use should be

⁵⁶¹ Roff and Danks, “Trust but Verify.”

⁵⁶² Asaro, “On Banning Autonomous Weapon Systems.”

⁵⁶³ “Stopping Killer Robots.”

⁵⁶⁴ “ICRC Position on Autonomous Weapon Systems.”

considered unethical and unlawful hence establishment of responsibility is fundamental to regulate AWS and to establish responsibility, the presence of human agency is fundamental.

This research will analyze two forms of responsibilities; individual responsibility and state responsibility. While corporate responsibility involves attributing accountability to organizations, such as defense contractors or tech companies that develop and deploy AWS, this thesis does not delve deeply into this aspect of accountability within the legal framework. The likelihood of victims successfully suing defense contractors is reduced due to the intricacies of international law and the protection afforded to such entities by state actors.⁵⁶⁵ Rather, the operators or commanders who actively supervise the utilization of these systems bear the primary responsibility for guaranteeing adherence to international legal standards.⁵⁶⁶ Consequently, this thesis highlights the obligation of both individuals and governmental bodies, contending that they are better suited to be held liable for the acts and decisions pertaining to the implementation and functioning of AWS. To guarantee accountability in the implementation of Meaningful Human Control, the most effective approach is to have human agents directly oversee and intervene in the employment of AWS. This emphasis aligns with this strategy.

6.4.1 Individual Criminal Responsibility and MHC

The notion of individual accountability is well established in the realm of international law. Both IHL and IHRL, which are fundamental aspects of ICL, require the investigation of infractions and the prosecution of those responsible, when deemed appropriate.⁵⁶⁷ The nature of this responsibility changes depending on the particular details of the infraction: The International

⁵⁶⁵ Wells, *Corporations and Criminal Responsibility*.

⁵⁶⁶ Gunawan, Aulawi, and Ramadhan, "Command Responsibility of Autonomous Weapons Systems under International Humanitarian Law."

⁵⁶⁷ Gerhard Werle, "Individual Criminal Responsibility in Article 25 ICC Statute," *Journal of International Criminal Justice* 5, no. 4 (September 1, 2007): 953–75, <https://doi.org/10.1093/jicj/mqm059>.

Human Rights Law (IHRL) requires investigations particularly for severe abuses that qualify as crimes under international law, whereas less significant offenses may not impose the same duty. In the same vein, the criteria for investigating crimes during war under IHL are generally less stringent than those under IHRL and are distinct from those applied in law enforcement operations.⁵⁶⁸ It is crucial to establish preliminary explanations before addressing the issue of individual responsibility for offenses committed through AWS.

Primarily, the focus of responsibility in this context is primarily criminal, as the conduct involved usually pertain to breaches of fundamental human rights, such as bodily autonomy. Furthermore, the idea that every individual involved must act independently requires us to differentiate between the many individuals responsible for violations carried out using AWS, specifically producers, operators, and commanders.⁵⁶⁹ The culpability of these agents will be evaluated according to their contributions and mental involvement.

Assigning individual accountability can occasionally be uncomplicated. For instance, if Autonomous Weapon Systems (AWS) are programmed to engage targets without discrimination, such as having "shoot on sight" capabilities, and are deployed in situations where they cause multiple fatalities, criminal law, at the national and international level, can be applicable to all individuals involved in the process, including manufacturers, producers, military commanders, or public officials responsible for the deployment. When dealing with such situations, the typical conditions for holding someone criminally responsible, including the connection between cause

⁵⁶⁸ Lyal S. Sunga, *Individual Responsibility in International Law for Serious Human Rights Violations*, vol. 21 (BRILL, 2021), https://books.google.com/books?hl=en&lr=&id=f7FFEAAAQBAJ&oi=fnd&pg=PR3&dq=individual+criminal+responsibility+in+IHL+and+IHRL+&ots=i_-5UDU5ST&sig=S8yBcw48VNrvtMPq0kEKDMeaQGA.

⁵⁶⁹ Schulzke, "Autonomous Weapons and Distributed Responsibility."

and effect, the physical act committed, and the mental state of the individual, must be satisfied.⁵⁷⁰ The intentional action criterion usually includes both explicit intent and irresponsibility. Here, MHC guarantees that human agents maintain control over individual attacks, ensuring obvious responsibility that is comparable to targeted executions carried out by drone strikes.

Nevertheless, more expansive understandings of MHC can yield comparable outcomes. If a human agent possesses knowledge that utilizing AWS in a specific situation is very likely to lead to breaches of international law and demonstrates apathy towards these consequences, both the causal connection and the mental state (*mens rea*) can still be proven.⁵⁷¹ These scenarios are classified here as "easy cases," meaning that the absence of direct human supervision over a specific interaction does not excuse those responsible for the deployment and operation of AWS from their obligations.

"Harder cases" are those in which a violation of IHL or IHRL occurs unintentionally or without any reckless conduct from human actors, such as creators or operators.⁵⁷² In these instances, there was no explicit intention or expectation that AWS would engage in illicit activities; however, the offenses occurred. Two primary strategies have been proposed to address these instances and potential deficiencies in accountability.

First and foremost, there is a contention that domestic law still applies to cases where careless behavior leads to wrongful deaths.⁵⁷³ Although ICL generally does not acknowledge

⁵⁷⁰ Van der Vyver, "The International Criminal Court and the Concept of Mens Rea in International Criminal Law."

⁵⁷¹ Fareed Mohd Hassan and Noor Dzuhaidah Osman, "AI-Based Autonomous Weapons and Individual Criminal Responsibility Under the Rome Statute," *Journal of Digital Technologies and Law* 1, no. 2 (2023), <https://cyberleninka.ru/article/n/ai-based-autonomous-weapons-and-individual-criminal-responsibility-under-the-rome-statute>.

⁵⁷² Bo, "Autonomous Weapons and the Responsibility Gap in Light of the Mens Rea of the War Crime of Attacking Civilians in the ICC Statute."

⁵⁷³ André Nollkaemper, "Internationally Wrongful Acts in Domestic Courts," *American Journal of International Law* 101, no. 4 (2007): 760–99.

criminal negligence, it is unrealistic to argue that no accountability can be attributed in such instances. However, it is more efficient to determine whether negligent behavior is pertinent in instances where AWS performs unexpected actions, particularly when employing self-learning algorithms.⁵⁷⁴ The application of strict liability to human operators without a demonstration of their guilt is inconsistent with the fundamental character of modern criminal law and the concept of personal accountability.

Additionally, certain academicians suggest that the notion of "command responsibility" be reevaluated and implemented in these circumstances.⁵⁷⁵ The following conditions must be satisfied for command responsibility, a widely recognized form of indirect liability in international criminal law, to be applicable:

- a) The direct perpetrator (the subordinate) and the indirect perpetrator (the superior) are in a hierarchical relationship.
- b) The superior possessed knowledge or had reasonable grounds to believe about the offense that was committed or about to be committed.
- c) The superior neglected to implement adequate measures to prevent the crime or to discipline the subordinate.

The topic of extending command responsibility to include the connection between a human agent deploying Autonomous Weapon Systems (AWS) (referred to as the "superior") and the AWS itself (referred to as the "subordinate") is a highly debated matter. Critics contend that this

⁵⁷⁴ Georgina Ibarra, David Douglas, and Meena Tharmarajah, "Machine Learning and Responsibility in Criminal Investigation," *Australia: CSIRO*, October, 2020, <https://www.somethingdigital.com.au/wp-content/uploads/2020/10/Machine-Learning-and-Responsibility-in-Criminal-Investigation.pdf>.

⁵⁷⁵ Igor Vuletić, "Rethinking Command Responsibility in the Context of Emerging AI Weapons," *EU and Comparative Law Issues and Challenges Series (ECLIC)* 7 (2023): 163–80.

extension is fundamentally problematic because AWS lacks the ability to intentionally perform punishable actions and the crucial mental state and legal personhood aspect required for command responsibility.⁵⁷⁶ Since AWS is not capable of consciousness, it lacks the intention or understanding that is usually necessary for criminal responsibility.⁵⁷⁷ The inherent lack of cognitive state and ethical capacity challenges the direct implementation of conventional command responsibility frameworks.

Nevertheless, several researchers argue that human individuals can still be held responsible according to a revised understanding of command responsibility if they neglect to provide what is referred to as "dynamic diligence" over AWS.⁵⁷⁸ This notion entails the establishment of ongoing engagement with the system, making regular assessments of its operations, and retaining the capability to intervene or override the decisions made by the AWS. "Dynamic diligence" necessitates a proactive and continuous dedication from human supervisors to oversee and direct the AWS, so integrating human supervision into the operating structure of these autonomous systems.

Overall, although there is a tendency to promote limited interpretations of Meaningful Human Control (MHC) as crucial for establishing personal accountability, relying exclusively on this method may unduly broaden the reach of criminal legislation. The strict demands of Narrow MHC, which necessitate direct human oversight of every step, may not be feasible or adequate for all situations utilizing AWS. Alternatively, more comprehensive interpretations of MHC, which encompass negligence criteria and a redefined version of command responsibility, may provide more sophisticated and efficient means for holding individuals accountable. These expanded

⁵⁷⁶ Margulies, "Chapter 13."

⁵⁷⁷ Gordon, "Artificial Moral and Legal Personhood."

⁵⁷⁸ Margulies, "Chapter 13."

frameworks not only enforce strict regulations but also promote a more comprehensive system of supervision, guaranteeing that human operators stay actively engaged and accountable for the self-governing systems they implement.

It is crucial to adopt these broader interpretations of MHC in order to ensure that all the actors in the design, development, command and deployment can be held liable in International Law, which can in turn mandate a more cautious approach towards the use of AWS. This method guarantees that the operation of AWS is consistent with the well-established principles of IHL, IHRL and ICL. Consequently, it fosters accountability, protects human rights, and averts potential abuses. The deployment of AWS is balanced in its integration of technological innovation with legal and ethical criteria, thereby guaranteeing compliance with international regulations and effectiveness.

6.4.2 State Responsibility

Some commentators have shifted their focus to state responsibility due to the inadequacy of individual responsibility in complex cases and the necessity of avoiding strict liability. This accountability aspect is the least investigated but potentially the most promising approach to addressing the legal and ethical challenges presented by AWS. State responsibility has several benefits: it is not exclusive and can coexist with other forms of responsibility; it may provide victims with a greater opportunity for adequate redress, as states typically have more resources; and it is well-suited to various forms of responsibility.⁵⁷⁹ Furthermore, ensuring that states are held

⁵⁷⁹ Hammond, "Autonomous Weapons and the Problem of State Accountability."

accountable ensures that they are incentivized to comply with IHL, IHRL and ICL, as states are the primary users of AWS.⁵⁸⁰

Attributing a violation of IHRL/IHL to a state that has deployed AWS does not appear to be a problem, as the deployment will logically be ordered by a human agent, such as a police officer or military commander, who is considered an organ of the state for the purposes of international responsibility.⁵⁸¹ The actions of government institutions are considered to be actions of the state, as per Article 4 of the Articles on Responsibility of States for Internationally Wrongful Acts (ARS).⁵⁸² Nevertheless, a potential issue may arise if AWS is able to identify and execute its objectives without human intervention, as it lacks the ability to govern individual attacks through Meaningful Human Control (MHC). In such instances, it is imperative to differentiate between the deployment of AWS, which is directly attributable to the state, and the selection and engagement of unlawful targets, which may not be directly attributable. It is essential to ensure MHC in order to maintain state culpability for the actions of AWS. The fact that AWS execute actions autonomously does not absolve states of responsibility; ARS attribute conduct to states in a variety of scenarios where state organs are not directly involved, thereby establishing that the actions of any state organ is deemed an act of the state.⁵⁸³ In the *Nicaragua v. United States* case, the International Court of Justice (ICJ) emphasized this principle by concluding that the United States' substantial control and support of the Contras, a rebel organization in Nicaragua, could be

⁵⁸⁰ Anthony F. Lang, "Crime and Punishment: Holding States Accountable," *Ethics & International Affairs* 21, no. 2 (2007): 239–57.

⁵⁸¹ Aryeh Neier, "Accountability for State Crimes: The Past Twenty Years and the next Twenty Years," *Case W. Res. J. Int'l L.* 35 (2003): 20.

⁵⁸² "Responsibility of States for Internationally Wrongful Acts (2001)," n.d.

⁵⁸³ A. Begemann, "The Responsibility of States for Internationally Wrongful Acts Committed within the Framework of International Organizations" (PhD Thesis, University of Oxford, 2016), <https://ora.ox.ac.uk/objects/uuid:46b9d7cf-7155-4f5e-9a1d-d04aa8ae4a88>.

attributed to the United States.⁵⁸⁴ Although the Contras were not state organs, the United States' level of control provided a foundation for attribution.

By applying this principle to AWS, the actions of AWS can be ascribed to the state in the same way as the deployment and operational decisions made by state entities (e.g., military commanders or defense officials).⁵⁸⁵ Despite the fact that AWS operates autonomously, the initial deployment decision and governance responsibilities are the responsibility of state agents, which in turn links the actions of AWS back to the state. Furthermore, the state is responsible for the actions of the AWS, even if the state organ was unaware of them. States are accountable for the actions of entities under their control under the ARS, even if specific outcomes were not anticipated. The ICJ's decision in the Bosnian Genocide case, which held Serbia accountable for failing to prevent genocide despite not directly perpetrating the acts, further strengthens this contention.⁵⁸⁶

Within the framework of AWS, guaranteeing MHC requires nations to establish strong oversight procedures to proactively foresee and address potential breaches of international law. If an AWS engages in an illegal behavior, the state can still be held accountable because it has a duty to ensure proper management and oversight of its deployed systems.⁵⁸⁷ MHC ensures continuous human oversight and the capacity to intervene in the operations of AWS, thereby bridging potential breaches in accountability. This supervision is essential because it establishes a direct connection

⁵⁸⁴ "Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)," accessed July 7, 2024, <https://www.icj-cij.org/case/70>.

⁵⁸⁵ Federica Paddeu, "18 The Law of State Responsibility," *The Cambridge Companion to the International Court of Justice*, 2023, 411.

⁵⁸⁶ "Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovin)," accessed July 7, 2024, <https://www.icj-cij.org/case/91>.

⁵⁸⁷ Federica I. Paddeu, "Self-Defence as a Circumstance Precluding Wrongfulness: Understanding Article 21 of the Articles on State Responsibility," *British Yearbook of International Law* 85, no. 1 (January 1, 2015): 90–132, <https://doi.org/10.1093/bybil/brv015>.

between the autonomous actions of AWS and the state's obligation to regulate and control them. States can assure compliance with international legal standards and prevent AWS from acting unpredictably by mandating that human agents maintain control over critical functions.

Victims who are unable to pursue recourse through individual responsibility due to the intricacies of explicitly attributing actions to human agents have the option to sue states. This is particularly critical in situations where the actions of AWS cannot be explicitly attributed to a specific individual's intent or negligence. States are generally more resourceful and capable of providing adequate compensation and justice to victims, which is why state responsibility under the ARS provides a viable path for redress.

State culpability is also contingent upon the state's conduct constituting a violation of an international obligation. This pertains to AWS's obligations under IHL and IHRL. Nevertheless, the application of circumstances that preclude wrongfulness, such as force majeure, is a critical area of concern. Force majeure is defined as an irresistible force or unforeseeable event that is beyond the state's control and renders it materially impossible to fulfill the obligation, as per Article 23 of ARS.⁵⁸⁸ Three positive requirements must be satisfied for force majeure to be applicable: 1) The event must be unexpected 2) The event must be beyond the state's control. 3) The event must render compliance materially untenable.⁵⁸⁹ The deployment of AWS without a narrow MHC poses a risk of unanticipated behavior, particularly when self-learning algorithms are involved. It may be challenging for states to assert that such events were wholly unexpected when corporations that develop AWS notify governments of potential malfunctions. This issue can be mitigated by

⁵⁸⁸ "Responsibility of States for Internationally Wrongful Acts (2001)."

⁵⁸⁹ Federica I. Paddeu, "A Genealogy of Force Majeure in International Law," *The British Yearbook of International Law* 82, no. 1 (2011): 381–494.

assuring MHC over individual attacks, even if AWS behavior is beyond the state's control, by providing a framework for human intervention.

In the context of AWS, force majeure is only invoked when it is materially impossible to comply with an international obligation, which is exceedingly unlikely. The defense would not be applicable if a human agent had the ability to prevent the malfunction but chose not to do so due to environmental constraints. Furthermore, the plea of force majeure is prohibited by two negative requirements. 1) The state's conduct must not have caused the circumstance, and 2) The state must not have assumed the risk of the situation occurring. The deployment of AWS inherently entails certain risks, particularly in terms of their behavior and potential malfunctions. Consequently, states are unable to utilize force majeure as a defense when they have elected to implement AWS. States implicitly embrace the risks associated with the deployment of these autonomous systems by choosing to employ them, which include potential malfunctions and violations of international obligations.

It is imperative to guarantee MHC over AWS to prevent states from abdicating their obligations under the pretext of force majeure. States are obligated to establish comprehensive oversight mechanisms that enable human intervention and control in order to mitigate the probability of unforeseeable and uncontrollable events. This is achieved by maintaining MHC. This oversight guarantees that states are unable to absolve themselves of liability by asserting that AWS acted outside of their control, as the MHC requires ongoing human involvement in the decision-making process of these systems.

6.4.2.1 War Torts as a Recourse

In light of the inadequacy of force majeure as a defense for AWS malfunctions, commentators have suggested a model of strict liability for wrongdoings committed through AWS, which they have dubbed "war torts."⁵⁹⁰ By establishing explicit and binding responsibilities for states using AWS, this model aims to address the accountability gaps, ensuring accountability regardless of fault. Proof of culpability (intent or negligence) is not necessary for this model.⁵⁹¹ Rather, it holds states rigorously liable for any harm caused by AWS, ensuring that victims receive compensation and justice regardless of the circumstances that led to the wrongful act. The establishment of a stringent liability framework would clearly define the responsibilities of states in the deployment and operation of AWS, preventing them from evading accountability through intricate legal defenses such as force majeure. The war torts model guarantees that victims have a straightforward route to pursue redress. States would be required to compensate victims for the harm caused by AWS, thereby establishing a more dependable and uncomplicated method of accountability.

MHC is essential for the viability of the war torts paradigm. MHC mitigates the risk of unanticipated and uncontrollable behavior by guaranteeing that human agents maintain control and supervision over AWS. This oversight framework necessitates that states implement robust monitoring, periodic evaluations, and the capacity to intervene in AWS operations. The right to remedy is applicable to violations that arise from the use of AWS and to the guarantee that MHC can improve transparency and accountability.⁵⁹² Nevertheless, the remedy system's existing

⁵⁹⁰ Crootof, "War Torts," 2016 2015.

⁵⁹¹ Rebecca Crootof, "War Torts," *NYUL Rev.* 97 (2022): 1063.

⁵⁹² Herman Veluwenkamp, "Reasons for Meaningful Human Control," *Ethics and Information Technology* 24, no. 4 (November 23, 2022): 51, <https://doi.org/10.1007/s10676-022-09673-8>.

deficiencies are the primary obstacles, not the absence of limited MHC. The obligation to provide victims with access to information and justice can be fulfilled by ensuring that AWS operations are understandable and reviewable post facto.

6.4.2.2 Reparations as a Recourse

Lastly, reparations must be evaluated in relation to Meaningful Human Control (MHC). It is imperative to assign responsibility in order to facilitate reparations, which encompass access to justice, compensation, and information. The right to remedy is applicable to violations that arise from the use of AWS, and the reparations procedure can be significantly improved by ensuring MHC.⁵⁹³

It is essential to ensure that MHC has control over AWS operations in order to maintain transparency and accountability, which directly affects the ability of victims to pursue justice. Victims of violations have the right to pursue judicial remedies when AWS are employed in military or law enforcement operations. MHC guarantees that there is a transparent chain of command and accountability, which facilitates the identification of the individuals accountable for AWS's actions.⁵⁹⁴ This preciseness is essential for legal proceedings, as it enables courts to determine the parties responsible and offers victims a means of pursuing justice.

Compensation for the damage inflicted upon victims is also included in reparations. Under international law, states are obligated to provide adequate compensation for harm resulting from internationally wrongful acts.⁵⁹⁵ MHC guarantees that states are held accountable for the actions

⁵⁹³ Holstein, "Accountability for Crimes Committed by Autonomous Weapon Systems under International Criminal Law."

⁵⁹⁴ Devitt, "Meaningful Human Command."

⁵⁹⁵ Dinah Shelton, "Righting Wrongs: Reparations in the Articles on State Responsibility," *American Journal of International Law* 96, no. 4 (2002): 833–56.

of AWS by maintaining human supervision and control. This supervision serves to prevent the transfer of responsibility to machines and guarantees that states are unable to circumvent liability by attributing it to autonomous systems. States can effectively assess and provide compensation for victims by instituting MHC.

The victims' right to information is a critical component of reparations. Victims are entitled to be informed of the circumstances that led to the violations they experienced.⁵⁹⁶ The accumulation and preservation of data related to AWS operations is facilitated by MHC, which enables the review and comprehension of the decisions made by these systems post-factum. By guaranteeing that AWS operations are transparent and comprehensible, it is possible to conduct comprehensive investigations. This, in turn, assists in fulfilling the responsibility to ensure that victims have access to comprehensive and accurate information regarding the incidents in question.⁵⁹⁷ The remedy system's extant deficiencies frequently serve as the primary obstacles to the reparations process. Nevertheless, the absence of a limited MHC exacerbates these challenges by introducing accountability gaps. The direct human control over specific decisions made by AWS, known as narrow MHC, guarantees that every action taken by these systems is monitored and can be intervened upon by human operators. In order to guarantee that any unlawful actions can be traced back to responsible human agents and to maintain transparency in AWS operations, this level of control is essential.

⁵⁹⁶ Brianne McGonigle Leyh, "Reparations for Victims," in *Research Handbook on Post-Conflict State Building* (Edward Elgar Publishing, 2020), 228–40, <https://www.elgaronline.com/edcollchap/edcoll/9781788971638/9781788971638.00022.xml>.

⁵⁹⁷ Linda M. Keller, "Seeking Justice at the International Criminal Court: Victims' Reparations," *T. Jefferson L. Rev.* 29 (2006): 189.

6.5 MHC as a Safeguard for Ethical Deliberation in the Use of Lethal Force

As discussed earlier, the accountability-based approach to MHC is not the exclusive perspective in the discussion on assisted withdrawal services (AWS). Another important interpretation of MHC is the need for human oversight, not only to avoid gaps in responsibility, but also for core deontological grounds. This viewpoint asserts that the practice of autonomous killing, in which humans are not involved in deciding when to use lethal force, is fundamentally inconsistent with the fundamental principles of IHL and IHRL, particularly the principles of humanity and human dignity.⁵⁹⁸

This ethical argument concerns the inherent characteristics of AWS and argues that MHC should be used whenever a non-human entity has the potential to cause harm to a human life. This applies regardless of whether the precise act of killing is legal under applicable laws. Ensuring that a person is present throughout every instance of using deadly force against an individual is not only justified for the purpose of accountability, but also as an ethical imperative.⁵⁹⁹ Put simply, it is regarded as a necessary condition that is known or determined beforehand, rather than being based on observations or experiences.

The Holy See has been particularly vocal in its support of this position, despite the fact that there are numerous states. The Holy See argues that human attributes, such as compassion and discernment, are innately required when making decisions regarding life and death.⁶⁰⁰ From both ethical and legal perspectives, the absence or concealment of the human agent in such decisions is problematic. It is impossible for a machine to become a truly ethically responsible entity, regardless

⁵⁹⁸ Mary Ellen O'Connell, "Banning Autonomous Killing," 2013, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2313737.

⁵⁹⁹ Veluwenkamp, "Reasons for Meaningful Human Control."

⁶⁰⁰ Mauri, "The Holy See's Position on Lethal Autonomous Weapons Systems."

of its complexity. Human beings are merely data to a machine, one set of values among many others. The Holy See's stance is predicated on distinct moral principles: only a human being is capable of ethically engaging with another human being, acknowledging them as an equal.

AWS introduces a unique and unprecedented form of asymmetry in human affairs by effectively divorcing the application of force from individual human decision-making. This viewpoint implies that the restricted understanding of MHC is crucial in order to prevent this result. Advocates of this perspective frequently cite the notion of human dignity, contending that non-human decision-makers, such as AWS, lack comprehension of the value of life and the consequences of ending it.⁶⁰¹ The focus here lies not on accountability, but rather on the ability to fully grasp the seriousness of a decision that entails the use of deadly force.

Conversely, some contend that the deontological interpretation of MHC is contradicted by the notion that "humanity" and "human dignity" do not inherently require humans to use weapons. On the contrary, they argue that what is important is the actor's compliance with IHL and IHRL, regardless of whether the actor is a human or a non-human entity.⁶⁰² The essence of this perspective is that the crucial factor is the efficacy in minimizing the risk of encountering deadly force. As a result, a restricted (MHC) is typically perceived as a strict necessity that could potentially weaken the effective defense of humans.

The unavoidable consequence of the ethical viewpoint on MHC is that autonomous killing, carried out via AWS, fundamentally contradicts it. This is a primary reason why proponents of prohibiting AWS place much weight on MHC in its most stringent interpretation. However, the

⁶⁰¹ Amoroso and Tamburrini, "Toward a Normative Model of Meaningful Human Control over Weapons Systems."

⁶⁰² Simmler and Markwalder, "Guilty Robots?"

primary concern is the extent to which this understanding of MHC can be established as a legally recognized criterion.

In the final analysis, the MHC is essential for the ethical decision-making process in the context of lethal force employed by AWS. It guarantees the preservation of the fundamental values of human nature and respect for human worth, so preventing the devaluation that may arise when decisions on life and death are taken by entities that are not human. Although there are varying opinions regarding the importance and understanding of MHC, its contribution to maintaining ethical debate is crucial. It is imperative to maintain human oversight over technology in order to guarantee that laws remain relevant to new and changing circumstances, despite the inexorable advancement of technology. By maintaining human oversight and involvement in the use of lethal force, it is guaranteed that it adheres to legal and moral standards, thereby serving as a critical control on the autonomous powers of AWS.

6.6 Incorporating Meaningful Human Control (MHC) into Legal Regimes

As maintained MHC over AWS is increasingly recognized as essential for maintaining ethical and legal standards in the deployment of such systems. The debate centers on whether MHC should be incorporated into treaty law or customary international law. This section argues for the latter, highlighting the historical precedence of human agency and intent in legal frameworks and citing relevant scholarly perspectives to support this position.

6.5.1 Premise 1: Treaty Law: Formalizing MHC

Treaty law involves formal agreements between states that codify specific obligations and rules. Treaties such as the Geneva Conventions and various arms control agreements provide a structured and binding framework for state behavior. Incorporating MHC into treaty law could

offer clear and specific guidelines on the deployment and operation of AWS, ensuring that states are legally bound to maintain human oversight.

For instance, a new treaty or an amendment to existing treaties could explicitly mandate the inclusion of MHC in the development and use of AWS. Such a treaty could define the parameters of MHC, specify the roles and responsibilities of human operators, and establish mechanisms for accountability and enforcement. This approach could provide a robust legal foundation for MHC, backed by the formalities and procedural safeguards inherent in treaty law.

However, the process of negotiating and ratifying a new treaty or amending existing ones can be lengthy and politically challenging. Achieving consensus among states with diverse interests and capabilities might be difficult, potentially delaying the implementation of MHC.

6.5.2 Premise 2: Customary International Law: A Historical and Practical Approach

Customary international law, in contrast, develops from the consistent and widespread practice of states, accompanied by a belief in a legal obligation (*opinio juris*). Unlike treaty law, customary law does not require formal agreements but emerges organically from state behavior and practice. Since antiquity, human agency and intent have been central to legal systems. From the earliest codifications of law, such as the Code of Hammurabi and Roman law, to modern legal frameworks, the role of human actors has been paramount. The principle of holding individuals accountable for their actions is deeply rooted in both domestic and international law.

Several scholars have emphasized the importance of human agency in law. For example, Michael N. Schmitt argues that "the essence of international humanitarian law lies in its regulation of human conduct during armed conflict." He posits that the principles of distinction,

proportionality, and necessity, which form the core of IHL, inherently require human judgment and decision-making.⁶⁰³ Similarly, Rebecca Crootof highlights the ethical implications of delegating lethal decisions to machines. She argues that "machines lack the moral and ethical reasoning capabilities that humans possess," making human oversight indispensable for maintaining the ethical foundations of international law.⁶⁰⁴

Customary international law has long held individuals accountable for actions taken during armed conflict. The International Criminal Court (ICC) and ad hoc tribunals like the International Criminal Tribunal for the former Yugoslavia (ICTY) have consistently focused on human intent and agency in prosecuting war crimes and crimes against humanity.⁶⁰⁵ Incorporating MHC into customary law aligns with this tradition by ensuring that human oversight remains a cornerstone of accountability.

Customary law offers a degree of flexibility and adaptability that treaty law may lack. As technology evolves and new ethical and legal challenges emerge, customary law can adapt more readily to changing circumstances. This flexibility is crucial in addressing the dynamic nature of AWS and ensuring that legal standards keep pace with technological advancements.⁶⁰⁶ Customary international law emerges from the broad consensus of the international community. By reflecting the general practice of states and their legal obligations, customary law carries a sense of legitimacy and acceptance that may be harder to achieve through formal treaties.⁶⁰⁷ The growing

⁶⁰³ Schmitt, "Military Necessity and Humanity in International Humanitarian Law."

⁶⁰⁴ Crootof, "The Varied Law of Autonomous Weapon Systems."

⁶⁰⁵ Bo, "Autonomous Weapons and the Responsibility Gap in Light of the Mens Rea of the War Crime of Attacking Civilians in the ICC Statute."

⁶⁰⁶ Brigitte Stern, "Custom at the Heart of International Law," *Duke J. Comp. & Int'l L.* 11 (2001): 89.

⁶⁰⁷ Stefan Oeter, "The Legitimacy of Customary International Law," *Economic Analysis of International Law*, 2014, 1.

recognition of MHC in state practice indicates a movement towards its acceptance as a customary norm.

While incorporating MHC into customary international law offers several advantages, it is not without challenges. Ensuring consistent state practice and *opinio juris* can be difficult, especially given the varying capabilities and policies of different states. Moreover, customary law's organic development may lead to ambiguities and inconsistencies in its application. In conclusion, incorporating MHC into customary international law offers a practical and historically grounded approach to ensuring human oversight in the deployment and use of AWS. By building on the long-standing principles of human agency and intent in legal frameworks, customary law can provide the necessary flexibility and adaptability to address the evolving challenges posed by autonomous systems. While formalizing MHC through treaty law remains a valuable pursuit, the organic and widely accepted nature of customary law makes it a robust foundation for upholding ethical and legal standards in the age of emerging technologies.

6.7 Concluding Remarks

The preservation of ethical and legal standards in the deployment and utilization of AWS is contingent upon the concept of MHC. This chapter has considered the importance of integrating MHC into legal frameworks, emphasizing its importance in the preservation of human supervision, as a practical solution to the ongoing debate regarding the expansion of autonomy. The analysis has shown that, although both treaty law and customary international law provide viable pathways for the incorporation of MHC, the latter offers a more practical and historically consistent approach.

The chapter commenced by deconstructing the term MHC, emphasizing the importance of its three fundamental components—'meaningful', 'human', and 'control'. Each component emphasizes the importance of significant human involvement in the supervision of AI-powered systems, particularly those that are capable of performing lethal actions. Collectively, the dual aspects of direct and indirect control, the situational context of 'meaningful' control, and the critical role of human agents establish the foundation for the understanding and application of MHC in a variety of domains.

MHC's congruence with the principles of IHL, IHRL and ICL was demonstrated through an examination of its normative and philosophical frameworks. The ethical responsibility to preserve human dignity and moral autonomy, as well as the legal mandates that necessitate human supervision to guarantee adherence to international standards, were emphasized during the discussion. This comprehensive approach underscored the importance of MHC in maintaining the fundamental values of human rights and humanism, as well as in preventing accountability gaps.

Delineating the limited and broad understandings of the concept, the varying interpretations of MHC were examined. The broader interpretation, which is more adaptable, enables human oversight through robust system design and operational frameworks, whereas the narrow interpretation emphasizes profound human involvement in each instance of force application. The ongoing debate on MHC is exemplified by the contributions of both perspectives, which underscore the necessity of a balanced approach that reconciles ethical considerations with practical constraints.

The chapter then examined the methods for expanding legal responsibility through MHC, with a specific focus on the obligation of both persons and states. The conversation highlighted the importance of having human oversight to address gaps in accountability, focusing on the

difficulties and resolutions related to assigning personal criminal liability for offenses involving AWS. The critical role of MHC in ensuring that states remain accountable for the deployment and actions of AWS, even in scenarios involving force majeure or unforeseen malfunctions, was also demonstrated by the analysis of state responsibility.

The feasibility of integrating MHC into legal frameworks was assessed, particularly with respect to International Customary Law. This approach aligns with the established historical practice of human action and purpose in legal systems, offering the opportunity to adjust, accommodate various circumstances, and gain widespread approval. The natural progression of customary law establishes a strong basis for maintaining ethical and legal principles in response to changing technological breakthroughs, while treaty law continues to be a worthwhile endeavor.

In summary, the incorporation of MHC into customary international law is crucial for the preservation of accountability and the guarantee that AWS operates within the confines of established legal and ethical frameworks. This method not only has implicit adherence to the fundamental principles of human supervision and responsibility but also accommodates the dynamic nature of emerging technologies. The integration of MHC into customary law is a pragmatic and historically consistent approach to protect human values and maintain the rule of law in the era of AI, as the international community continues to address the implications of autonomous systems.

Chapter 7

CONCLUSION RESEARCH FINDINGS AND RECOMMENDATIONS

This chapter serves as the culmination of the dissertation, bringing together the thorough analysis carried out on the implementation and consequences of AWS. As AWS become more involved in military and law enforcement activities, they present unique difficulties for established systems of legal responsibility, ethical supervision, and human authority. This chapter tackles these challenges by combining findings related to the main research questions, assessing the degree to which existing legal norms can adapt to the rise of autonomous technologies, and suggesting practical methods for ensuring that AWS (autonomous technologies) function within established ethical and legal limits. In addition, this chapter will take into account the research findings, constraints, and offer suggestions for future research.

7.1 Answers to the Research Questions

The primary research concerns that underpin this dissertation are comprehensively addressed in this section. It investigates the intricacies associated with the deployment of AWS through the integration of historical analysis, theoretical and legal frameworks. The answers that are provided will synthesize the findings from previous chapters, providing a comprehensive comprehension of the complex balance between technological advancement and regulatory supervision that is required to manage the implications of AWS in both military and law enforcement contexts.

7.1.1 *How can the development and deployment of Autonomous Weapon Systems (AWS), characterized by varying levels of autonomy, AI, and remoteness, be reconciled with the requirements of human control, legal accountability, and moral responsibility?*

Over the course of history, war's concept of remoteness took great strides, from primitive levels of hand-to-hand fighting to the deployment of advanced technological systems. Combat effectiveness and the desire to increase it have always driven this evolution, while attempts were made to minimize risks to combatants.⁶⁰⁸ AWS development is simply the most recent surge in this continuum—with large amounts of autonomy and advanced AI capabilities. Understanding this historical context supports a continuous drive towards balancing effectiveness with safety in the integration of AWS into modern operations within ethical and legal standards. The historical development of remote warfare underlines the necessity of maintaining a balance between combat effectiveness and safety and ethical considerations in the deployment of AWS.

Autonomy in AWS is the capacity to operate autonomously without human intervention. This autonomy is essential for their efficiency; however, it poses substantial obstacles to ensuring ethical and legal compliance. The need for human oversight at various levels of decision-making is underscored by the OODA Loop and Sheridan's 10-level scale, which provide frameworks for understanding and measuring the autonomy of AWS.^{609,610} It is evident that AWS must be designed to incorporate human control mechanisms to ensure that it operates within legal and ethical boundaries by defining and measuring autonomy.

The decision-making processes of AWS can be obscured by the complexity and opacity of AI algorithms, which can make it challenging for human operators to completely comprehend or

⁶⁰⁸ Schmitt, *Der Nomos Der Erde*.

⁶⁰⁹ Richards, "Boyd's OODA Loop."

⁶¹⁰ Parasuraman, Sheridan, and Wickens, "A Model for Types and Levels of Human Interaction with Automation."

predict AWS behavior. Automation bias may result in ethical oversights and errors if human operators rely excessively on automated systems. AWS has the ability to process information and act at a faster pace than human decision-making processes, resulting in a temporal disparity that hinders the effectiveness of human intervention.⁶¹¹ In order to overcome these constraints, it is imperative to preserve substantial human oversight of AWS operations. This can be accomplished by employing mechanisms such as "human-in-the-loop" or "human-on-the-loop" systems, which allow human operators to intervene, supervise, and override AWS decisions as needed.

Sophisticated algorithms are employed in the collection, processing, and analysis of data for the purpose of target selection in Algorithmic Target Construction (ATC). Although this diminishes the necessity for human supervision, it also generates substantial ethical and legal concerns. Maintaining compliance with IHL and IHRL necessitates transparency and accountability in ATC processes. AWS can be monitored to ensure that their decision-making processes are in accordance with ethical and legal standards by instituting robust oversight mechanisms. Robust oversight mechanisms are essential for upholding compliance with international laws by ensuring transparency and accountability in ATC.

Maintaining human supervision at critical decision points is essential for the effective reconciliation of AWS with human control and accountability. Human operators must possess the capacity to establish operational parameters, evaluate critical decisions, and intervene when required. This hybrid approach guarantees that, despite the fact that AWS is capable of operating autonomously to a certain extent, a human element is always present to supervise, validate, and rectify their actions. By maintaining human supervision at critical decision points, AWS operations

⁶¹¹ Schwarz, "Delegating Moral Responsibility in War."

are validated and corrected as necessary, resulting in a hybrid approach that integrates human accountability with autonomy.

7.1.2 To what extent the core principles of International Humanitarian Law (IHL) regulate the development and deployment of Autonomous Weapon Systems (AWS) and how does it debate accountability and responsibility in autonomous military decision-making?

IHL is a legal framework that is intended to alleviate the atrocities of war. Its primary objective is to restrict the means and methods of warfare while simultaneously safeguarding non-combatants. IHL is presented with new challenges by AWS, which are capable of autonomously selecting and engaging targets. Consequently, a comprehensive evaluation of their adherence to IHL principles, including necessity, proportionality, and distinction, is required. The necessity of adapting legal frameworks to emerging technologies such as AWS, ensuring that they adhere to humanitarian principles and minimize superfluous suffering, is underscored by the historical evolution of IHL, from the St. Petersburg Declaration to the Geneva Conventions.⁶¹² AWS are regulated by the fundamental principles of IHL, which mandate the observance of necessity, proportionality, and distinction. This ensures that these systems are consistent with legal standards and humanitarian values.

The objective of weapons law is to regulate the use of weaponry in order to reduce their humanitarian impact. The legality of AWS under weapons law is contingent upon their intended use and design. AWS must adhere to the principles outlined in the St. Petersburg Declaration and subsequent treaties to avoid causing indiscriminate damage or superfluous suffering.⁶¹³ The comprehensive examination of AWS for compliance with IHL from development through

⁶¹² Gasser, "A Look at the Declaration of St. Petersburg of 1868."

⁶¹³ Crawford, "The Enduring Legacy of the St Petersburg Declaration."

deployment is guaranteed by the legal review procedure, which is mandated by Article 36 of Additional Protocol I.⁶¹⁴ AWS are regulated by weapons law to prevent the infliction of indiscriminate injury or unnecessary suffering. Rigorous legal evaluations are conducted to ensure that AWS comply with IHL principles throughout their lifecycle.

A fundamental principle of IHL is that AWS must not inflict superfluous suffering or excessive damage. A comprehensive evaluation of AWS is necessary to guarantee that their autonomous nature does not inherently result in excessive damage, as this principle is based on the concept of proportionality. The legality of AWS is contingent upon their programming and their capacity to conduct context-specific assessments, which guarantees that they do not cause unnecessary harm. AWS must be programmed to prevent the infliction of superfluous suffering or excessive damage, thereby guaranteeing their adherence to the proportionality principle of IHL through rigorous assessments. In order to prevent indiscriminate effects, AWS must possess the ability to implement precise targeting. In order to distinguish between military and civilian targets, AWS must possess sophisticated algorithms and robust technological capabilities. The principle of absolute infallibility is essential, as any faults or errors could render AWS into indiscriminate weapons. Advanced technological capabilities and algorithms that prevent indiscriminate effects are necessary to ensure precision and control in AWS, in accordance with IHL's prohibition of indiscriminate weapons.

AWS is required to consistently differentiate between combatants and non-combatants. This capability presents a challenge for machines because it necessitates rapid, context-specific judgment. In order to guarantee adherence to the principle of distinction, AWS must be endowed

⁶¹⁴ "Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977."

with sophisticated sensors and algorithms that enable it to make precise distinctions. In order to guarantee adherence to the principle of distinction in IHL, AWS must have sophisticated technological capabilities that enable it to accurately differentiate between combatants and non-combatants.

In order to balance potential civilian damage against military advantages, AWS is required to conduct proportionality assessments. Traditionally, humans have been responsible for making complex, context-dependent decisions. In order for AWS to conduct proportionality assessments that adhere to IHL standards, it is imperative that advancements in AI and machine learning be implemented. In order to effectively balance military advantages against potential civilian damage, AWS must be able to conduct proportionality assessments, which necessitates advancements in AI and machine learning. In accordance with the principle of precautions in attack, AWS is required to implement all practicable measures to mitigate civilian harm. This necessitates the use of sophisticated algorithms and sensors to facilitate real-time data processing and decision-making. In order to guarantee that AWS operations are consistent with IHL, it is essential to have human oversight. Advanced technological capabilities and human oversight are necessary to ensure that AWS complies with IHL and takes all feasible precautions to minimize civilian harm.

The Martens Clause underscores the significance of public moral awareness and humanitarian principles in warfare.⁶¹⁵ In order to guarantee that their actions are morally and ethically sound, it is imperative that AWS be developed and deployed in a manner that is consistent with these principles. This necessitates the integration of ethical frameworks into the design of AWS and the preservation of transparency and public engagement. AWS must ensure that its

⁶¹⁵ de Oliveira Biazatti and de Mesquita Vasconcellos, "The Martens Clause."

operations are morally sound by integrating ethical frameworks into their design and maintaining transparency, in accordance with the principles of public conscience and humanism. The development and deployment of AWS are regulated by the core principles of IHL, which mandate the observance of necessity, proportionality, and distinction. These principles guarantee that AWS operations minimize superfluous suffering and prevent indiscriminate damage. It is imperative to maintain human governance and incorporate ethical frameworks into the design of AWS to ensure adherence to IHL and uphold the fundamental values of ethical warfare and human dignity. Human oversight and ethical frameworks are necessary to maintain human dignity and ethical warfare, as the fundamental principles of IHL regulate AWS by ensuring conformance with necessity, proportionality, and distinction.

7.1.3 How the development and deployment of Autonomous Weapons Systems is regulated in law enforcement, in context of International Human Rights Law, how is responsibility associated in autonomous decision making?

The deployment of AWS in law enforcement presents substantial challenges and requires a robust regulatory framework to guarantee adherence to International Human Rights Law (IHRL). These systems, which were initially designed for military purposes, are now being increasingly adapted for a variety of law enforcement functions, including border security, surveillance, and crowd control. The autonomous nature of AWS, particularly their ability to make independent decisions, raises critical issues related to human rights, particularly the right to life, privacy, and protection from inhuman treatment, despite their operational advantages. Consequently, in order to mitigate the risk of human rights violations, the deployment of AWS in law enforcement must be meticulously regulated under IHRL.

A comprehensive framework for regulating AWS in law enforcement is provided by IHRL, which is bolstered by the principles of natural law. Natural law theory advocates for the preservation of human dignity and the right to life by emphasizing the ethical standards and intrinsic rights that are inherent in human nature. These principles necessitate that AWS operations comply with a framework that prioritizes justice and respects human rights. Therefore, AWS is required to operate within a legal framework that is founded on the principles of natural law and prioritizes human rights and justice.

The regulation of AWS under International Human Rights Law (IHRL) is primarily guided by the criteria of legality, need, and proportionality.⁶¹⁶ To ensure the legality and justification of AWS's activities, it is imperative that any use of force by the firm be grounded in precise legal frameworks. AWS only use violent or less-lethal force as a final option to accomplish legitimate goals, as determined by need. The magnitude of force used should be commensurate with the level of threat, ensuring a proportional and balanced reaction. Consequently, in order to guarantee that their actions are justified and in accordance with IHRL, AWS must adhere to the principles of legality, necessity, and proportionality.

Establishing accountability frameworks is a critical component of integrating AWS into law enforcement. Ensure accountability and transparency in AWS operations by allowing human operators to assess and intervene in AWS decisions through human oversight mechanisms, such as "human-in-the-loop" or "human-on-the-loop" systems.⁶¹⁷ In order to maintain these standards, it is imperative that developers, programmers, and administrators have explicit roles and

⁶¹⁶ Heyns, "Human Rights and the Use of Autonomous Weapons Systems (AWS) during Domestic Law Enforcement."

⁶¹⁷ Richards, "Boyd's OODA Loop."

responsibilities. Consequently, it is imperative to ensure that AWS operations are accountable and transparent through the implementation of robust human oversight.

It is imperative to integrate human control into critical decision-making processes in order to prevent AWS from taking arbitrary actions. The application of force by AWS must be justified, necessary, and proportionate, and it must adhere to rigorous protocols that are consistent with international human rights standards. Regular audits and evaluations of AWS can assist in the identification and correction of potential biases or errors in their decision-making algorithms. Consequently, it is imperative to implement rigorous protocols and conduct routine audits to guarantee that AWS decisions are both legitimate and impartial.

Another substantial concern regarding the deployment of AWS in law enforcement is the right to privacy. Individuals are safeguarded from illicit interference with their privacy by IHRL, particularly Article 17 of ICCPR.⁶¹⁸ In order to prevent excessive monitoring and data collection, the use of AWS for surveillance must be regulated to ensure that any surveillance measure is both necessary and proportionate. Consequently, it is imperative to establish stringent regulations to safeguard privacy rights in AWS surveillance operations.

AWS must also protect the right of individuals to security and freedom from inhuman treatment. Torture and cruel, inhuman, or degrading treatment are prohibited by Article 7 of the ICCPR.⁶¹⁹ AWS should be programmed to prevent the arbitrary or disproportionate use of force, thereby ensuring that this prohibition is adhered to. In order to ascertain the necessity and propriety of their actions to prevent human rights violations, AWS must have real-time assessment capabilities. Consequently, it is imperative that AWS be programmed to prevent the use of

⁶¹⁸ Baldinger, "The 1966 International Covenant on Civil and Political Rights (Iccpr)."

⁶¹⁹ Baldinger.

excessive force and inhumane treatment, thereby guaranteeing adherence to human rights standards.

States are obligated to safeguard life and conduct comprehensive investigations into any illicit deprivation of life by AWS. This encompasses the establishment of explicit guidelines for the use of AWS, the provision of sufficient training to law enforcement personnel, and the oversight of AWS operations to ensure transparency and accountability. Documentation and reporting mechanisms for AWS decisions are indispensable for post-incident investigations. As a result, in order to preserve the right to life, states must guarantee transparency, accountability, and comprehensive investigations of AWS operations. The principle of just administrative action necessitates that AWS's decisions be subject to human review and oversight. Legal recourse must be available to individuals who are impacted by AWS decisions, guaranteeing that their rights are safeguarded and that they are treated fairly. Thus, human review and supervision are indispensable for guaranteeing equitable administrative action and safeguarding individual rights in AWS operations.

In conclusion, the preservation of human rights and accountability in autonomous decision-making are essential components of the integration of AWS into law enforcement, necessitating rigorous regulation under IHRL. AWS deployment can be in line with international human rights standards by adhering to the principles of legality, necessity, and proportionality and implementing robust human oversight mechanisms. In order to guarantee that any violations are promptly addressed, it is imperative that the responsibility for AWS actions be explicitly assigned to human operators. Consequently, the preservation of human rights in law enforcement and AWS compliance with IHRL necessitate stringent regulation and human oversight.

7.1.4 What are the criteria for attributing penal responsibility to individuals and entities in cases of gross violations of International Humanitarian Law (IHL) and International Human Rights Law (IHRL) via Autonomous Weapon Systems in the context of International Criminal Law, and how can such responsibility be effectively attributed and prosecuted?

International Criminal Law (ICL) holds individuals accountable for serious breaches of international norms, drawing inspiration from past instances like the Nuremberg and Tokyo Tribunals.⁶²⁰ These tribunals established key principles for prosecuting war crimes, crimes against humanity, and other grave offenses, with an emphasis on ensuring individual responsibility. The emergence of AWS poses additional problems to these well-established concepts, as AWS has the ability to function independently, making it more difficult to assign responsibilities. Therefore, it is necessary to modify ICL in order to properly tackle the distinct issues presented by AWS.

ICL is intricately connected to IHL and IHRL, which regulate conduct during armed conflict and protect individual rights at all times, respectively.⁶²¹ ICL enhances the effectiveness of these laws by implementing mechanisms to bring legal action against severe transgressions, such as war crimes and crimes against humanity. The incorporation of AWS into military and law enforcement operations necessitates a reassessment of these structures to guarantee that they effectively tackle the intricacies brought about by autonomous systems. Hence, it is crucial to guarantee that ICL effectively harmonizes with IHL, IHRL within the framework of AWS.

One major difficulty in pursuing crimes utilizing AWS under ICL is the establishment of *mens rea*, which refers to the mental state necessary for criminal liability. According to Article 30

⁶²⁰ Adjei, "THE DEVELOPMENT OF INDIVIDUAL CRIMINAL RESPONSIBILITY UNDER INTERNATIONAL LAW."

⁶²¹ Zysset, "The Common Core between Human Rights Law and International Criminal Law."

of the Rome Statute, criminal responsibility requires the presence of purpose and knowledge. Nevertheless, the independent functioning of AWS makes it challenging to demonstrate that the persons responsible for its implementation have the necessary intention and awareness to carry out illegal activities. Therefore, it may be necessary to reinterpret or modify the current *mens rea* standards in order to effectively handle crimes related to Artificial Intelligence and Autonomous Weapon Systems (AWS).

By applying product responsibility to AWS, it would be possible to establish accountability by making technologists, such as developers, programmers, and manufacturers, liable for any errors or carelessness. This has the potential to improve safety protocols and evaluations of potential risks. Nevertheless, there are practical constraints, such as the challenge of assigning blame in intricate development networks and the absence of established legal cases that hold manufacturers liable for the exploitation of their products by third parties. Therefore, whereas product liability is a possible avenue for holding someone accountable, it has notable constraints when applied to AWS.

The Rome Statute delineates many forms of involvement that might lead to personal criminal culpability, such as direct and indirect perpetration, aiding and abetting, and command responsibility.⁶²² It is necessary to apply these notions with caution to AWS in order to ascertain the proper degrees of accountability. Developers and operators can be categorized as either direct or indirect culprits based on their level of participation in programming and implementing AWS. Hence, a comprehensive comprehension of involvement modalities is essential for assigning accountability in crimes linked to AWS.

⁶²² "Rome Statute of the International Criminal Court."

Technologists, such as developers and manufacturers, have a crucial influence in determining the behavior of AWS. Although they may not commit crimes directly, their accountability can be evaluated in terms of indirect perpetration or assisting and encouraging. Nevertheless, the intricate and uncertain nature of AWS poses difficulties in determining the requisite intention and knowledge for criminal culpability. Therefore, it is crucial to provide a clear delineation of the responsibilities of technologists within the legal framework in order to guarantee accountability.

Deployers or operators of AWS initiate the functioning of these systems but do not have direct control over their independent activities, making it difficult to assign direct accountability. Determining the mental state of individuals who deploy AWS activities is difficult because they may not anticipate the precise consequences. Thus, their responsibility may be more accurately described as helping and abetting, depending on their level of knowledge and intention. Therefore, it is necessary for the legal framework to clearly define the obligations of those who deploy in order to guarantee that there is a proper system of accountability in place. Commanders who provide permission for the deployment of AWS may be held responsible under the principle of command responsibility if they do not take action to prevent or punish crimes perpetrated by these systems. To establish this, it is necessary to prove that commanders had operational authority and were cognizant of, or should have been cognizant of, the possibility for AWS to engage in illegal activities. Therefore, it is imperative to rigorously enforce command responsibility in order to hold military commanders accountable for the acts of AWS.

The present ICL paradigm places a high importance on human responsibility, recognizing only individuals as legally responsible for committing offenses. This poses challenges for AWS, as they operate autonomously and lack the capacity for self-reflection or moral evaluations.

Modifying the current legal framework is essential to align it with the unique attributes of AWS. This may be done by making amendments to the Rome Statute or by adopting new treaties. These modifications are necessary to guarantee accountability. Hence, it is imperative to implement legislative modifications in order to efficiently govern AWS and uphold human responsibility. An innovative strategy for closing the accountability gap is to treat AWS as legal entities that may be held criminally responsible. This would require bestowing upon them a type of legal personality. Nevertheless, the adoption of this technique is hindered by philosophical, legal, and practical obstacles, as artificial intelligence systems lack consciousness and moral awareness. Therefore, granting AWS legal personality is not a feasible option; instead, it is more appropriate to hold human operators and commanders responsible.

The incorporation of AWS into military and law enforcement activities requires modifications to current legal frameworks. In order to guarantee accountability, it is imperative to enact legal modifications, establish robust oversight mechanisms, and clearly delineate the responsibilities of developers, operators, and commanders. Effectively attributing and prosecuting violations of IHL and IHRL using Artificial Intelligence (AI) systems like AWS, within the context of International Criminal Law (ICL), necessitates significant legal modifications and rigorous accountability measures that prioritize human oversight and authority.

7.1.5 How can the integration of Meaningful Human Control (MHC) in AWS be achieved to establish clear lines of accountability and attribute responsibility to human operators, thereby addressing the accountability gap in the development and deployment of autonomous weapon systems?

The advent of AI has presented significant ethical dilemmas, particularly in the context of AWS. MHC is a fundamental concept that ensures human supervision in AI systems, particularly

those that are endowed with lethal capabilities. Three fundamental components comprise the MHC concept: "control," "human," and "meaningful."⁶²³ Every component has a vital function in comprehending and executing MHC in diverse situations, guaranteeing that human participation is substantial and influential. Therefore, MHC plays an eminent role in ensuring significant human involvement in AI decision-making, especially in life-threatening situations.

MHC incorporates ethical, legal, and moral aspects based on IHL, IHRL and ICL. This comprehensive paradigm highlights the significance of human judgment and accountability in the deployment of deadly technology. Military Humanitarian Conduct (MHC) is morally necessary to guarantee that choices about the use of force are made with careful moral deliberation, following the principles of just war and ethical conduct in times of conflict. Thus, MHC plays a vital role in upholding human judgment and responsibility in the utilization of AWS, in accordance with the norms of IHL, IHRL and ICL.

MHC can be interpreted in two main ways: narrow and wide. The narrow perspective necessitates extensive human engagement in all decisions pertaining to the use of force, guaranteeing that human supervision is substantial and prompt. This viewpoint argues that it is crucial for people to possess a thorough understanding of the issue at hand and the capability to intervene in a competent manner. A wider perspective enables greater flexibility in human supervision, with a focus on the robustness of AI systems in terms of their design, programming, and operational dependability. Therefore, whereas the tight perspective guarantees direct human authority over every action, the broad perspective promotes flexible supervision, underscoring the necessity for a well-balanced approach to MHC.

⁶²³ "Killer Robots and the Concept of Meaningful Human Control | Human Rights Watch."

The MHC is essential in the expansion of the legal obligation in AWS, as it encompasses both the liability of individuals and the duty of states. A critical component of maintaining individual accountability under IHL and IHRL is the investigation of abuses and the retribution of the perpetrators. The MHC system guarantees that human agents retain authority over individual assaults, ensuring unambiguous responsibility and accountability. When dealing with complicated situations, adopting more expansive interpretations of MHC, which include considerations of negligence and command responsibility, might offer more efficient methods for ensuring individual accountability. Thus, MHC plays a crucial role in establishing unambiguous individual responsibility and guaranteeing compliance with international legal norms in the implementation of AWS.

State responsibility is a vital component of holding AWS accountable during deployment. If the actions of AWS can be ascribed to them, states can be held liable for violations of IHL and IHRL. MHC guarantees ongoing human supervision and the ability to intervene, connecting the operations of AWS to the governing authority. This omission is crucial for upholding governmental accountability and guaranteeing adherence to international legal norms. Therefore, MHC is essential for maintaining governmental responsibility, establishing a structure for human involvement, and guaranteeing accountability for acts taken by AWS.

The incorporation of MHC into legal systems can be achieved by utilizing either treaty law or customary international law. Although treaty law provides explicit and precise directives, the process of negotiating and ratifying treaties may be protracted and politically arduous. Customary international law arises from the consistent behavior of nations and offers flexibility and adaptation to changing conditions. This approach is consistent with the established historical practice of human action and purpose in legal systems. Thus, integrating MHC (Meaningful Human Control)

into customary international law provides a pragmatic and historically coherent method to guarantee human supervision in the deployment of AWS.

Integrating MHC into AWS is crucial for upholding ethical and legal norms, guaranteeing holistic human involvement, and expanding responsibility. Both narrow and wide interpretations of MHC emphasize the significance of human supervision, with the former emphasizing direct authority and the latter flexible supervision. The MHC plays a vital role in holding individuals and states accountable for their actions and ensuring compliance with international law norms. Customary international law provides a pragmatic approach for integrating MHC, in accordance with established legal standards. Therefore, it is crucial to include MHC (Meaningful Human Control) into AWS (Autonomous Weapon Systems) by means of customary international law. This is necessary in order to create unambiguous lines of responsibility and ensure human supervision in the process of developing and deploying autonomous weapon systems.

7.2 Research Findings

7.2.1 The Historical Evolution and Ethical Integration of AWS in Warfare

The research emphasizes the historical development of remote warfare, which has progressed from primitive combat to sophisticated technological systems like Autonomous Weapon Systems (AWS). This trajectory is indicative of a consistent endeavor to strike a balance between combat effectiveness and safety. This equilibrium must be preserved in the deployment of AWS to guarantee compliance with ethical and legal standards. The incorporation of meaningful human control (MHC) is necessary to ensure ethical and legal compliance in AWS, which is distinguished by its advanced AI capabilities and variable levels of autonomy. In order to operate within legal and ethical boundaries, the study emphasizes that AWS must be designed to include

human oversight mechanisms. It also emphasizes the importance of MHC in ensuring substantial human intervention in AI decision-making, particularly in lethal scenarios.

7.2.2 Human Control and Autonomy in AWS Operations

The opacity and intricacy of AI algorithms in AWS pose substantial obstacles to ensuring ethical and legal compliance. The research indicates that the autonomous operation of AWS has the potential to obfuscate decision-making processes, resulting in potential ethical oversights and errors. It is imperative to maintain MHC through mechanisms such as "human-in-the-loop" or "human-on-the-loop" systems in order to resolve these limitations. These systems allow human operators to supervise, intervene, and override AWS decisions as needed. This hybrid approach guarantees that AWS can operate autonomously to a certain extent while still retaining a human element to supervise, validate, and rectify their actions, thereby upholding ethical and legal standards.

7.2.3 International Humanitarian Law (IHL) Regulation of AWS

The development and deployment of AWS are regulated by IHL through the necessity, proportionality, and distinction of fundamental principles. The study underscores the necessity of programming AWS to prevent the infliction of superfluous suffering or excessive damage, thereby guaranteeing adherence to the proportionality principle of IHL through rigorous assessments. Furthermore, AWS must have sophisticated technological capabilities to accurately differentiate between combatants and non-combatants, thereby guaranteeing compliance with the principle of distinction. The maintenance of human governance and the integration of ethical frameworks into AWS design are essential for assuring compliance with IHL and upholding the fundamental values of human dignity and ethical warfare.

7.2.4 *AWS in International Human Rights Law (IHRL) and Law Enforcement*

The implementation of AWS in law enforcement presents substantial obstacles and requires the establishment of robust regulatory frameworks to guarantee compliance with IHRL. The significance of adhering to principles such as legality, necessity, and proportionality in AWS operations is underscored by the study. Maintaining ethical standards necessitates the establishment of accountability frameworks, the integration of human control into critical decision-making processes, and the promotion of transparency and public engagement. In order to guarantee that any violations are promptly addressed, it is imperative that the responsibility for AWS actions be explicitly assigned to human operators. The research emphasizes the importance of human supervision and stringent regulation in order to guarantee that AWS complies with IHRL and the preservation of human rights in law enforcement.

7.2.5 *Penal Responsibility for AWS-Related Violations*

The necessity of modifying existing legal frameworks to address the distinctive challenges presented by AWS is underscored by International Criminal Law (ICL), which holds individuals accountable for grievous breaches of international norms. In the context of autonomous systems, the study identifies the challenge of establishing *mens rea*, or the mental state necessary for criminal responsibility. It suggests the necessity of legal modifications, including the reinterpretation of *mens rea* requirements and the incorporation of broader interpretations of command responsibility. The research also investigates the feasibility of extending product liability to AWS developers and operators, despite the practical constraints of this approach. The effective attribution and prosecution of responsibility for IHL and IHRL violations via AWS under ICL are contingent upon comprehensive legal reforms and stringent accountability measures that preserve human oversight and control.

7.2.6 *Implementing Meaningful Human Control (MHC) in AWS*

The notion of MHC, or Human Oversight in AWS, is crucial for safeguarding ethical and legal considerations that are based on IHL, IHRL and ICL. The study highlights the importance of significant human intervention in managing AWS operations, whether through tight or flexible interpretations of MHC, in order to retain control. Integrating MHC into legal systems may be accomplished through either treaty law or customary international law, with the latter offering a more pragmatic and historically coherent method. The research asserts that incorporating MHC into customary international law is crucial for establishing clear lines of responsibility and ensuring human oversight in the creation and use of AWS. This technique ensures that AWS acts within ethical and legal boundaries, therefore upholding human dignity and following to the ideals of ethical conduct in times of conflict and just war.

7.3 Hypothesis Testing

The first hypothesis *The deployment of Autonomous Weapon Systems (AWS) by military forces during armed conflict and law enforcement poses significant challenges to the notion of legal accountability.* posits that the deployment of Autonomous Weapon Systems (AWS) poses significant challenges to the notion of legal accountability. This hypothesis is derived from the inherent complexity and unpredictability of AWS, which operate with varying degrees of autonomy. Conventional legal frameworks and accountability mechanisms are inherently designed for human actors, which is the critical issue at hand. These frameworks are not easily applicable

to machines that are capable of making decisions without direct human intervention, as Thurnher (2014) and ICRC have emphasized.^{624,625}

The assignment of responsibility is one of the most significant obstacles. Autonomous systems have the potential to make decisions that have significant consequences, such as potential violations of IHL and IHRL. However, attributing these actions to a specific human or entity is problematic because the decision-making process is distributed across the design, deployment, and operational stages of AWS. This decentralization of decision-making complicates the establishment of *mens rea* (intent) and *actus reus* (action), which are essential elements of criminal liability under international law. Additionally, the existing legal frameworks are inadequately prepared to manage the intricate and rapid decision-making processes of AWS. A temporal disparity is created by these systems, which can process information and act more rapidly than human operators, thereby challenging the effectiveness of human intervention and supervision. The opacity of AI algorithms also complicates the ability of human operators to completely comprehend or anticipate AWS behavior, which may result in ethical oversights and legal violations.

This research has established that the autonomous operation of AWS does, in fact, undermine traditional principles of accountability and responsibility. The analysis demonstrates that the more autonomously AWS operates, the more difficult it is to hold them accountable for their actions. This confirms that the current legal regimes are insufficient to address the accountability issues posed by AWS, as the inherent complexities of AI decision-making processes and the absence of explicit guidelines exacerbate these challenges. As a result, this hypothesis has

⁶²⁴ Thurnher, "Examining Autonomous Weapon Systems from a Law of Armed Conflict Perspective."

⁶²⁵ "Weapons."

been corroborated by the demonstration of the substantial voids and constraints in the current legal frameworks that pertain to the autonomous functions of AWS.

7.4 Limitations of Thesis

A significant limitation in the current research is the dynamic nature of Autonomous Weapon Systems (AWS). AWS technology is growing rapidly with each passing day, and improvements are being made constantly in artificial intelligence, machine learning, and robotics. Many times, such progress will be faster than the creation and adoption of legal and regulatory frameworks. As a result, findings and recommendations given in this dissertation may fast become outdated when new technologies and capabilities are introduced. The data and legal analyses must be continually monitored and updated to ensure the research remains relevant. In addition, it is speculative to predict what future AWS technology may look like and what that could mean; therefore, only weak conclusions can be ascertained.

Legal analysis, even though conducted with great detail in this dissertation, is limited by available data and complexity within international legal frameworks. IHL, IHRL and ICL are enormous and highly complex bodies of law teeming with copious amounts of case law, treaties, and state practices. This study cannot possibly cover all relevant legal precedents, emerging doctrines, or the entire spectrum of state practices that would be important to present. Legal interpretations may also vary drastically between jurisdictions, and often, the general application and enforcement of international law can be influenced by geopolitical factors. Such factors may have an impact on the generalizability and applicability of the legal conclusions of this study.

The discussion of AWS accountability brings Meaningful Human Control into play. However, the conceptualization of MHC is comprehensive, with quite several nuances. Diverging

views on what constitutes control that is "meaningful" could result in different implementations across the board, which would not necessarily consistently meet the ethical and legal issues. The feasibility of implementing robust human oversight mechanisms across all operational contexts also comprises a considerable challenge. Human oversight may still be ineffective because of factors such as the speed of combat decision-making, geographical distance between operators the AWS, and the reliability of communication systems. Such are practical limitations of the solution through MHC, which must be factored in considerations.

This research primarily rides on adaptations from existing legal frameworks to meet the challenges ahead due to AWS. Practical in nature, it does not deal with the novelty that surrounds autonomy in a system. The existing legal frameworks were fashioned for human-operated systems and may not necessarily adapt to the new complexities of AI and machine learning. Adjusting such a framework may risk only being sufficient for regulating and controlling without solving the root issues associated with the autonomy of AWS. A more radical reform of the legal regime may be necessary, but this thesis is concerned with more incremental changes due to practical and political constraints.

The findings and recommendations of this dissertation, therefore, are based on theoretical analysis and specific case studies within defined legal and operational contexts. The generalizability of these findings to all types of AWS and diverse geopolitical settings may be limited. AWS is embedded in different legal traditions, technological capabilities, and policy approaches to regulation. As a result, such differences can significantly influence how AWS is deployed, regulated, and held accountable. Consequently, conclusions drawn throughout this dissertation have to be adapted contextually in specific national or regional settings.

The dissertation relies on such scholarly works and reports of the ICRC and UNIDIR. They are credible and authoritative sources, but they may contain some bias in ideas and recommendations. Reports from institutions, for example, may highlight some ethical considerations or legal interpretations due to their mission and values as an organization. These biases may influence the discourse related to AWS regulation and accountability, thus again affecting the objectivity of the research findings. This needs effective resolution through a balanced analysis.

Empirical testing of the stated hypotheses and the findings of this research is very challenging. Indeed, deploying AWS in real scenarios involves hundreds of variables, ranging from operational conditions to the decision-making process and the behavior of autonomous systems in different environments. Ethical and logistical constraints make controlled empirical studies exceedingly challenging to validate the theoretical conclusions drawn. There will be strong ethical implications in trying out AWS in real-life conditions, based on the possibility of causing undue harm. Besides, the unpredictability of AWS behavior in different situations, and the empirical testing of research findings can be very complicated. This emphasizes the necessity for continuous empirical research that should be carried out to reinforce and, at the same time, develop further the detailed theoretical framework made by this dissertation.

While this research has comprehensively identified legal and ethical challenges arising from the deployment of AWS and proffered Meaningful Human Control as a solution, it suffers the following shortcomings. The limitations are mainly due to the rapid pace of technological developments, quickly getting complex legal frameworks, ethical aspects, heavy dependencies on the availability and growth of existing legal infrastructures, issues related to generalizability, sources bias, and empirical testing. These limitations can only be overcome by sustained scholarly

attention, interdisciplinary collaboration, and adaptive legal and policy measures that ensure the use of AWS will be responsible and observant of international norms.

7.5 Recommendations for Future Research

The rapid development and deployment of AWS have raised significant legal, ethical, and operational challenges. This dissertation has tackled these issues, demonstrating the vital need for normative guidelines that guarantee accountability and compliance with international norms. Early research from Thurnher (2014) stipulated that the big challenge is that of attribution of responsibility in autonomous systems, especially as the existing legal frameworks were fashioned with human decision-makers in mind. Thurnher's work established the basis for understanding the legal dilemmas that AWS create, but it does not put forward specific measures to solve them.⁶²⁶

Sharkey (2019) also emphasized the risks of a moral and ethical nature which AWS present. The paper argues that there should be strict human control in order to avoid these kinds of perils. His work emphasizes maintaining human judgment in decisions on killing, but he, too, left the door open for much more exploration of practical implementations of this oversight.⁶²⁷ ICRC has been similarly strong in arguing for clarity in accounting for the deployment of AWS, as seen in its reporting to the United Nations. As they have also stated, challenges lie in compliance with international humanitarian law and autonomous technologies' involvement.⁶²⁸

UNIDIR has addressed the requirement of MHC over autonomous systems to meet international legal standards. UNIDIR has set out the case for MHC, and its work provides a foundation for discussion about what implementing human oversight in AWS operations might

⁶²⁶ Thurnher, "Examining Autonomous Weapon Systems from a Law of Armed Conflict Perspective."

⁶²⁷ Sharkey, "Autonomous Weapons Systems, Killer Robots and Human Dignity."

⁶²⁸ "ICRC Position on Autonomous Weapon Systems."

look like.⁶²⁹ But there is still empirical work to be done, and guidance to be given. So, the thesis proceeds further by building on this base: suggesting concrete mechanisms through which MHC could be integrated into AWS operations and inquiring into how these mechanisms can further legal accountability. It will provide details of recommendations for future studies and possible new research questions to fill the gaps. These recommendations were intended to increase the understanding and the use of MHC in AWS so that the resultant systems could be ethically and legally deployed.

The primary focus for future research needs to carry out empirical studies for observing and analyzing the behavior of AWS under controlled conditions. These might involve the simulation of scenarios involving battlefields and policing, among others. Generally, empirical data will provide tangible evidence that can be used to refine theoretical models of accountability and improve the designs of AWS to ensure they work within the set boundaries of ethics and law. Such studies are also supposed to look into the real challenges facing operators in their quest to control AWS and the effectiveness of various oversight mechanisms.

What is acutely needed is interdisciplinary research between ethicists, AI developers, legal scholars, and policymakers that lead to co-designed forms for AI systems, which, from the outset, are in line with ethical standards and legal norms. Research should center on creating algorithms that prioritize human rights and humanitarian principles to make sure AWS can make moral and sound decisions even in complex and dynamic environments. For instance, while discussing aligning AI goals with human values, Bostrom and Yudkowsky (2014) give one side of the coin

⁶²⁹ Programme, "The Weaponization of Increasingly Autonomous Technologies."

for practical implementations in AWS.⁶³⁰ Still, future works can extend the other side by moving to concrete implementations.

Comparative legal research would also be necessary, given the diversity of the traditions and regulatory frameworks under which AWS operates in different countries. Therefore, future studies can investigate how various jurisdictions regulate the issues of AWS and accountability by finding best practices which can guide the design of any possible harmonized international regulation. This may involve a comparison with the experience of countries as different as the United States, which has developed specific guidelines in the use of autonomous systems within its Department of Defense's Directive 3000.09 and contrasted to what is being done in other parts of the world.⁶³¹

For decisions to be held accountable, the workings of AI need to be transparent and explainable. Further research should be done in developing more sophisticated mechanisms so that the processes of AI are understandable and interpretable to the operators. Such mechanisms further allow the operators to trace and understand the rationale of how the decisions from AWS were achieved so that their level of intervention can also be improved. Works of scholars like Doshi-Velez and Kim (2017) on interpretable machine learning can become a basis of such mechanisms regarding AWS.⁶³²

The study must consider the human factors affecting AWS—cognitive load, decision fatigue, and interaction with autonomous systems. This will help make better-designed interfaces

⁶³⁰ Nick Bostrom and Eliezer Yudkowsky, "The Ethics of Artificial Intelligence," in *Artificial Intelligence Safety and Security* (Chapman and Hall/CRC, 2018), 57–69, <https://www.taylorfrancis.com/chapters/edit/10.1201/9781351251389-4/ethics-artificial-intelligence-nick-bostrom-eliezer-yudkowsky>.

⁶³¹ "DOD DIRECTIVE 3000.09 AUTONOMY IN WEAPON SYSTEMS."

⁶³² Finale Doshi-Velez and Been Kim, "Towards A Rigorous Science of Interpretable Machine Learning" (arXiv, March 2, 2017), <http://arxiv.org/abs/1702.08608>.

and protocols, both necessary to support human operators for effective control over AWS. The research of Endsley (1995) on situational awareness in complex systems can serve as a path in identifying ways to reduce operator burden in case of difficult decisions under time pressure.

AWS raises very complicated legal and ethical issues; it requires continuous scholarly attention. This dissertation contributed to understanding these issues by proposing Meaningful Human Control as a solution. However, this work lays foundational steps for further empirical study and interdisciplinary collaboration, comparative legal analysis, and more AI transparency and human factors. Addressing those areas will allow for the development of more robust frameworks for the accountable and ethical use of AWS in military and law enforcement settings.

7.6 Closing Remarks

The complex challenges technology present have been emphasized by the examination of Autonomous Weapon Systems (AWS) and their implications for legal accountability. It is imperative to address the voids in legal and ethical frameworks as AWS becomes more integrated into military and law enforcement operations. These challenges have been emphasized in this dissertation, and it has also proposed solutions and established the groundwork for future research and policy development.

The accelerated advancement of AWS technology signifies a paradigm shift in law enforcement and warfare. The attribution of responsibility and accountability is complicated by the varying degrees of autonomy of AWS. The fundamental principles of IHL, IHRL and ICL were established during a period in which human agency was a central focus of law enforcement and war. The introduction of autonomous systems has resulted in a substantial strain on these frameworks. This thesis has examined the historical development of remote warfare, underscoring

the necessity of maintaining a balance between the efficacy of combat and ethical and legal considerations. The accountability deficit posed by AWS has been addressed through the introduction of the concept of Meaningful Human Control (MHC), which guarantees human oversight and intervention at critical decision points.

The importance of AWS adhering to principles such as necessity, proportionality, and distinction has been emphasized in the context of IHL. In order to operate in accordance with these principles, AWS must possess sophisticated technological capabilities and effective oversight mechanisms. In order to prevent arbitrary actions and guarantee adherence to human rights standards, it is essential for IHRL to implement rigorous regulations and human oversight. The difficulties associated with prosecuting offenses involving AWS under ICL, particularly the establishment of criminal intent, have been examined. To guarantee accountability, potential modifications to legal frameworks have been suggested, including the application of product liability to AWS developers and the incorporation of broader interpretations of command responsibility. Future research recommendations underscore the necessity of empirical studies, interdisciplinary collaborations, comparative legal analysis, and advancements in AI transparency and human factors. Practical implementations of MHC will be developed and theoretical models of accountability will be refined based on these directions.

In summary, the implementation of AWS requires a reassessment of the current legal and ethical frameworks. By suggesting mechanisms to guarantee legal accountability and human supervision in AWS operations, this dissertation has enhanced the discourse. It is essential for academicians, policymakers, and practitioners to work together to resolve the challenges posed by AWS and maintain the principles of human dignity, justice, and accountability as technology continues to develop. To ensure AWS fully comply with legal norms, their development must pivot

from a focus on inflicting harm to one of protecting life. This shift in perspective underscores the ethical imperative for AWS to prioritize safeguarding human dignity and reducing harm, thereby enhancing their alignment with international legal standards and moral expectations. This approach fosters a paradigm where technological advancements contribute to humanitarian goals and legal accountability. Carl von Clausewitz astutely observed, "War is not merely an act of policy; it is a genuine political instrument, a continuation of political discourse, that is pursued through alternative methods."⁶³³ This emphasizes the ongoing necessity of incorporating ethics and human judgment into the tools of warfare to prevent technological advancements from surpassing our dedication to human values.

⁶³³ Carl Von Clausewitz, *On War*, vol. 1 (Jazybee Verlag, 1950), <https://books.google.com/books?hl=en&lr=&id=ceI6DwAAQBAJ&oi=fnd&pg=PA1&dq=Carl+von+Clausewitz+&ots=DIA8NC7k1W&sig=ZtlhJ10zCjcDIsOe1-5RWhyvUFk>.

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