

**The Autonomisation of Decision-Making:
Autonomous Warfare, Legal Coding, and the Limits of International
Humanitarian Law**

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**A thesis submitted to the Faculty of Graduate and Postdoctoral Studies,
University of Manitoba**

In partial fulfillment of the requirements of the degree of

MASTER OF LAWS

**Faculty of Law
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Abstract

With the advent of autonomous weapon systems, International Humanitarian Law (IHL) has been presented with a significant challenge. Autonomous technologies used in decision-making processes during times of conflict expose loopholes in the current principles of IHL that regulate the use of force, such as the principles of *distinction* and *proportionality*. Contemporary conflicts, particularly the Russia–Ukraine War and the 2025 India–Pakistan escalation, readily demonstrate how autonomous and semi-autonomous systems are increasingly involved in surveillance, targeting, and even striking decisions.

This thesis examines whether existing international legal frameworks adequately regulate autonomous warfare and addresses the legal gaps created by AI-enabled decision-making. This thesis adopts a mixed-methods approach grounded in doctrinal legal analysis, supplemented by policy analysis, assessment of legal institutions and regulatory systems, and interdisciplinary theoretical perspectives. This approach corresponds most closely with Martha Minow’s categories of doctrinal restatement, policy analysis, and the study and assessment of legal institutions, systems, and institutional actors.¹ The research integrates Katharina Pistor’s theory of legal coding and modest insights from Science and Technology Studies (STS), which provide additional critical perspectives on regulatory complexity and how law structures power and responsibility.

The thesis concludes with recommendations for reform to preserve meaningful human oversight and ensure that humanitarian protections remain effective in an era of algorithmic warfare.

¹ Martha Minow, “Archetypal Legal Scholarship: A Field Guide” (2013) 63:1 Journal of Legal Education 65 at 65–68.

Acknowledgments

I would like to thank my advisor, Dr. Mary Shariff, Faculty of Law, University of Manitoba, for providing her guidance and expertise. I would also like to thank my former advisor, Dr Katie Szilagyi, Faculty of Law, University of Manitoba, for her insights and guidance on law and technology. I also gratefully acknowledge the following people: Committee members Dr. Gillian MacNeil and Dr. Kjell Anderson, Faculty of Law, University of Manitoba, for their valuable feedback; and Dr. Donn Short, Faculty of Law, University of Manitoba, for his invaluable lessons that brought my writing to the graduate level.

I would also like to acknowledge and thank Robson Hall, Faculty of Law, and the Faculty of Graduate and Postdoctoral Studies, University of Manitoba, for the financial support I received during my time at the University of Manitoba. This support allowed me to dedicate my full attention to my LLM studies and the completion of this thesis.

I would also like to thank my family and partner for their continuous support and patience throughout this entire process. This thesis would not have been possible without them.

To my Mother, who I hope is looking down with pride.

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Chapter 1: Introduction

On a September morning in 2024, a young mother cycled through the streets of Kherson, Ukraine, as a drone hovered above her. The aircraft tracked her movements for nearly 300 meters before releasing an explosive that tore into the road beside her, leaving her bleeding and injured.² The attack was captured through the drone's own camera and later verified by investigators. In May 2025, residents of the Ukrainian village of Velykyi Burluk reportedly watched as a swarm of Russian V2U drones³ circled overhead before descending on vehicles and people gathered near a market and postal facility.⁴ According to Ukrainian drone specialist Serhii Beskrestnov, the incident suggests the system may have been unable to distinguish military objectives from civilians reliably.⁵

As increasingly autonomous and artificial intelligence (AI) enabled weapons systems assume greater roles in target identification and engagement, incidents such as the Kherson drone attacks and alleged inaccurate V2U drone strikes expose a fundamental gap or weakness in International Humanitarian Law (IHL).⁶ Designed in an era in which humans made life-and-death decisions on the battlefield, existing legal frameworks increasingly struggle to assign

² Human Rights Watch, *Hunted From Above: Russia's Use of Drones to Attack Civilians in Kherson, Ukraine* (3 June 2025), online: Human Rights Watch <https://www.hrw.org/report/2025/06/03/hunted-from-above/russias-use-of-drones-to-attack-civilians-in-kherson-ukraine>.

³ Organization for Economic Co-operation and Development (OECD), "Russian V2U AI-Powered Strike Drone Deployed in Ukraine" (9 June 2025), OECD AI Incidents Monitor (AIM), online: OECD.AI <https://oecd.ai/en/incidents/2025-06-09-e3fa>.

⁴ John Hardie, "Ukrainian Intelligence Details Russia's New V2U Autonomous Loitering Munition" (14 June 2025), FDD's Long War Journal, online: Foundation for Defense of Democracies <https://www.longwarjournal.org/archives/2025/06/ukrainian-intelligence-details-russias-new-v2u-autonomous-loitering-munition.php>.

⁵ Ibid.

⁶ International Committee of the Red Cross, "What Is International Humanitarian Law?" (13 October 2014), online: ICRC <https://www.icrc.org/en/document/what-international-humanitarian-law>; See also, C Droege, "International Humanitarian Law and Peace: A Brief Overview" (2024) 106:927 Intl Rev Red Cross 989, DOI: 10.1017/S1816383125000062

responsibility, ensure meaningful human control, and effectively regulate weapons capable of selecting and striking targets with unprecedented speed and distance.

Since World War II, the United Nations and other international organizations have played a crucial role in holding perpetrators of mass atrocities accountable and promoting justice. Likewise, technological developments have transformed how wars are fought and have changed the nature of warfare. The industrial innovations of World War I led to the development of tanks, aircraft, and chemical weapons on an unprecedented scale.⁷ World War II accelerated this trend with inventions like radar, code-breaking machines, advanced aviation, and the first nuclear weapons.⁸ The late-20th-century electronics revolution introduced guided missiles, satellites, and early precision-strike systems.⁹ The digital age brought drones, network-centric warfare, and cyber operations,¹⁰ while current breakthroughs in AI and autonomy are shaping weapons that can sense, decide, and act with minimal human oversight.¹¹

While international law has, at times, sought to regulate particular types or levels of harm without identifying specific weapons or technologies, technological developments may nevertheless be deployed in legal and regulatory gaps where existing rules do not clearly address their novel capabilities or effects.¹²

⁷ Robert Harris & Jeremy Paxman, *A Higher Form of Killing: The Secret History of Chemical and Biological Warfare* (London: Arrow, 2002), Ch 1.

⁸ Richard Sheposh, “Scientific and Technological Advances of World War II” (2022), online: EBSCO Research Starters: <https://www.ebsco.com/research-starters/military-history-and-science/scientific-and-technological-advances-world-war-ii>.

⁹ Paul N Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge, Mass: MIT Press, 1996); See also, David K van Keuren, “Cold War Science in Black and White” (2001) 31:2 Soc Stud Sci 207, DOI: 10.1177/0306312701031002004.

¹⁰ Paul Rosenzweig, *Cyber Warfare: How Conflicts in Cyberspace Are Challenging America and Changing the World* (Santa Barbara, Calif: Praeger, 2013).

¹¹ Lena Tabucco, “AI-Enabled Autonomous Weapons and Human Control: Part I: Human Control and Machine-Learning Design and Development” (2025) 106 Intl L Stud.

¹² See, e.g., Declaration (IV, 3) concerning the Prohibition of the Use of Bullets which Easily Expand or Flatten in the Human Body, The Hague, 29 July 1899; Declaration (IV, 2) concerning the Prohibition of the Use of Projectiles the Sole Object of Which Is the Diffusion of Asphyxiating or Deleterious Gases, The Hague, 29 July 1899; Convention (IV) respecting the Laws and Customs of War on Land, The Hague, 18 October 1907, annexed

With the advent of AI, this vacuum is emergent and arguably greater in scope.¹³ The complexities of algorithmic decision-making processes¹⁴ have enabled an ecosystem in which autonomous features added to existing technologies create dynamic, novel situations.¹⁵

Artificial intelligence can now be integrated into decision-making at virtually any stage of conflict, rendering many existing legal frameworks or principles on weapons use increasingly ineffective in modern warfare.¹⁶ This growing gap underscores the urgent need for novel, adaptive and forward-looking legal frameworks capable of keeping pace with rapidly evolving military technologies.

Recently, we have witnessed militaries incorporating increasingly complex forms of artificial intelligence-based decision support systems (AI DSS) in their decision-making process, including decisions on the use of force.¹⁷ What is key to consider here is the absence of human

Regulations, arts 22–23, 25. These instruments demonstrate the historical regulation of particular harmful effects and methods of warfare through general prohibitions rather than technology-specific regulation.

¹³ See Saeed, S, FK Shujahi & AS Minhas, “Emerging Technologies and the Future of Strategic Stability in South Asia: Indo-Pakistani Deterrence, Multi-Domain Conflict, and Crisis Governance” (2026) 17(1) *Pakistan Journal of Applied Social Sciences* 17–43. The authors observe that AI-driven systems may generate targeting recommendations and initiate sequences of responses at a pace that exceeds the capacity of political leadership to engage in meaningful decision-making, potentially reducing the time available for de-escalation to minutes or seconds. This illustrates how AI-enabled military capabilities may complicate existing mechanisms of human oversight and intervention by compressing the timeframe within which legal and policy decisions can be made. The integration of AI into military decision-making therefore presents not only challenges arising from novel technological capabilities, but also from the accelerated pace at which decisions and responses may occur.

¹⁴ Brigitte Alfter, Ralph Müller-Eiselt & Matthias Spielkamp, eds, *Automating Society: Taking Stock of Automated Decision-Making in the EU* (Algorithm Watch, 2019). The report describes automated decision-making (ADM) as involving algorithmically controlled decision-making or decision-support systems in which decisions are partially or completely delegated to data-driven systems that subsequently execute an action. It further conceptualizes ADM as a socio-technological framework encompassing the decision-making model, the algorithm through which that model is translated into computable code, the data used as inputs, and the broader context in which the system is developed and deployed. The implications and complexities of algorithmic decision-making, including their significance for human oversight and accountability, are analyzed further below.

¹⁵ McFarland, T., Assaad, Z. “Legal reviews of in situ learning in autonomous weapons.” *Ethics Inf Technol* 25, 9 (2023). <https://doi.org/10.1007/s10676-023-09688-9>

¹⁶ Gerald Mako, “Legal Accountability for AI-Driven Autonomous Weapons” (9 March 2026), *Articles of War* (blog), Lieber Institute at West Point, online: <https://lieber.westpoint.edu/legal-accountability-ai-driven-autonomous-weapons/>; See also; *AI-Enabled Autonomous Weapons and Human Control*, Supra note 11.

¹⁷ Wen Zhou & Anna Rosalie Greipl, “Artificial Intelligence in Military Decision-Making: Supporting Humans, Not Replacing Them” (29 August 2024), *Humanitarian Law & Policy Blog*, International Committee of the Red Cross, online: <https://blogs.icrc.org/law-and-policy/2024/08/29/artificial-intelligence-in-military-decision-making-supporting-humans-not-replacing-them/>.

control in the operation of these systems in combination with the programming/coding underlying and facilitating human operator absence.

In 2019, the International Committee of the Red Cross (ICRC) report on IHL and the challenges of contemporary armed conflicts discussed modern warfare methods in depth.¹⁸ Autonomous weapons were specifically analyzed in light of the decision-making ability they possess and the subsequent loss of human control.¹⁹ As described in the report, these systems overshadow the human element in decision-making and raise legal concerns about striking decisions, ethical risks related to delegating responsibility to an algorithm, and humanitarian concerns given the technology's expansive capabilities.²⁰

The problem needs to be critically analyzed to determine whether international standards are adept at handling modern conflicts that include Autonomous Weapon Systems (AWS) and if not, what steps can be taken to adapt those standards and enhance their competency in the mentioned regulatory sphere.

Complexities arising from Autonomous Technologies in contemporary conflicts

A Reuters report recently stated, “The Indian and Pakistani militaries have deployed high-end fighter jets, conventional missiles, and artillery during decades of clashes. Still, the four days of fighting in May 2025 marked the first time New Delhi and Islamabad utilized unmanned aerial vehicles at scale against each other”.²¹

¹⁸ International Committee of the Red Cross, International Humanitarian Law and the Challenges of Contemporary Armed Conflicts (Geneva: ICRC, 2019), online: ICRC <<https://www.icrc.org/en/document/icrc-report-ihl-and-challenges-contemporary-armed-conflicts>

¹⁹ Ibid at 31.

²⁰ Ibid at 32.

²¹ Devjyot Ghoshal, Ariba Shahid & Shivam Patel, “India and Pakistan’s Drone Battles Mark New Arms Race in Asia” (27 May 2025), Reuters (online), online: <https://www.reuters.com/business/aerospace-defense/india-pakistans-drone-battles-mark-new-arms-race-asia-2025-05-27/>; See also, Nimra Javed & Zohaib Altaf, “India-Pakistan Development of Drones: Implications for Strategic Stability” (2025) 44(2) Strategic Studies 44 at 44–66 (arguing that the development of swarm and autonomous drones by India and Pakistan contributes to an action-reaction cycle that may undermine arms-race and crisis stability); Muhammad Nadeem Mirza & Hamid Ali Mujahid, “AI Arms

A U.N. human rights commission has documented hundreds of instances of Russian drone pilots targeting civilians in the city of Kherson in southern Ukraine and concluded that they amount to crimes against humanity and war crimes.²² Russia has tested a nuclear-powered weapon, Poseidon, which is a development of its already existing unmanned underwater military vehicle “Status-6”.²³ In India, the Defence Research and Development Organization (DRDO) has rolled out a new generation of Man-portable Autonomous Underwater Vehicles designed to bring intelligence and speed to underwater operations.²⁴

In addition to targeted strikes, Unmanned Aerial Vehicles (UAVs)²⁵ and Autonomous Underwater Vehicles (AUVs)²⁶ are also used for surveillance,²⁷ together raising pertinent questions about compliance with the principles of IHL, particularly *distinction*²⁸ and *proportionality*²⁹. In particular, their use raises concerns about whether military objectives can be

Race and Strategic Stability Between India and Pakistan” (2025) 25(1) IPRI Journal 42 at 42–68, DOI: 10.31945/iprij.250103 (arguing that the integration of AI and emerging technologies into the military systems of India and Pakistan contributes to an AI-driven arms race, increases uncertainty, and heightens the risk of inadvertent escalation).

²² United Nations Human Rights Council, Report of the Independent International Commission of Inquiry on Ukraine: Drone Attacks in Kherson Province, UNHRCOR, 59th Sess, UN Doc A/HRC/59/CRP.2 (2025), online: Office of the United Nations High Commissioner for Human Rights <https://www.ohchr.org/sites/default/files/documents/hrbodies/hrcouncil/coiukraine/a-hrc-59-crp2-en.pdf>.

²³ Anya L Fink, Russia’s Nuclear Weapons: Doctrine, Forces, and Modernization, Congressional Research Service Report No R45861 (21 April 2022), online: Congress.gov <https://www.congress.gov/crs-product/R45861>.

²⁴ Joe Saballa, “Autonomy Goes Portable: India Fields Smarter Underwater Threat Hunters” (17 November 2025), NextGen Defense (online), online: <https://nextgendefense.com/india-underwater-threat-hunters/>.

²⁵ Syed Agha Hassnain Mohsan, et al, “Towards the Unmanned Aerial Vehicles (UAVs): A Comprehensive Review” (2022) 6(6) Drones 147, online: <https://doi.org/10.3390/drones6060147>.

²⁶ National Oceanic and Atmospheric Administration, “Autonomous Underwater Vehicles” (22 June 2020, updated 25 April 2022), online: NOAA Ocean Exploration <https://oceanexplorer.noaa.gov/technology/subs-auvs/>

²⁷ Oleksandra Molloy, “How are Drones Changing Modern Warfare?” (1 August 2024), Land Power Forum, Australian Army Research Centre, online: <https://researchcentre.army.gov.au/library/land-power-forum/how-are-drones-changing-modern-warfare>, p 1.

²⁸ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Additional Protocol I), 8 June 1977, 1125 UNTS 3, arts 48, 51(2), 52(2). The principle of distinction is a fundamental principle of international humanitarian law which provides that parties to an armed conflict must “at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives”. This implies that indiscriminate attacks and the use of indiscriminate means and methods of warfare are prohibited. *This is discussed in multiple sections further below.*

²⁹ Additional Protocol I, *ibid*, art 51(5)(b), 57. The principle of *proportionality* prohibits attacks ‘which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination

reliably distinguished from civilians and civilian objects (distinction), and whether anticipated civilian harm is proportionate to the concrete and direct military advantage anticipated (*proportionality*).

International criminal law (ICL)³⁰ points to another layer of legal complexity from the IHL perspective. When autonomous technologies cause unlawful civilian harm pursuant to ICL, can human commanders or political leaders be held criminally responsible under IHL? Or does the nature of autonomous technology create gaps that current legal systems cannot adequately address?

Reform opportunities through “Coding” and STS theory

Katharina Pistor’s theory of legal coding, broadly introduced in her seminal work, *The Code of Capital*, provides a useful theoretical lens for the analysis by illustrating herein how legal frameworks actively construct and delegate power through the selective “coding” of assets.³¹ While particular attributes of coding are discussed in more detail below under the Research Methodology section, the basic concept is that law can function or be leveraged as an enabling infrastructure that selectively codes power to capital-intensive assets.³² In addition to capital, the perspectives offered by Pistor’s coding theory also enable the identification, through interpretation, of legal gaps,³³ including gaps in *distinction* and *proportionality* assessments. According to Pistor, it is essential to question the capacity of representative institutions to cope with the pace of socioeconomic and technological change in a timely fashion.³⁴

thereof, which would be excessive in relation to the concrete and direct military advantage anticipated’. *This is discussed in multiple sections further below*

³⁰ Bartram S Brown, ed, *Research Handbook on International Criminal Law* (Cheltenham, UK: Edward Elgar Publishing, 2011) page 3-4.

³¹ Katharina Pistor, *The Code of Capital: How the Law Creates Wealth and Inequality* (Princeton, NJ: Princeton University Press, 2019).

³² *Ibid* at 21.

³³ Katharina Pistor, “Legal Coding Beyond Capital?” (2022) 1 *European Law Open* 344, online: Columbia Law School Scholarship Archive.

https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=3751&context=faculty_scholarship.

³⁴ *Ibid* at page 6.

Applied to autonomous military technologies, this perspective highlights how law does not merely lag behind innovation (leading to widening gaps in the law) but also demonstrates how it shapes and legitimizes the allocation of responsibility and control in ways that obscure accountability and facilitate – in this case – breach of the object and purpose of principles under IHL. As a result, and as will be further alluded to and discussed throughout this paper, the legalities surrounding autonomous technologies exaggerate power imbalances and risk the creation of exploitable situations for actors in power.

Science and technology studies (STS)³⁵ provides a particularly relevant theoretical framework for examining the relationship between law, policy, and technological development. A central premise of STS is that technology is not socially or politically neutral: technological systems are shaped by the social, institutional, and normative contexts in which they are developed, while technologies, once designed and deployed, can in turn shape those contexts, including legal and regulatory structures.³⁶ In this way, STS can also be seen to recognize or advance a form of “coding” in that the technology informs or influences the subsequent shape of the law, with the subsequent legal infrastructure establishing the environment within which technologies are deployed. The two frameworks are therefore distinct in their objects and analytical commitments, but sufficiently aligned to permit a productive dialogue between them: in Pistor’s formulation, law operates through code, while, in the STS tradition, technology can itself embody and reproduce normative

³⁵ See Janet Vertesi et al, eds, *STS: A Field Guide for Science & Technology Studies* (Princeton, NJ: Princeton University Press, 2019), online: JSTOR <https://www.jstor.org/stable/j.ctvc77mp9>. In this paper, “STS” refers to Science and Technology Studies, an interdisciplinary field that examines the reciprocal relationships among science, technology, law, institutions, and society. Science and Technology Studies (STS) is a field that examines how scientific knowledge and technological systems are shaped by social, political, historical, and cultural contexts, rather than viewing science and technology as independent forces that simply drive change.

³⁶ See, generally, Wiebe E Bijker, Thomas P Hughes & Trevor Pinch, eds, *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, 2nd ed (Cambridge, Mass: MIT Press, 2012); Sheila Jasanoff, ed, *States of Knowledge: The Co-Production of Science and Social Order* (London: Routledge, 2004).

choices that subsequently shape the legal and institutional environment.³⁷ Although a detailed examination of the theoretical similarities and distinctions between Pistor’s coding theory and STS falls outside the scope of this thesis, the two frameworks are employed dialectically to illuminate the reciprocal relationship between technological development and legal ordering, and, in particular, to identify gaps that may emerge when legal frameworks attempt to govern rapidly evolving technologies.

1.1 Research Problem, Objectives, and Significance

Art 22 of the Hague Regulations establishes that “the right of belligerents to adopt means of injuring the enemy is not unlimited”.³⁸ This foundational right is protected by core principles of International Humanitarian Law (IHL)³⁹, namely *distinction*,⁴⁰ *proportionality*,⁴¹ *military necessity*,⁴² and *precautions*,⁴³ and is enshrined in the elementary considerations of *humanity* being reflected and expressed in the Martens Clause.⁴⁴ Thus, the lawfulness of targeting is dependent on the fulfillment of these core principles. As succinctly described by the International Committee of the Red Cross:

³⁷ See Lawrence Lessig, *Code: And Other Laws of Cyberspace* (New York: Basic Books, 1999); Lawrence Lessig, *Code 2.0* (New York: Basic Books, 2006). See also Katharina Pistor, *The Code of Capital*, *supra* note 31 especially ch 8, discussing the relationship between legal coding and digital technologies.

³⁸ Regulations respecting the Laws and Customs of War on Land, annexed to Convention (IV) respecting the Laws and Customs of War on Land, 18 October 1907, 205 CTS 277, art 22 (emphasis added).

³⁹ International Committee of the Red Cross, “Fundamental Principles of IHL”, *How Does Law Protect in War?* Online Casebook, online: ICRC https://casebook.icrc.org/a_to_z/glossary/fundamental-principles-ihl.

⁴⁰ Additional Protocol I, *Supra* note 28, art 48, 51(2), 52(2).

⁴¹ Additional Protocol I, *Supra* note 28, art 51(5)(b), 57.

⁴² Additional Protocol I, *supra* note 28, art 48, 52.

⁴³ Jean-François Quéguiner, “Precautions under the Law Governing the Conduct of Hostilities” (2006) 88:864 *International Review of the Red Cross* 793 at 794–97.

⁴⁴ “Until a more complete code of the laws of war has been issued, the High Contracting Parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity and the dictates of public conscience.” Martens clause, first introduced in 1899, in addition to being now considered a customary rule, is adopted in whole or in part in various IHL instruments. See e.g. Additional Protocol I, *Supra* note 28, art 1(2), see also; Convention (II) with Respect to the Laws and Customs of War on Land and its annex: Regulations, 29 July 1899, 187 CTS 429, preamble; and Convention (IV) respecting the Laws and Customs of War on Land, 18 October 1907, 205 CTS 277, preamble.

The rationale of international humanitarian law is to provide a minimum of humanity in armed conflict by seeking to minimize the level of harm caused to those not or no longer taking part in hostilities. The rules on targeting are central to this aim, as they determine against whom and under what circumstances armed force may be used, even in the heat of hostilities.⁴⁵

This thesis focuses on and analyzes the IHL concepts of *distinction*⁴⁶ and *proportionality*⁴⁷ in relation to the use of autonomous weapons in the Russia–Ukraine War and the India–Pakistan Conflict. These conflicts have been selected for analysis as both represent contemporary contexts in which emerging technologies, including drones, autonomous or semi-autonomous systems, surveillance technologies, and AI-enabled targeting capabilities, have featured prominently in military operations, while the availability of reporting and other open-source material permits examination of their reported use and effects. Also, the conflicts provide contrasting operational and strategic contexts through which to examine the interaction between human decision-makers, technological systems, and the application of existing IHL rules. The Russia–Ukraine conflict illustrates the large-scale integration of drones, surveillance systems, and algorithmic targeting tools used in modern warfare, while the India–Pakistan context highlights the strategic dynamics of technologically evolving conflict between two nuclear-armed states with longstanding geopolitical tensions

The focus on distinction and proportionality follows from the particular relationship between the technologies examined, their reported use, and the nature and scale of the resulting or potential harm to civilians and civilian objects. The reported use of increasingly sophisticated and, in some circumstances, autonomous or AI-enabled systems raises questions concerning the ability to

⁴⁵ International Committee of the Red Cross, “Targeting under International Humanitarian Law” in How does law protect in war? – Online casebook, online: ICRC <https://casebook.icrc.org/highlight/targeting-under-international-humanitarian-law>.

⁴⁶ Additional Protocol I, Supra note 28, art 48, 51(2), 52(2).

⁴⁷ Additional Protocol I, Supra note 28, art 51(5)(b), 57.

reliably distinguish between lawful military objectives and protected persons or objects, as well as the ability to assess whether anticipated civilian harm is proportionate to the concrete and direct military advantage anticipated. These principles therefore provide the most direct legal framework through which to examine the potential gaps identified in this thesis and to develop corresponding recommendations for the application of IHL to emerging technologies. The requirement to take precautions in attack is also relevant to this analysis and is considered where appropriate, particularly insofar as precautions intersect with target verification, the selection of means and methods of warfare, and the assessment of anticipated civilian harm.

The rise of AI in decision-making during war, existing legal frameworks and preliminary consideration of the distinction and proportionality principles

While IHL has historically governed the conduct of armed conflict, the emergence of autonomous and semi-autonomous systems complicates the application of existing legal regimes. Traditional legal frameworks were designed around an assumption - that human actors had or retained meaningful control over decisions involving the use of force. However, as AI-based decision support systems and autonomous weapons become more sophisticated,⁴⁸ the degree of direct human involvement in targeting, surveillance, and operational decision-making may diminish. This development raises fundamental questions regarding how the legality of actions by human commanders can be maintained and assessed in technologically mediated warfare.

Autonomous systems, such as Unmanned Aerial Vehicles, Autonomous Underwater Vehicles, and Algorithm-Driven Decision Support tools, introduce complex chains of responsibility that extend beyond traditional military command structures.⁴⁹ The involvement of

⁴⁸ Zhou & Greipl, “Artificial Intelligence in Military Decision-Making”, supra note 17.

⁴⁹ Arthur Holland Michel, *Decisions, Decisions, Decisions: Computation and Artificial Intelligence in Military Decision-Making* (Geneva: International Committee of the Red Cross, 2024), online: International Committee of the Red Cross <https://shop.icrc.org/decisions-decisions-decisions-computation-and-artificial-intelligence-in-military->

programmers, engineers, private contractors, and intelligence analysts creates a distributed network of actors, making it increasingly difficult to attribute responsibility for unlawful acts during armed conflict.⁵⁰ Consequently, when civilian harm results from AI-enabled operations, existing frameworks for criminal liability and command responsibility may struggle to identify who should be held accountable.⁵¹

The principle of *distinction*⁵² is deeply embedded in multiple scenarios within the laws of war. However, the core concern remains the protection of civilians and distinguishing between combatants and non-combatants. Autonomous decision-making introduces risks of misclassification and error. For example, the use of AI-based decision support systems (AI-DSS), which help analyze large sets of data and suggest actions, allows scope for the inclusion of a biased target profile and inaccurate target identification, with the errors of a human being tagged to an algorithm to avoid responsibility.⁵³

Additionally, the computations behind the AI-DSS decision-making could be extremely difficult to contest⁵⁴, given the commercial opacity afforded by contractual obligations with private contractors and considerations of national security.⁵⁵ Both companies and states are reluctant to

[decision-making.html](#), see also Yordan Gunawan et al, “Command Responsibility of Autonomous Weapons under International Humanitarian Law” (2022) 8:1 Cogent Social Sciences 2139906, online: <https://doi.org/10.1080/23311886.2022.2139906>.

⁵⁰ Ibid, Holland at 55.

⁵¹ Ibid.

⁵² Additional Protocol I, Supra note 28, art 48, 51(2), 52(2), see also International Committee of the Red Cross, “Rule 1. The Principle of Distinction between Civilians and Combatants”, Customary International Humanitarian Law Database (online), online: <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule1>.

⁵³ Elke Schwarz, “Autonomous Weapons Systems, Artificial Intelligence, and the Problem of Meaningful Human Control” (2021) 5:1 The Philosophical Journal of Conflict and Violence, online: Trivent Publishing <https://trivent-publishing.eu/img/cms/4-%20Elke%20Schwarz.pdf> at 17; Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information* (Cambridge, Mass: Harvard University Press, 2015).

⁵⁴ Ibid.

⁵⁵ Nick Robins-Early, “AI’s ‘Oppenheimer Moment’: Autonomous Weapons Enter the Battlefield” (14 July 2024), online: The Guardian <https://www.theguardian.com/technology/article/2024/jul/14/ais-oppenheimer-moment-autonomous-weapons-enter-the-battlefield>; See e.g. discussion in Pistor, *The Code of Capital*, supra note 31 at 158 – 182 John Williams, “Growing Autonomy and the Politics of Moral Responsibility for Military Action” (2026) 25:1 *Journal of Military Ethics* 3, online: Taylor & Francis <https://doi.org/10.1080/15027570.2026.2633842>.

provide details about the development of autonomous weapons and instead rely on general debates on the level of human judgment in these weapons to evade critical discourse on specific aspects that may render these weapons illegal in war.⁵⁶

The integration of autonomy into traditional weapons not only challenges the task of distinguishing between civilians and combatants but also risks institutionalizing or coding errors in a manner that undermines both civilian protection and the integrity of IHL. The fragmentation of responsibility exposes the inadequacy of the traditional IHL principles even in situations where humans are part of the decision-making process.

The research problem also relates to the application of the principle of *proportionality*.⁵⁷ The *proportionality* rule under IHL requires that the anticipated military advantage of an attack must not be outweighed by excessive civilian harm.⁵⁸ However, when warfare is technologically mediated and algorithmic systems assist or influence targeting decisions, determining how to assess *proportionality* becomes more complex. Questions arise, including whether machines can adequately interpret contextual and humanitarian considerations, and whether reliance on algorithmic outputs may unintentionally weaken human judgment in operational environments.

Objectives

This thesis principally addresses the issue of regulatory adequacy with a particular focus on the principles of *distinction* and *proportionality* for acts committed using autonomous weapons. While international discussions on lethal autonomous weapons systems (LAWS) and the ethics of AI are ongoing, the issues are very much live, and there remains limited consensus on how these emerging

⁵⁶ Ibid.

⁵⁷ Additional Protocol I, Supra note 28, art 51(5)(b), 57, see also “International Committee of the Red Cross, “Rule 14. Proportionality in Attack”, Customary International Humanitarian Law Database (online), online: <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule14>.

⁵⁸ Additional Protocol I, Supra note 28, art 57(2)(iii).

technologies should be governed.⁵⁹ Some policymakers advocate for strict international regulations or outright bans on certain autonomous capabilities, while others emphasize the strategic necessity of technological advancement in an increasingly competitive global security environment.⁶⁰

This strategic necessity argument is also supported by the downstream arguments of technical and legal opacity demanded by corporations – the same opacity allowed by states in their efforts to advance their war capabilities.⁶¹ Current state regulations and IHL principles often fail to consider the human impact during modern conflict, and rather focus more predominantly on the technological innovation of states.⁶²

As a result, the development and deployment of AI-enabled military systems may continue to occur faster than the establishment of comprehensive or applicable legal standards. To examine these issues, the thesis focuses on two contemporary conflicts.

As earlier mentioned, the Russia–Ukraine conflict illustrates the large-scale integration of drones, surveillance systems, and algorithmic targeting tools used in modern warfare⁶³, while the India–Pakistan context highlights the strategic dynamics of technologically evolving conflict between two nuclear-armed states with longstanding geopolitical tensions⁶⁴.

⁵⁹ Autonomous Weapons Systems, “The Political Landscape: How Nations are Responding to Autonomous Weapons in War” (25 April 2025), online: <https://autonomousweapons.org/global-perspectives-on-regulation/>.

⁶⁰ Ibid.

⁶¹ Sylvia Lu, “Algorithmic Opacity, Private Accountability, and Corporate Social Disclosure in the Age of Artificial Intelligence” (2020) 23:1 *Vanderbilt Journal of Entertainment and Technology Law* 99; Jenna Burrell, “How the Machine ‘Thinks’: Understanding Opacity in Machine Learning Algorithms” (2016) 3:1 *Big Data & Society* 2053951715622512, online: SAGE Journals <https://doi.org/10.1177/2053951715622512>.

⁶² Ibid.

⁶³ Sam Bendett, “Roles and Implications of AI in the Russian-Ukrainian Conflict” (20 July 2023), *Russia Matters* (online), online: <https://www.russiamatters.org/analysis/roles-and-implications-ai-russian-ukrainian-conflict>.

⁶⁴ Tahir Mahmood Azad, “The Strategic Use of Drones in Pakistan–India Irregular Warfare” (17 March 2026), *Irregular Warfare Initiative* (online), online: <https://irregularwarfare.org/articles/india-pakistan-drone-warfare/>.

The primary objectives of this thesis are therefore twofold. First, the research seeks to examine the **distribution of responsibility** across the various actors involved in the development and deployment of autonomous technologies. Secondly, the identification of the gaps in responsibility allows the thesis to explore how emerging ethical and governance frameworks for artificial intelligence may be **harmonized** with existing international legal regimes (with particular focus on the principles of *distinction* and *proportionality*) without unduly constraining technological innovation or state security interests. As mentioned before, the challenges that AI presents to IHL principles hint towards harmonization and modification of the current set of laws, rather than a complete overhaul. Again, *distinction* and *proportionality* assessments remain essential to IHL, and they need to adapt to the expanded range of attacks and methods of war that AI has enabled in modern conflicts.

Significance

The significance of this research lies in its attempt to further bridge what appears to be a growing gap between technological innovation and international legal regulation. By analyzing contemporary conflicts through the combined lenses of IHL, Pistor's theory of coding, and Science and Technology Studies (STS), the thesis contributes to ongoing debates regarding the governance of autonomous and AI-enabled warfare. This thesis highlights gaps in IHL which are currently being exploited or potentially exploitable by states engaged in conflict and deepens examination of risks and potential future ramifications of inaction in the regulatory control of autonomous weapon systems.

Furthermore, this work aims to clarify how IHL core principles such as *distinction* and *proportionality* can also evolve in response to new technological realities, ensuring that the fundamental humanitarian protections embedded in international law remain relevant in the age of

AI. The concept of autonomy, the principles of IHL, and the effect of AI during war have been researched and studied, but often in isolation and in hypotheticals, given the rapid advancements we see every day. The thesis aims to use real-world situations to highlight the active use of autonomous technology and shed light on the missing pieces in international policy that enable powerful states to exploit the same with little attention to the existing principles of IHL. The integration of two case studies, Pistor's theory of legal coding and STS, enables a multi-layered analysis of the central research question: whether existing international humanitarian law can effectively regulate autonomous warfare. Accordingly, this thesis is guided by the following **research questions**:

- **Are the principles of *Distinction* and *Proportionality* under International Humanitarian Law capable of regulating Autonomous Weapons Systems (AWS)?**
- **In consideration of the core IHL principles of *distinction* and *proportionality*, do regulatory gaps exist at the interface of IHL and AWS?**
- **If yes, what reforms are required to address the regulatory gaps created by AWS / autonomous warfare?**

Finally, the thesis proposes modest yet concrete regulatory reforms to bridge the gap between technology, warfare, and law.

The reasons for choosing *distinction* and *proportionality* are threefold. Firstly, these principles form the core of IHL, and this thesis attempts to analyze how the very core of IHL is being diminished via the use of AWS. Secondly, the research building up to the thesis signals active violations of these two principles in the case studies discussed below. Lastly, the variables required to conduct the respective assessments for *distinction* and *proportionality* are the most impacted variables by autonomous warfare systems. This direct and indirect impact, in my opinion, warrants

a critical analysis of these two concepts in particular through the Russia-Ukraine and India-Pakistan case studies.

1.2 Scope and Limitations

This thesis examines the intersection of AI-enabled military technologies and international legal frameworks governing armed conflict. As described, the primary focus lies on how emerging technologies, particularly AI-based decision systems and autonomous or semi-autonomous weapons platforms, interact with the principles of IHL.⁶⁵

The study concentrates on two foundational principles of IHL, *distinction* and *proportionality*, and evaluates whether these principles remain adequate for regulating technologically mediated warfare.

The geographical scope of the study is limited to the **Russia–Ukraine conflict** and the **India–Pakistan conflict**. The Russia–Ukraine conflict offers a contemporary example of large-scale interstate warfare in which AI-supported intelligence analysis, autonomous and semi-autonomous drone systems, and data-driven targeting technologies have been deployed extensively⁶⁶, generating significant debate regarding *distinction* and *proportionality* under IHL. In contrast, the India–Pakistan conflict provides insight into the legal and strategic implications of emerging military technologies in a regional security environment shaped by persistent border disputes⁶⁷, nuclear deterrence, and asymmetric escalation risks.⁶⁸

⁶⁵ Jimena Sofia Viveros Álvarez, “The Risks and Inefficacies of AI Systems in Military Targeting Support” (4 September 2024), Humanitarian Law & Policy Blog, International Committee of the Red Cross (online), online: <https://blogs.icrc.org/law-and-policy/2024/09/04/the-risks-and-inefficacies-of-ai-systems-in-military-targeting-support/>.

⁶⁶ Bendett, “Roles and Implications of AI in the Russian-Ukrainian Conflict”, supra note 63.

⁶⁷ Reuters, “Timeline: Flashpoints and Flare-Ups in India-Pakistan Ties” (8 April 2012), Reuters (online), online: <https://www.reuters.com/article/world/us/timeline-flashpoints-and-flare-ups-in-india-pakistan-ties-idUSBRE837056/>.

⁶⁸ Azad, “The Strategic Use of Drones in Pakistan–India Irregular Warfare”, supra note 64.

Examining these cases comparatively enables an assessment of whether existing legal principles governing the use of force and conduct of hostilities remain effective across different operational and geopolitical settings, thereby contributing to ongoing debates concerning the regulation of autonomous weapons and AI-enabled military systems.⁶⁹

The case studies direct us towards real-life instances where the inadequacy of regulation of autonomous weapon systems is exposed and allow for meaningful discourse and solution-driven research. Additionally, as mentioned before, the conflicts provide contrasting operational and strategic contexts through which to examine the interaction between human decision-makers, technological systems, and the application of existing IHL rules

Despite these analytical goals, certain limitations shape the scope of the research. First, the thesis focuses primarily on the **legal and normative implications of artificial intelligence** in warfare rather than the technical architecture of AI systems. While references are made to various technologies, the research does not attempt to provide a detailed engineering or technical analysis of these systems. Instead, the emphasis remains on their legal and governance implications within the framework of international law.

Second, the research relies largely on **publicly available information**, academic literature, policy reports, and documented incidents related to the selected case studies. Due to the classified nature of many military technologies and operational strategies, complete transparency regarding the design, capabilities, and decision-making structures of AI-enabled systems may not always be available.

⁶⁹ International Committee of the Red Cross, 2019 ICRC Report on International Humanitarian Law and the Challenges of Contemporary Armed Conflicts, *supra* note 18.

Additionally, there is a blend of facts and misinformation present in the online sphere, which is difficult to navigate, and the thesis attempts to be cognizant and follow reliable sources for the above-mentioned information – though it may not be 100% successful in this regard.

Finally, the thesis is limited to the examination of interstate conflict contexts and does not extensively explore the role of non-state actors in the development or deployment of autonomous weapons technologies. Although non-state actors are increasingly relevant in modern warfare, the primary focus of this research remains on state conduct and the obligations imposed upon states under international law. That said, the extent to which opacity is implicated in gaps remains an important area of research for state actor obligations given their inherent position in the creation and adherence to international law, but may also be useful as a future research area for non-state actors.

Within these defined boundaries, the thesis seeks to provide a focused legal and policy analysis of how emerging AI technologies challenge established legal doctrines governing armed conflict.

1.3 Research Methodology

The thesis examines primary legal materials, including treaty law, customary rules, state practice, and soft-law guidance, to assess how *distinction*, *proportionality*, and *lex specialis* apply to autonomous and semi-autonomous weapons. The analysis is grounded in case studies from the Russia–Ukraine conflict and the India–Pakistan clashes. It draws on verified UN reports, NGO investigations, government statements, and technical documentation on UAVs and autonomous underwater systems.

Methodologically, this thesis adopts a mixed-methods approach grounded in doctrinal legal analysis, supplemented by policy analysis, assessment of legal institutions and regulatory systems,

and interdisciplinary theoretical perspectives.⁷⁰ The doctrinal component examines treaty law, customary international law, relevant legal principles, and their application to autonomous warfare, including through case studies of the Russia-Ukraine and India-Pakistan conflicts. The policy analysis component considers competing regulatory approaches to autonomous weapons, including proposals for prohibition, regulation, and continued development, while assessing the implications of these approaches for distinction, proportionality, meaningful human control, and accountability. The thesis also examines the operation of relevant international and domestic legal institutions and the positions adopted by states and international bodies in shaping the emerging regulatory framework.

As earlier described, to deepen the analysis of how law structures and governs technological systems, the thesis incorporates insights from Katharina Pistor's theory of legal coding.⁷¹ Katharina Pistor's theory highlights how certain legal modalities bestow critical attributes to certain assets. These attributes, in turn, provide a comparative advantage over similar assets, protect them from litigation, and promote exploitation. Four distinct attributes are highlighted through the theory, i.e., priority, durability, convertibility, and universality⁷².

These attributes are analyzed through an economic lens by Pistor. Applied to autonomous weapons, this perspective enables the thesis to interrogate how legal doctrines may privilege certain actors, such as states, developers, or manufacturers, while diffusing or obscuring accountability across complex human-machine relationships. It thus also allows for a critical examination of whether existing legal frameworks inadvertently "code" autonomy (i.e., "law is code") in ways that facilitate the expansion and integration of the concept of autonomy in

⁷⁰ Martha Minow, "Archetypal Legal Scholarship", *supra* note 1.

⁷¹ Pistor, *The Code of Capital*, *supra* note 31 at 13-15.

⁷² These terms are discussed in relation to autonomous weapons further below.

traditional weapons systems and conversely shield decision-making processes from scrutiny or liability, in turn exposing regulatory gaps. Additionally, Pistor's theory is also supported by her continued research (i.e. beyond coding capital) that offers solutions to the creation of this apparent regulatory vacuum.⁷³ This research is also integrated into the thesis, allowing it to attempt a deeper technical analysis of the regulatory issues surrounding autonomous weapons systems in conflict in terms of IHL.

In parallel, and as earlier described, the thesis draws on Science and Technology Studies (STS) to conceptualize autonomous weapons as socio-technical systems rather than neutral tools.⁷⁴ STS emphasizes that technologies embed legal, political, and operational assumptions that shape their use and interpretation⁷⁵ (i.e., "code *qua* technology is law").

This lens is particularly useful in analyzing how algorithmic decision-making, data inputs, and system design influence the interpretation/application of legal principles such as *distinction* and *proportionality*. The reason STS is useful here is that it helps move the analysis beyond the idea that autonomous weapons are simply neutral when they execute human commands. Instead, STS treats autonomous weapons as socio-technical systems, systems whose behavior is shaped not only by hardware and software but also by human decisions, institutional practices, operational doctrines, and political values.

The integration of Pistor's theory of legal coding and STS enables a multi-layered and indeed dialectical analysis of the central research questions: whether existing international law can effectively regulate autonomous warfare and whether the current assessments of *distinction* and

⁷³ Pistor, "Legal Coding Beyond Capital?", supra note 33.

⁷⁴ Vertesi et al, eds, STS, supra note 35.

⁷⁵ Vertesi et al, eds, STS, supra note 35.

proportionality are adequate for decision-making processes distributed across human and machine actors.

The thesis is divided into 6 chapters, which build sequentially towards answering the research questions and analyzing key elements to bind the research together.

Chapter 2 establishes the legal, contextual, and theoretical framework for the analysis and explores the principles of *distinction* and *proportionality*, tracing their evolution in modern warfare.

Chapter 3 focuses on defining and categorizing autonomous and semi-autonomous weapon systems, including aerial and underwater unmanned vehicles. It also engages with ethical and doctrinal debates surrounding the delegation of lethal force to machines and reviews emerging international regulatory norms governing such technologies.

Chapter 4 applies the legal framework developed in the preceding chapters to case studies of the Russia–Ukraine conflict and the India–Pakistan escalation, assessing how the principles of *distinction* and *proportionality* operate in practice while highlighting challenges relating to civilian protection, attribution of responsibility, and conflict classification.

Chapter 5 examines the adequacy of existing international legal norms through legal coding theory and STS. It is important to note that the analysis of the core concepts through Science and Technology Studies is primarily conducted in a dedicated section in Chapter 5, while Pistor’s legal coding theory can be seen applied throughout the thesis to strengthen the analysis. STS provides a valuable reassessment of the analysis through legal coding’s lens and hence is included as a distinct analysis of its own.

The final chapter synthesizes the findings of the study and offers policy and legal reform recommendations aimed at improving accountability and compliance in the use of autonomous systems and suggests directions for future research.

Chapter 2: Legal, Contextual and Theoretical Foundations

International law has fallen short in developing dynamic laws and in matching the pace of technological innovation that current methods of warfare exploit.⁷⁶ The foundations reflect the interests and perspectives of the states that shaped the international legal order at the time, i.e., the states in power, and contain inherent biases, a lack of political considerations, and are difficult to apply contextually to modern conflicts, which involve dynamic weapons, undefined parties to conflicts, and sensitive geographical boundaries.⁷⁷ The Geneva Conventions⁷⁸ are fundamental in understanding the foundations of International Humanitarian Law (IHL)⁷⁹. The codification began through the adoption of the 1864 Geneva Convention and the 1868 Declaration of Saint Petersburg, which prohibited the use of certain projectiles in wartime.⁸⁰ The foundational treaties include the four Geneva Conventions of 1949 (GC I, II, III, and IV)⁸¹, supplemented by Additional Protocols I⁸² and II⁸³ of 1977, relating to the protection of victims of international and non-international armed conflicts, respectively.⁸⁴

⁷⁶ Yahli Shereshevsky, “International Humanitarian Law-Making and New Military Technologies” (November 2022) 104 :920 *International Review of the Red Cross*, online : <https://international-review.icrc.org/articles/international-humanitarian-law-making-and-new-military-technologies-92> ; see also, Mako, “Legal Accountability for AI-Driven Autonomous Weapons” *Supra* note 16.

⁷⁷ Linda Kinstler, “Are we witnessing the death of international law?”, *The Guardian* (26 June 2025), online: <<https://www.theguardian.com/law/2025/jun/26/are-we-witnessing-the-death-of-international-law>>.

⁷⁸ Geneva Conventions of 12 August 1949, 75 UNTS 31, 85, 135 & 287 (entered into force 21 October 1950).

⁷⁹ ICRC, “What Is International Humanitarian Law?”, *supra* note 6.

⁸⁰ Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War, 12 August 1949, 75 UNTS 287 (entered into force 21 October 1950); Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight (Declaration of St Petersburg), 11 December 1868, reprinted in (1907) 1 *American Journal of International Law Supplement* 95.

⁸¹ Geneva Conventions, *supra* note 79.

⁸² Additional Protocol I, *Supra* note 28.

⁸³ Protocol Additional to the Geneva Conventions of 12 August 1949 and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), 8 June 1977, 1125 UNTS 609 (entered into force 7 December 1978).

⁸⁴ Protocol Additional to the Geneva Conventions of 12 August 1949 and relating to the Adoption of an Additional Distinctive Emblem (Protocol III), 8 December 2005, 2404 UNTS 261 (entered into force 14 January 2007).

Since then, numerous treaties and customary law principles have been constructed to form what is collectively known as IHL. The latest developments in IHL for weapons are the Convention on Cluster Munitions, 2008⁸⁵, and the Treaty on the Prohibition of Nuclear Weapons, 2017.⁸⁶ The Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects⁸⁷ was adopted in 1980 and included protocols prohibiting weapons such as non-detectable fragments, mines, and incendiary weapons.

Furthermore, developments in the areas of criminal repression have closely aligned with policing the types of weaponry that cause excessive harm. In 2017, amendments to the Statute of the International Criminal Court made it a war crime to use certain weapons, such as weapons that use microbial agents, blinding laser weapons, and those weapons whose primary effect is to injure by fragments undetectable by X-rays in the human body.⁸⁸

Post World War II, states had settled into a new world order, which was backed by the evolution of these laws through a lens biased to the states in power, as discussed earlier. Additionally, while a state might consent and ratify international law, international law is not necessarily automatically implemented by that state.⁸⁹ The voluntary nature of participation, along

⁸⁵ Convention on Cluster Munitions, 30 May 2008, 2688 UNTS 39 (entered into force 1 August 2010).

⁸⁶ Treaty on the Prohibition of Nuclear Weapons, 7 July 2017, 729 UNTS 161 (entered into force 22 January 2021).

⁸⁷ 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, 10 October 1980, 1342 UNTS 137 (entered into force 2 December 1983).

⁸⁸ Amendments to Article 8 of the Rome Statute of the International Criminal Court, Res ICC-ASP/16/Res.4, 16th Sess, Assembly of States Parties to the Rome Statute (14 December 2017).

⁸⁹ See Robert McCorquodale, “The Relationship between International and Domestic Law” in Max Planck Encyclopedia of Public International Law (Oxford University Press) (discussing the relationship between international and domestic legal orders and the traditional distinction between monism, under which international and domestic law are understood as forming a single legal order, and dualism, under which they are treated as distinct legal orders requiring mechanisms of domestic reception or implementation). See also Madelaine Chiam, “Monism and Dualism in International Law” (2018) Oxford Bibliographies in International Law, DOI:

with veto powers in the Security Council and financial dependency on powerful states, weaken the pillars of international law and give way to modern conflicts.⁹⁰

Viewed through the ideas inspired by Pistor's legal coding theory, highlights how "first-mover"⁹¹ biases can be intentional and promoted by parties with capital to exploit them.⁹² Coding theory, applied to the case studies that will be discussed in the thesis, presents a perspective that accurately portrays the intricacies of Autonomous Weapon Systems (AWS)⁹³. The development of AWS can therefore be understood as part of a broader coding process in which law enables certain activities while technological development simultaneously tests and expands the boundaries of what the law permits, arguably which is contrary to the object and purpose of IHL. From an STS perspective, this can be understood as technology operating as a form of law: where legal rules do not fully address emerging capabilities, technological practices may fill those gaps and begin to shape the trajectory of future legal development.

Seemingly consistent with Pistor's coding narrative, in which established law operates as code that can preserve existing advantages, Russia has been a vocal opponent of new measures to regulate autonomous weapons systems and their associated technologies. It has consistently argued

10.1093/OBO/9780199796953-0168 (noting the continuing analytical utility of monism and dualism despite their limitations as comprehensive descriptions of contemporary practice).

⁹⁰ Soniya Nibhani, "Long-Term Consequences of the Use of Veto Power by UNSC Permanent Members: Towards a Post-World War II Multipolar Global Order" (2025) Intergovernmental Research and Policy Journal, online: IRPJ <https://doi.org/10.5281/zenodo.17975728>.

⁹¹ Marvin B Lieberman & David B Montgomery, "First-Mover Advantages" (1988) 9: S1 Strategic Management Journal 41 at 44.

⁹² Pistor, The Code of Capital, supra note 31 at 345.

⁹³ International Committee of the Red Cross, "What You Need to Know About Autonomous Weapons" (26 July 2022), online: ICRC <https://www.icrc.org/en/document/what-you-need-to-know-about-autonomous-weapons>; Sebastian Clapp, "Military Drone Systems in the EU and Global Context: Types, Capabilities and Regulatory Frameworks" (4 June 2025), Members' Research Service, European Parliamentary Research Service, online (pdf): European Parliament [https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/772885/EPRS_BRI\(2025\)772885_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/772885/EPRS_BRI(2025)772885_EN.pdf) at 3-5.

that existing IHL norms and principles apply to all weapon systems, including AWS, and are therefore “sufficient” to address the potential issues related to them.⁹⁴

India also does not support the negotiation of a legally binding instrument on autonomous weapons systems. Though India is one of the founding members of the Non-Aligned Movement, which supports the negotiation of a legally binding instrument on autonomous weapons systems, it has taken a separate stance on this issue.⁹⁵

This potentially suggests that emerging technologies may not merely be subject to future legal reform, but may themselves shape the direction and substance of that reform, consistent with the STS emphasis on the mutually constitutive relationship between technology and its social, political, and legal environment. Either way, it is important to note that these positions come from states that have the political and financial capital to exploit the technology and hold the power to shape and/or regulate it at the same time. This is not to suggest that relatively weaker states might not also exploit autonomous weapons. However, the point is less about exploiting weapons *per se* and observing the nature of the exploitation in conjunction with expressed state narratives and positioning in order to deepen understanding of the operation and efficacy of IHL and potential leveraging of gaps, gap-filling and power to leverage, shape or code law.

⁹⁴ Russian Federation, Considerations for the Report of the Group of Governmental Experts of the High Contracting Parties to the Convention on Certain Conventional Weapons on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems, UN Doc CCW/GGE.1/2021/WP.1 (27 September 2021), online: United Nations <https://undocs.org/CCW/GGE.1/2021/WP.1>.

⁹⁵ Automated Decision Research, “India” (online), online: https://automatedresearch.org/news/state_position/india/.

2.1 Russia-Ukraine Conflict

Since 2014, Russia and Ukraine have been at war after the Revolution of Dignity,⁹⁶ which saw the removal of then-president Viktor Yanukovich, the return to the 2004 Constitution of Ukraine, and the occupation of Crimea by Russia.⁹⁷ Notably, naval and cyberwarfare were not new additions from the full-scale conflict, but existing tangents from the 2014 beginnings.⁹⁸ Between December 2023 and May 2024, Russia was assessed to have increased its drone and missile attacks, firing harder-to-hit weapons, such as ballistic missiles.⁹⁹

During the initial conflict in 2014, there were multiple attempts to hide the involvement of Russian soldiers and term certain battles as internal conflicts. In April 2014, the anti-government protests in the Donbas developed into armed conflict between Russian-backed separatists and Ukraine. Russian citizens with links to its security forces had taken control of the separatist movement by this stage. Russia deployed 30,000–40,000 troops near Ukraine's eastern border in early April.¹⁰⁰ Russia used tactics such as disinformation, unconventional troops, and hidden troops as volunteers, along with conventional military power, in an attempt to hinder any Ukrainian attempt at the protection of their land.¹⁰¹ In 2022, a full-scale invasion of Ukraine by Russia was initiated.

⁹⁶ BBC News, “Ukraine Profile – Timeline” (10 May 2012), BBC News (online), online: <https://www.bbc.com/news/world-europe-18010123>.

⁹⁷ Simone F van den Driest, “Crimea’s Separation from Ukraine: An Analysis of the Right to Self-Determination and (Remedial) Secession in International Law” (2015) 62(3) Netherlands International Law Review 329.

⁹⁸ Alistair MacDonald, Jemal R Brinson, Emma Brown & Ievgeniia Sivorka, “Russia’s Bombardment of Ukraine Is More Lethal Than Ever” The Wall Street Journal (13 May 2024), online: <https://www.wsj.com/world/russias-bombardment-of-ukraine-is-more-lethal-than-ever-afd733c4>.

⁹⁹ Ibid.

¹⁰⁰ Michael Kofman, Katya Migacheva, Brian Nichiporuk, Andrew Radin, Olesya Tkacheva & Jenny Oberholtzer, Lessons from Russia's Operations in Crimea and Eastern Ukraine (Santa Monica, Cal: RAND Corporation, 2017), online: RAND Corporation https://www.rand.org/pubs/research_reports/RR1498.html.

¹⁰¹ Phillip A Karber, Lessons Learned from the Russo-Ukrainian War (Vienna, Va: The Potomac Foundation, July 2015), prepared for the US Army Capabilities Integration Center (ARCIC) Historical Lessons Learned Workshop, online: https://www.researchgate.net/publication/316122469_Karber_RUS-UKR_War_Lessons_Learned.

The invasion was methodical and strategically verbalized in the international forum and media before an actual invasion and full-scale war.¹⁰² Firstly, Russia alleged multiple actions by Ukraine that would incite war, such as inciting tensions, Russophobia, and repressing Russian speakers. Furthermore, questions about the legitimacy of statehood were raised, and the alleged actions by Kyiv's army against pro-Russian separatists were deemed as a first step towards genocide.¹⁰³ The international community rejected these claims and found the allegations baseless.¹⁰⁴ The attempts to justify its actions and introduce a pro-Russian narrative flowed into the blatant misuse of autonomous weapons on an already contested and volatile battlefield, as further explained below.

Both sides have deployed aerial and underwater drones to undermine the military capabilities of the other party, and multiple reports suggest that these drones contain varying levels of artificial intelligence, ranging from navigational assistance to fully autonomous striking capabilities.¹⁰⁵ Russian officials have been claiming to use “high-precision” weapons, including with the help of target designation systems which reportedly “integrate AI elements” against only military targets.¹⁰⁶ Meanwhile, the Russian army’s attacks have been destroying civilian objects often located far from the frontline. For example, Russian officials claimed to have hit a meeting

¹⁰² Andrew Osborn & Polina Nikolskaya, “Russia’s Putin Authorises ‘Special Military Operation’ Against Ukraine” Reuters (24 February 2022), online: <https://www.reuters.com/world/europe/russias-putin-authorises-military-operations-donbass-domestic-media-2022-02-24/>.

¹⁰³ AFP, “Putin Says Conflict in Eastern Ukraine ‘Looks Like Genocide’” The Moscow Times (10 December 2021), online: <https://www.themoscowtimes.com/2021/12/10/putin-says-conflict-in-eastern-ukraine-looks-like-genocide-a75780>.

¹⁰⁴ Reality Check Team, “Ukraine Crisis: Vladimir Putin Address Fact-Checked” BBC News (22 February 2022), online: <https://www.bbc.com/news/60477712>.

¹⁰⁵ See Paul Adams, “The New AI Arms Race Changing the War in Ukraine” BBC News (10 October 2025), online: <https://www.bbc.com/news/articles/cly7jrez2jno>; see also Peter Dickinson, “Missiles, AI, and Drone Swarms: Ukraine’s 2025 Defense Tech Priorities” (2 January 2025), UkraineAlert, Atlantic Council (online), online: <https://www.atlanticcouncil.org/blogs/ukrainealert/missiles-ai-and-drone-swarms-ukraines-2025-defense-tech-priorities/>.

¹⁰⁶ Mariarosaria Taddeo & Alexander Blanchard, “A Comparative Analysis of the Definitions of Autonomous Weapons Systems” (2022) 28:5 Science and Engineering Ethics 37.

of Ukrainian military officials with “high-precision” Kalibr sea-based missiles. Instead, these missile attacks harmed a residential area and resulted in the death of more than 20 civilians.¹⁰⁷

2.2 India-Pakistan 2025 Escalations

On May 2, 2025, Al Jazeera reported that “Gunmen on April 22 shot dead 25 male tourists and a local pony rider in the meadows of Pahalgam, India, triggering outrage and calls for revenge. New Delhi blamed Pakistan for supporting the fighters responsible for the attack, a charge Islamabad denied.”¹⁰⁸

On May 7th, 2025, the tensions between the two states escalated into a military confrontation with India attacking 9 sites in Pakistan.¹⁰⁹ The next 4 days saw intensive fighting between the two states, and a variety of weapon systems were used. As the conflict continued, missiles, along with coordinated attacks from fighter planes, were directed towards each other’s military bases. However, as a response to the escalation, Pakistan launched drone strikes on Indian military bases in 15 locations in Punjab, Jammu and Kashmir, Gujarat, and Rajasthan, triggering air-raid sirens and blackouts in multiple cities. Most of the drones were countered by India’s air-defense systems.¹¹⁰

On 8 May, India conducted drone strikes, hitting Pakistan’s radar infrastructure, including a radar site near Lahore, with Pakistan in turn launching missiles and drones against 36 locations in India.¹¹¹ Pakistan claimed 40 civilians were killed in the May 7 strikes, including seven women

¹⁰⁷ Ibid.

¹⁰⁸ Abid Hussain, “Pahalgam attack: A simple guide to the Kashmir conflict” (2 May 2025), online: Al Jazeera <https://www.aljazeera.com/news/2025/5/2/pahalgam-attack-a-simple-guide-to-the-kashmir-conflict>.

¹⁰⁹ Abid Hussain, “Why did India strike Pakistan? All we know about Operation Sindoor” (7 May 2025), online: Al Jazeera <https://www.aljazeera.com/news/2025/5/7/why-did-india-strike-pakistan-all-we-know-about-operation-sindoor>.

¹¹⁰ Anupreeta Das & Salman Masood, “India and Pakistan Escalate Attacks to Military Bases”, New York Times (9 May 2025), online: <https://www.nytimes.com/2025/05/09/world/asia/india-pakistan-kashmir-drones.html>.

¹¹¹ Rahul Roy-Chaudhury, “India–Pakistan drone and missile conflict: differing and disputed narratives” (15 May 2025), online: International Institute for Strategic Studies (IISS) <https://www.iiiss.org/online-analysis/online-analysis/2025/05/indiapakistan-drone-and-missile-conflict-differing-and-disputed-narratives/>.

and 15 children.¹¹² Analysts described that both India and Pakistan can claim strategic gains even though they each also suffered losses.¹¹³ As per Al Jazeera, hours after the drone attacks, India accepted responsibility for the drone strikes but insisted it had been provoked.¹¹⁴ Although no deaths are reported via drone use, the facts remain unclear. Under IHL, India's response must still fit within the rules of targeting (such as *distinction and proportionality*), even if the initial act was atrocious.¹¹⁵

If a site is being used to train, shelter, equip, or coordinate fighters, the anticipated advantage is meaningful. The more difficult part of targeting analysis is estimating civilian presence, and use of drones will also alter expectations. A commander using a small, precise drone might reasonably anticipate minimal civilian harm, which shifts the *proportionality* balance in their favor.¹¹⁶ However, if a drone is prone to misclassification, relies on outdated maps, or otherwise has known reliability limitations, the commander may be required to take additional precautions, such as independently verifying the target or obtaining more current information. Failing to account for such limitations could mean that the attack was not based on the feasible precautions required by IHL.¹¹⁷

The use of drones falls short of the duty to take precautions if the commander does not possess the knowledge of how the drone operates. Even if a technical officer is part of the decision-

¹¹² Inter-Services Public Relations (Pakistan), "On the night of 6-7 May 2025, the Indian Armed Forces launched unprovoked and reprehensible dastardly attacks targeting innocent civilians, including women, children, and the elderly" (13 May 2025), online: Inter-Services Public Relations <https://ispr.gov.pk/press-release-detail?id=7>.

¹¹³ Abid Hussain, "What did India and Pakistan gain – and lose – in their military standoff?" (14 May 2025), online: Al Jazeera <https://www.aljazeera.com/news/2025/5/14/what-did-india-and-pakistan-gain-and-lose-in-their-military-standoff>.

¹¹⁴ "Have India and Pakistan started a drone war?" (8 May 2025), online: Al Jazeera <https://www.aljazeera.com/news/2025/5/8/have-india-and-pakistan-started-a-drone-war>.

¹¹⁵ "Act of war": Pakistan pledges retaliation to Indian deadly attacks" (7 May 2025), online: Al Jazeera <https://www.aljazeera.com/news/2025/5/7/pakistan-decries-act-of-war-vows-retaliation-as-india-launches-strikes>.

¹¹⁶ International Committee of the Red Cross, "Frequently Asked Questions: International Humanitarian Law and the Use of Drones in Armed Conflict" (10 December 2025), online: ICRC <https://www.icrc.org/en/article/faq-international-humanitarian-law-drones-armed-conflict>.

¹¹⁷ Additional Protocol I, Supra note 28, art 57(2)(a).

making process, the fragmentation of the process itself allows for the rule to be exploited and justify “feasible” precautions by the mere presence of someone who has the technical knowledge but is not responsible for taking the final call. This also has direct implications for the principle of distinction: because target verification is a specific precautionary obligation intended to ensure that the object of an attack is a military objective, inadequate understanding of a system's reliability or classification capabilities may undermine the decision-maker's ability to make the requisite determination that the target is distinguishable from civilians or civilian objects.¹¹⁸

2.3 International Humanitarian Law and Lex Specialis

2.3.1 A word on Lex Specialis vs Lex Generalis

Lex specialis is a legal maxim meaning that a more specific law prevails over a more general law when both cover the same subject matter.¹¹⁹ IHL is considered the *lex specialis* governing the assessment of the lawfulness of the use of force during an armed conflict, in relation to general International Human Rights Law (IHRL).¹²⁰ This principle helps in resolving potential conflicts between IHL and IHRL, ensuring coherence in the legal framework governing war.

Lex generalis is a Latin term meaning “general law.”¹²¹ In international law, it refers to legal rules or norms that apply broadly across a range of situations.¹²² IHRL is often considered the *lex generalis* because it establishes universal standards for the protection of fundamental rights,

¹¹⁸ Additional Protocol I, Supra note 28, art 57(2)(a)(i).

¹¹⁹ International Law Commission, Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law, Report of the Study Group finalized by Martti Koskenniemi, UN Doc A/CN.4/L.682 (13 April 2006); International Committee of the Red Cross, “Lex Specialis | How Does Law Protect in War? – Online Casebook”, online: ICRC Casebook https://casebook.icrc.org/a_to_z/glossary/lex-specialis.

¹²⁰ Ibid.

¹²¹ Merriam-Webster, “Definition of Lex Generalis”, online: Merriam-Webster Dictionary <https://www.merriam-webster.com/dictionary/lex+generalis>; Trans-Lex, “Lex Specialis Principle”, online: Trans-Lex <https://www.trans-lex.org/910000/>.

¹²² ILC, Fragmentation of International Law, supra note 120 at 4.

including the rights to life, liberty, dignity, and security. Unlike IHL, which applies specifically during armed conflict, human rights obligations generally apply at all times, including during both peace and war.¹²³ The principle of *lex generalis* therefore provides the broader normative framework within which more specialized legal regimes operate. The relationship between *lex specialis* and *lex generalis* is particularly relevant in debates surrounding AWS¹²⁴.

IHL and the current framework for regulating autonomy in weapons

Existing IHL rules governing *distinction*, *proportionality*, military necessity, and precaution were developed primarily with human operators / decision-makers in mind.¹²⁵ While these principles continue to apply to the weapon systems in use, questions remain regarding whether current legal frameworks adequately address the challenges posed by increasing levels of autonomy in weapons systems. The absence of specific regulations governing AWS may create uncertainty (and in turn potential strategic opportunity – practical or legal) regarding issues such as attribution of responsibility, meaningful human control, and accountability for unlawful harm.

Consequently, the roles and interaction between IHL as the *lex specialis* and IHRL as the *lex generalis* have become increasingly important in determining whether existing international law can regulate autonomous weapons effectively or whether new legal instruments are required. While this particular discussion focuses on IHL and the *lex specialis*, it is relevant to note that theoretical frameworks for assessing strategic/opportunistic state behaviors (including legal

¹²³ ILC, Fragmentation of International Law, *supra* note 120 at 5.

¹²⁴ ICRC, AWS, *Supra* note 94.

¹²⁵ ICRC, Challenges of Contemporary Armed Conflicts, *Supra* note 18.

coding and potentially also STS) could point to further analysis under IHRL and *lex generalis*, notwithstanding that this is outside the scope of this particular discussion.

As previously mentioned, Russia and India have been very vocal opponents of any legal measures against the invention and use of autonomous weapons. With the advent of Artificial Intelligence, and as will be discussed further below, gaps within the current legislative framework are being exploited by powerful states against other groups in conflict.¹²⁶

The reluctance to develop or modify laws signals the efforts to continue said exploitation to gain an undue advantage in conflict. From Pistor's perspective, this raises the possibility that actors with sufficient power, expertise, and resources may shape the application of malleable legal rules to advance their interests.¹²⁷

While STS similarly draws attention to the reciprocal relationship between technological systems and the legal and institutional environments in which they operate¹²⁸, the Pistorian framework is particularly useful here in examining how legal indeterminacy may itself become a site through which power is exercised. The deployment of emerging technologies within such gaps may therefore provide a preliminary illustration of the law-is-code dynamic, while the interaction between technological development and legal ordering remains relevant to the STS perspective.

¹²⁶ International Committee of the Red Cross, Autonomous Weapon Systems and International Humanitarian Law: Selected Issues (October 2025), online: ICRC <https://www.icrc.org/en/article/autonomous-weapon-systems-and-international-humanitarian-law-selected-issues>.

¹²⁷ Pistor, *The Code of Capital*, supra note 31.

¹²⁸ Vertesi et al, eds, *STS*, supra note 35.

2.3.2 International Humanitarian Law (IHL)

IHL regulates the conduct of parties once an armed conflict has begun, irrespective of whether the war itself is just or unjust. It aims to minimize suffering and protect victims of conflict.¹²⁹ The four Geneva Conventions of 1949¹³⁰, their Additional Protocols¹³¹, and customary international law¹³² are primary sources of IHL, along with treaties and conventions that have been developed over time to combat new problems that occur during conflict. The applicability of IHL to the two conflicts depends on the classification of both as International Armed Conflicts.

Common Article 2 of the Geneva Conventions¹³³ provides that the Conventions apply to any armed conflict arising between two or more states, irrespective of whether a state of war has been recognized by the parties. The Russia-Ukraine hostilities clearly involve the sustained resort to armed force between two states and therefore would fall within the framework governing IACs. The classification of the 2025 India-Pakistan escalations should similarly be determined by reference to the nature of the hostilities rather than the terminology used by the parties. In *Tadić*, the ICTY Appeals Chamber held that an armed conflict exists whenever there is a resort to armed force between states.¹³⁴ This approach is consistent with Common Article 2 and the broader framework of Additional Protocol I, which governs international armed conflicts. Accordingly, to the extent that the 2025 escalations involved a resort to armed force between India and Pakistan, the relevant hostilities would constitute an IAC and would therefore trigger the application of IHL.

¹²⁹ ICRC, “What Is International Humanitarian Law?”, *supra* note 6..

¹³⁰ Geneva Conventions, *supra* note 79.

¹³¹ Additional Protocols, *supra* note 28, 84, 85.

¹³² International Committee of the Red Cross, “Customary IHL” (28 July 2014), online: ICRC <https://www.icrc.org/en/law-and-policy/customary-ihl>.

¹³³ Geneva Conventions, *supra* note 79, common article 2.

¹³⁴ *Prosecutor v Tadić*, Case No IT-94-1-AR72, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction, IT-95-1, (1995) ICTY, at para 70.

2.4 Distinction and Proportionality: Evolving Standards in Modern Warfare

Both conflicts under consideration herein have seen enhanced weaponry, and states engaged in remote warfare at what is described as an unprecedented level. This leads to questions being raised about the legitimacy of actions by all parties under IHL principles, including *distinction* and *proportionality*.¹³⁵ This discussion is necessarily limited at this stage to those technological considerations relevant to the application of distinction and proportionality; a more comprehensive examination of AWS, including their technological architecture, autonomy, and associated decision-making processes, follows in the subsequent section.

2.4.1 The Principle of Distinction

Article 48 of the Additional Protocol I (API) sets forth the Principle of Distinction. It states that “Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives.”¹³⁶ This implies that indiscriminate attacks and the use of indiscriminate means and methods of warfare are prohibited. Additionally, state practice establishes this rule as a norm of customary international humanitarian law.¹³⁷ Even though India, Pakistan, and Russia are currently not parties to API, customary IHL applies to all parties to a conflict, and hence all parties in the case studies mentioned are bound by the principle of *distinction*.¹³⁸

¹³⁵ The obligation to take precautions in attack is also relevant to the assessment of such conduct. However, it is too speculative to undertake that analysis and beyond the scope of this thesis.

¹³⁶ Additional Protocol I, *supra* note 28, art 48 (emphasis added).

¹³⁷ International Committee of the Red Cross, Customary International Humanitarian Law, Rule 1, “The Principle of Distinction”, online: ICRC <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule1>.

¹³⁸ For further discussion, see Nils Melzer, “The Principle of Distinction under International Humanitarian Law” in *Targeted Killing in International Law* (Oxford: Oxford University Press, 2008), c 11.

Distinction in the age of autonomous weapons faces a unique situation.¹³⁹ On one hand, there is increased accuracy with high-resolution cameras and data that enables the system to make a very informed decision on whether a particular person or place is a legitimate target. On the other hand, the distance and time between the deployment of an autonomous weapon and the strike produce a gap in the direction given by commanders and the act committed.¹⁴⁰ Additionally, real-time analysis of a situation may lead to situations where the software has decided to strike a population or object that is protected under international law, without knowing the full context, as context is something that cannot precisely be codified.¹⁴¹

Russia - Ukraine

The Russo-Ukraine war has seen deliberate attacks on civilians that are also indiscriminate in nature, and has witnessed legal principles being broken that states are bound by during war.¹⁴² The ongoing Russo-Ukrainian war has seen broad use of a variety of increasingly autonomous systems for numerous roles.¹⁴³ The principle of *distinction* proscribes the use of means or methods of war that “cannot be directed at a specific military objective,” and if means are also autonomous, they are arguably also indiscriminate.¹⁴⁴

¹³⁹ See generally, Elliot Winter, “The Compatibility of Autonomous Weapons with the Principle of Distinction in the Law of Armed Conflict” (2020) 69:4 International and Comparative Law Quarterly 845.

¹⁴⁰ Rebecca Crotoft, “AI and the Actual IHL Accountability Gap” (28 November 2022), online: Centre for International Governance Innovation <https://www.cigionline.org/articles/ai-and-the-actual-ihl-accountability-gap/>

¹⁴¹ Ibid.

¹⁴² Drone Attacks in Kherson Province, *supra* note 22.

¹⁴³ See eg Vera Bergengruen, “How Tech Giants Turned Ukraine into an AI War Lab” (8 February 2024), TIME, online: <https://time.com/6691662/ai-ukraine-war-palantir/>; Vitaliy Goncharuk, Survival of the Smartest? Defense AI in Ukraine (Hamburg: Defense AI Observatory, Helmut Schmidt University, 2024); Jean-Marc Rickli & Federico Mantellassi, The War in Ukraine: Reality Check for Emerging Technologies and the Future of War (Geneva: Geneva Centre for Security Policy, 2024); Michael C Horowitz, “Ukraine’s Operation Spider Web Shows Future of Drone Warfare” (2025), Council on Foreign Relations, online: <https://www.cfr.org/expert-brief/ukraines-operation-spider-web-shows-future-drone-warfare>. These sources illustrate the increasing use of AI-enabled, autonomous, and semi-autonomous technologies in the conflict and provide examples of their integration into contemporary military operations. Selected examples are examined further below to assess the implications of such technologies for distinction and proportionality, including concerns arising from the potential for autonomous or semi-autonomous systems to produce attacks that may be insufficiently discriminating.

¹⁴⁴ Additional Protocol I, *supra* note 28, art 51(5)(b).

The fundamental characteristics of AWS make it unpredictable, and the technical nature of the systems erodes the levels of judgment that match humans¹⁴⁵. More specifically, autonomous weapons lack the contextual understanding of a dynamic environment and the simple knowledge of human behavior.¹⁴⁶ The problem is not simply poor operational choices or flawed military judgment, but that the fundamental technical character of weapons systems with autonomy at different levels means that they cannot satisfy *distinction*, thus also making their use indiscriminate and unlawful.¹⁴⁷ Deliberate harm, an extended range of attacks, and exploitation of AI in the targeting mechanism are all contributors to illegal acts during war¹⁴⁸. Russia has also clouded the judgment of autonomous targeting by intentionally targeting civilian infrastructure to provoke fear¹⁴⁹.

India - Pakistan

The application of the principle of *distinction* in the India–Pakistan context is particularly sensitive due to the nuclear capabilities of both states and the recurring hostilities across the Line of Control (LoC).¹⁵⁰ As parties to the Geneva Conventions and bound by customary international humanitarian law,¹⁵¹ both states are obligated to distinguish at all times between civilians and combatants, and between civilian objects and military objectives.

¹⁴⁵ Mariarosaria Taddeo & Alexander Blanchard, “Accepting Moral Responsibility for the Actions of Autonomous Weapons Systems—a Moral Gambit” (2022) 35 *Philosophy & Technology* 78.

¹⁴⁶ Winter, “Compatibility of Autonomous Weapons”, *supra* note 140 at 3.

¹⁴⁷ Bonnie Docherty, *A Hazard to Human Rights: Autonomous Weapons Systems and Digital Decision-Making* (28 April 2025), online: Human Rights Watch <https://www.hrw.org/report/2025/04/28/a-hazard-to-human-rights/autonomous-weapons-systems-and-digital-decision-making>

¹⁴⁸ *Ibid.*

¹⁴⁹ Drone Attacks in Kherson Province, *supra* note 22.

¹⁵⁰ The Line of Control is a military control line between the Indian- and Pakistani-controlled parts of the former princely state of Jammu and Kashmir—a line which does not constitute a legally recognized international boundary, but serves as the *de facto* border. United Nations, “Line of Control” (UNTERM), online: United Nations Terminology Database <https://unterm.un.org/unterm2/en/view/UNHQ/F458380C6EFA75A085256A00000768E8>; BBC News, “Line of Control: How India and Pakistan Share One of the World’s Most Dangerous Borders” (15 May 2025), online: BBC News <https://www.bbc.com/news/articles/cgmj710lne3o>.

¹⁵¹ Final Act of the Diplomatic Conference of Geneva of 1949, 12 August 1949, online: ICRC IHL Databases <https://ihl-databases.icrc.org/en/ihl-treaties/geneva-finact-1949/state-parties>.

In the recent conflict, heavy emphasis was laid by India on the validity of its target selection and how only terror and military infrastructure were targeted within the deep territories of Pakistan.¹⁵²

Increasing reliance on surveillance drones, precision-guided munitions, and AI-assisted intelligence analysis may enhance target accuracy. However, misidentification risks persist, particularly where intelligence inputs about civilian activities are incomplete, biased, or politically influenced¹⁵³, and they exacerbate the impacts of autonomous technologies. The classification of individuals as combatants or civilians directly affects whether they qualify as lawful military objectives. Errors in classification risk violating the *distinction* principle. While India has asserted compliance with the principle of *distinction* by emphasizing precision and limited objectives, the operational environment between India and Pakistan, marked by political tension, dense populations, dual-use infrastructure,¹⁵⁴ and emerging technologies, creates persistent legal and ethical challenges.¹⁵⁵

Comparing case studies on distinction – preliminary comment

The two case studies demonstrate that the challenges posed to the principle of distinction arise at different stages of the targeting process. In Russia–Ukraine, the principal concern is that autonomous and AI-enabled technologies may amplify the consequences of deliberate targeting decisions and increase the scale and speed of attacks. The attacks that are already alleged to be in

¹⁵² Al Jazeera, “Act of War: What Happened in Kashmir Attack That Killed 26 Tourists” (23 April 2025), online: Al Jazeera <https://www.aljazeera.com/news/2025/4/23/act-of-war-what-happened-in-kashmir-attack-that-killed-26-tourists>. Contra, Ishaal Zehra, “Kashmir: Why Was India So Quick to Blame Pakistan?” (2025), online: Lowy Institute <https://www.lowyinstitute.org/the-interpreter/kashmir-why-was-india-so-quick-blame-pakistan>.

¹⁵³ Docherty, A Hazard to Human Rights, *supra* note 148.

¹⁵⁴ See generally, Oona A Hathaway, Azmat Khan & Mara R Revkin, “The Dangerous Rise of ‘Dual-Use’ Objects in War” (2025) 134 Yale LJ 2645.

¹⁵⁵ Sara Nazir, “India’s Airstrikes: A Dangerous Precedent and Fraying International Norms – OpEd” (7 May 2025), online: Eurasia Review <https://www.eurasiareview.com/07052025-indias-airstrikes-a-dangerous-precedent-and-fraying-international-norms-oped/>.

violation of the principle of distinction are now further exacerbated. In the India–Pakistan context, the greater concern lies in the identification and classification of targets, particularly where intelligence is incomplete, politically influenced, or involves dual-use objects. Taken together, the cases illustrate that emerging technologies do not, in themselves, make an attack indiscriminate; rather, their use may create or exacerbate risks to distinction depending on how information is gathered, targets are classified, and targeting decisions are ultimately made.

2.4.2 The Principle of Proportionality

The principle of *proportionality* in attack is codified in Article 51(5)(b) of Additional Protocol I and repeated in Article 57.¹⁵⁶ A proportionally indiscriminate attack is termed as “an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.”¹⁵⁷ In other words, the principle of *proportionality* seeks to limit damage caused by military operations by requiring that the effects of the *means* and *methods* of warfare used must not be disproportionate to the anticipated military advantage. Additionally, state practice establishes this rule as a norm of customary international law.¹⁵⁸ Even though India, Pakistan, and Russia are not currently parties to the API, customary IHL applies to all parties to a conflict; hence, all parties in the case studies mentioned are bound by the principle of *proportionality*.

¹⁵⁶ Additional Protocol I, supra note 28, arts 51(5)(b) and 57.

¹⁵⁷ Additional Protocol I, supra note 28, arts 51(5)(b).

¹⁵⁸ ICRC, Customary International Humanitarian Law, Rule 14, “Proportionality in Attack”, supra note 57.

Proportionality is often divided into three elements: **suitability, necessity, and proportionality stricto sensu**.¹⁵⁹

Suitability requires that the measures of attack in question are appropriate to the objective sought. Necessity provides that the military objective can only be achieved by the measures in question; that is, if there is a choice among several suitable measures, the least onerous must be chosen. Finally, the stricto sensu, or narrowest sense, *proportionality* element means balancing the effects of measures chosen against the military objective, considering whether those effects, such as the injury or death to civilians, or destruction or damage to civilian infrastructure, are excessive according to those most affected.¹⁶⁰

The definition is subjective, and each attack is analyzed on an individual basis.¹⁶¹ The guidelines of *proportionality* are generally satisfied by drones and underwater weapons systems, as these weapons, by design, decrease collateral damage through precision strikes and reduce situations to pure facts and data.¹⁶²

Currently, human commanders must make decisions based on the information available to them at the time they plan the attack.¹⁶³ With autonomous/ semi-autonomous systems capable of ongoing planning and executing attacks, would the originating authorization be sufficient to hold a commander accountable for resultant *disproportionate* attacks or the deaths of non-combatants by an algorithm?

¹⁵⁹ Aharon Barak, “Proportionality stricto sensu (balancing)” in *Proportionality: Constitutional Rights and their Limitations* (Cambridge: Cambridge University Press, 2012) 340 at 343.

¹⁶⁰ “Proportionality” in *Max Planck Encyclopedia of Public International Law* (Oxford: Oxford University Press), online: Oxford Public International Law <https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e1459>.

¹⁶¹ ICRC, *Customary International Humanitarian Law*, Rule 14, “Proportionality in Attack”, supra note 57.

¹⁶² ILC, *Fragmentation of International Law*, supra note 120.

¹⁶³ Soren Sjogren, “What Military Commanders Do and How They Do It: Executive Decision-Making in the Context of Standardised Planning Processes and Doctrine” (2022) 5:1 *Scandinavian Journal of Military Studies* 379.

Russia - Ukraine

The limits of international humanitarian law have been tested and, according to numerous experts and international bodies, violated when it comes to Russia's approach to the war.¹⁶⁴ There are proven examples to support the claims that the use of unmanned weapons has caused *disproportionate* harm. While the use of short-range drones should, in theory, decrease the risk of civilian casualties, the head of the UN Human Rights Monitoring Mission in Ukraine (HRMMU) reported data "showing a clear and disturbing pattern of short-range drones being used in ways that put civilians at grave risk."¹⁶⁵ Despite the relatively equal distribution of unmanned systems amongst Russian and Ukrainian forces, Russian forces are disproportionately using these systems to exact harm on Ukrainian civilians.¹⁶⁶ Furthermore, Russia's near-nightly long-range drone strikes also, for example, often strike critical infrastructure in Ukraine,¹⁶⁷ dramatically degrading the quality of life and access to necessities throughout large parts of the country as they are meant to do.¹⁶⁸

¹⁶⁴ Paul Williams, "Targeting the Innocent: Russia's Continued Attacks on Ukrainian Civilians" (6 May 2025), online: Public Int Law Policy Group <<https://www.publicinternationallawandpolicygroup.org/lawyering-justice-blog/2025/5/6/russias-indiscriminate-attacks-on-civilians-in-ukraine>>.

¹⁶⁵ Ibid.

¹⁶⁶ United Nations Human Rights Monitoring Mission in Ukraine, *Deadly Drones: Civilians at Risk from Short-Range Drones in Frontline Areas of Ukraine*, 24 February 2022 – 30 April 2025 (Kyiv: HRMMU, 2025), online: United Nations in Ukraine <https://ukraine.un.org/en/298136-deadly-drones-civilians-risk-short-range-drones-frontline-areas-ukraine-24-february-2022-%E2%80%94>.

¹⁶⁷ Max Hunder, "Russian Attacks on Ukraine Power Grid Probably Violate Humanitarian Law, Says UN" (19 September 2024), online: Reuters <https://www.reuters.com/world/europe/russian-attacks-ukraine-power-grid-probably-violate-humanitarian-law-says-un-2024-09-19/>.

¹⁶⁸ United Nations Office of the High Commissioner for Human Rights, "Report Reveals Significant Rise in Civilian Casualties and Rights Violations in Ukraine" (30 June 2025), online: United Nations Office at Geneva <https://www.ungeneva.org/en/news-media/news/2025/06/108004/report-reveals-significant-rise-civilian-casualties-and-rights>.

Currently, the world is witnessing a deliberate attempt at attacks that are also clearly *disproportional* to the military advantage gained, and include targeting conducted via unmanned but remotely controlled drones.¹⁶⁹

India - Pakistan

Pakistan and India adopted distinct strategies for employing drones. The Indian military focused mainly on using drones for Suppression of Enemy Air Defenses (SEAD) missions, while Pakistan targeted airfields, ammunition depots, and military bases.¹⁷⁰ Drones were also deployed for surveillance to locate camouflaged systems.¹⁷¹ Beyond striking military assets, a significant purpose of Pakistan deploying drones was to inflict a psychological impact by causing panic among the local population. The slow-moving drones, hovering above and producing wailing sounds, caused great anxiety for civilians.¹⁷²

The Indian military launched multiple missile attacks targeting sites in Pakistan and Pakistan-administered Kashmir in an attack it called Operation Sindoor.¹⁷³ The missiles were India's response to the deadly April 22 attack on tourists in Indian-administered Kashmir in Pahalgam, during which 26 men were killed. An armed group called The Resistance Front (TRF), which demands independence for Kashmir, initially claimed responsibility for the Pahalgam attack. India claims that the TRF is an offshoot of a Pakistan-based armed group, the Lashkar-e-Taiba

¹⁶⁹ Shaun Walker, "Russian Drone Attacks on Civilians in Ukraine Are War Crimes, UN Report Concludes" (The Guardian, 28 October 2025), online: <https://www.theguardian.com/world/2025/oct/28/russian-drone-attacks-on-civilians-in-ukraine-are-war-crimes-un-report-concludes>.

¹⁷⁰ Usman Haider, "The First India-Pakistan Drone War" (The Diplomat, 30 May 2025), online: <https://thediplomat.com/2025/05/the-first-india-pakistan-drone-war/>.

¹⁷¹ Ibid.

¹⁷² Ibid.

¹⁷³ "India Launches Operation Sindoor, Exchanges Heavy Fire with Pakistan" (6 May 2025), online: Al Jazeera <https://www.aljazeera.com/news/2025/5/6/india-launches-attacks-on-several-sites-in-pakistan>.

(LeT).¹⁷⁴ However, apart from expert commentary and claims by national representatives, no further proof has been provided to substantiate India's claim.¹⁷⁵

Additionally, to muddy the water further, Pakistan's claim of non-involvement and civilian harm caused by Indian strikes remains unsubstantiated as well.¹⁷⁶ The *proportionality* assessment is then questioned at every step of the decision-making process.

Comparing case studies on proportionality – preliminary comment

The two case studies demonstrate that proportionality depends not only on the weapons employed, but on the decisions made throughout the targeting process. In Russia-Ukraine, the concern is that repeated attacks causing significant civilian harm may bear little relation to the concrete and direct military advantage anticipated, particularly where drones are used to deliberately affect civilian populations or essential infrastructure. In India-Pakistan, the proportionality assessment is complicated by uncertainty surrounding the factual basis for target selection and the anticipated military advantage. Taken together, the cases demonstrate that emerging technologies may improve the precision of attacks, but they do not resolve the underlying proportionality assessment: the legality of an attack ultimately depends on the relationship between the expected military advantage and the anticipated civilian harm at each stage of the targeting decision.

2.5 Technological Autonomy and the Shifting Architecture of Combat

Through the developments summarized above, we have reached a point where it is essential to understand the nuances of the technology integrated at different steps of the decision-making process in conflict. Advances in AI, machine learning, remote sensing, and networked weapon systems have altered not only the means and methods of warfare but also the underlying

¹⁷⁴ Ishaal Zehra, "Kashmir: Why Was India So Quick to Blame Pakistan?" (2025), online: Lowy Institute <https://www.lowyinstitute.org/the-interpreter/kashmir-why-was-india-so-quick-blame-pakistan>.

¹⁷⁵ Ibid.

¹⁷⁶ Sara Nazir, "India's Airstrikes", supra note 156.

architecture through which force is planned, authorized, and executed.¹⁷⁷ This shift challenges traditional legal assumptions embedded in IHL, particularly those premised on human judgment, temporal immediacy, and geographically bounded battlefields.¹⁷⁸

A key distinction to note is the level of autonomy with which a system operates, i.e., how much of the decision is made by a human as opposed to an algorithm, and the fundamentals on which the algorithm is trained to make these life-altering decisions on a battlefield.¹⁷⁹ The spectrum of autonomy ranges from systems that are operated by a human with technological assistance for accuracy and speed to fully autonomous systems capable of making targeting and striking decisions with little to no real-time human intervention. Not only are these systems being developed, but they are actively being used in combat as well.

Meaningful Human Control – Preliminary Considerations

It is alleged that a fully autonomous drone has been activated in Libya. The lethal autonomous weapons systems were programmed to attack targets without requiring data connectivity between the operator and the munition, showcasing, in effect, a true “fire, forget, and find” capability.¹⁸⁰ This reported incident was referenced in a report by the United Nations Security Council concerning operations involving the Turkish-made Kargu-2 loitering munition, developed by STM.¹⁸¹

¹⁷⁷ International Committee of the Red Cross, *Artificial Intelligence and Machine Learning in Armed Conflict: A Human-Centred Approach* (Geneva: ICRC, 6 June 2019), online: ICRC <https://www.icrc.org/en/document/artificial-intelligence-and-machine-learning-armed-conflict-human-centred-approach>.

¹⁷⁸ International Committee of the Red Cross, *Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects: Expert Meeting Report, 26–28 March 2014* (Geneva: ICRC, 2014), online: ICRC <https://www.icrc.org/en/document/report-icrc-meeting-autonomous-weapon-systems-26-28-march-2014>

¹⁷⁹ UNIDIR Security and Technology Programme, *The Weaponization of Increasingly Autonomous Technologies: Artificial Intelligence* (Geneva: United Nations Institute for Disarmament Research, 2018), online: UNIDIR <https://unidir.org/publication/the-weaponization-of-increasingly-autonomous-technologies-artificial-intelligence/>.

¹⁸⁰ United Nations Security Council, Letter Dated 8 March 2021 from the Panel of Experts on Libya Established Pursuant to Resolution 1973 (2011) Addressed to the President of the Security Council, UN Doc S/2021/229 (8 March 2021), online: United Nations Digital Library <https://digitallibrary.un.org/record/3905159>

¹⁸¹ Ibid.

The system was described as having the capacity to operate in an autonomous mode, identifying and engaging targets based on pre-programmed parameters and onboard processing capabilities.¹⁸² Although debate between international law experts remains as to the extent of human involvement in that particular instance, the episode illustrates the technological trajectory toward increasingly self-directing systems and the legal ambiguity that accompanies them. Machine learning systems rely on training data, probabilistic modeling, and pattern recognition.¹⁸³ Their outputs are shaped by the quality, representativeness, and biases embedded within datasets. Additionally, the compression of decision time enabled by autonomous systems alters the temporal dimension of warfare. As reaction times shrink from minutes to seconds or milliseconds, meaningful human control may become increasingly difficult to maintain in practice, even if formally required in policy.¹⁸⁴ This shift is also credited to states that hold greater power in international forums to regulate the very same technologies they exploit. This shift also raises fundamental questions of responsibility and accountability where autonomous systems contribute to decisions affecting the application of *distinction* and *proportionality*.

As human involvement becomes more limited and decision-making becomes increasingly distributed between human operators and technological systems, it may become more difficult to identify who is responsible for an unlawful outcome and at what stage a violation occurred. These developments therefore raise a broader question as to whether existing IHL rules are sufficiently equipped to regulate increasingly autonomous warfare, or whether reform is necessary to clarify

¹⁸² Ibid.

¹⁸³ National Institute of Standards and Technology, Artificial Intelligence Risk Management Framework (AI RMF 1.0) (Gaithersburg, MD: US Department of Commerce, 2023), online: NIST <https://www.nist.gov/itl/ai-risk-management-framework>

¹⁸⁴ Anna M Gielas, “Warfare at the Speed of Thought: Can Brain-Computer Interfaces Comply with IHL?” (21 August 2025), online: Humanitarian Law & Policy Blog <https://blogs.icrc.org/law-and-policy/2025/08/21/warfare-at-the-speed-of-thought-can-brain-computer-interfaces-comply-with-ihl/>.

standards of human control, accountability, and the assessment of compliance with *distinction* and *proportionality* in the use of such technologies.

Legal Fragmentation – Preliminary Considerations

Pistor's¹⁸⁵ emphasis on the adaptability of legal coding (which can also be understood as a form of leveraging - whether *ex ante* or *ex post facto* - of existing law) can help explain the existence and persistence of potential accountability gaps in autonomous warfare. Pistor suggests that legal and regulatory constraints tend to erode over time due to several reasons, ranging from incomplete legislation to powerful private actors.¹⁸⁶ Just as capital can be continuously re-coded to preserve its advantages,¹⁸⁷ emerging military technologies can be similarly absorbed (or deployed) into existing legal structures that already prioritize strategic and economic interests over potential humanitarian constraints. A single strike may involve software developers who wrote the algorithm, engineers who built the hardware, military commanders who authorized deployment, and states that set the rules of engagement.¹⁸⁸

Because each actor performs only part of the process, responsibility for an unlawful outcome can become fragmented. No single actor may appear to exercise complete control over the system, even though multiple actors collectively contributed to the conditions that enabled the outcome. The concept of autonomy is a novel concept that the legal and regulatory regimes (including IHL) have not yet accounted for. Therefore, the active inclusion of autonomy as a means or method in warfare erodes existing regulatory constraints, and as mentioned by Pistor for capital,

¹⁸⁵ Marco Goldini, "Katharina Pistor's The Code of Capital: How the Law Creates Wealth and Inequality" (2021) 30:2 Social & Legal Studies 291–326.

¹⁸⁶ Pistor, Legal Coding Beyond Capital, *supra* note 33.

¹⁸⁷ Pistor, The Code of Capital, *supra* note 31 at 23.

¹⁸⁸ Mark Kersten, "Algorithms, Automation and Accountability: Imagining Responsibility for the Crimes of Machines" (6 August 2025), online: Justice in Conflict <https://justiceinconflict.org/2025/08/06/algorithms-automation-and-accountability-imagining-responsibility-for-the-crimes-of-machines/>.

the erosion is attributed to various powerful actors capable of leveraging or relying on incomplete legislation.

Pistor's insight is that this fragmentation is not accidental; it reflects how legal systems are designed to manage complex, high-value activities. In the context of autonomous weapons, this means the law can end up protecting the system as a whole, thus leveraging the law in favor of unlawful acts. The speed and opacity of algorithmic decision-making make this even harder: when a machine acts in milliseconds based on patterns humans may not fully understand, tracing exactly "who decided what" becomes both technically and legally challenging.¹⁸⁹

Technological Opacity – Preliminary Considerations

Algorithms used in autonomous weapons are also often legally shielded from disclosure, meaning investigators cannot even fully examine *how* a targeting decision was made.¹⁹⁰ *Meaningful human control* has also been criticized, given its abstract nature within programming and use and the fact that states can still deploy increasingly autonomous systems while formally claiming human oversight while retaining strategic possibility to potentially disclaim responsibility when an autonomous system incorrectly strikes. This creates a particular challenge for individual criminal responsibility: where a system's decision-making process is opaque or difficult to predict, it may be more difficult to establish what the relevant human actor knew, foresaw, or could reasonably have anticipated when the system was deployed. This weakens enforceable accountability when harm occurs¹⁹¹.

¹⁸⁹ Gielas, "Warfare at the Speed of Thought", supra note 185; Burrell, "Opacity in Machine Learning", supra note 61.

¹⁹⁰ Burrell, "Opacity in Machine Learning", supra note 61 at page 3.

¹⁹¹ Merel Ekelhof, "Moving Beyond Semantics on Autonomous Weapons: Meaningful Human Control in Operation" (2019) 10:3 Global Policy 343.

In the next chapters, individual elements arising out of the foregoing discussion will be analyzed through the combined references from Pistor's theory (and STS), the concepts of fragmentation, opacity, and meaningful human control. The following chapter will focus on defining autonomous weapons, presenting their challenges, and shedding light on some emerging regulatory norms in the age of AI.

Chapter 3: Autonomous Weapon Systems: Definitions, Challenges, and Emerging Regulatory Norms

Autonomous weapons represent one of the most advanced and significant shifts in military systems since the proliferation of nuclear weapons.¹⁹² The advancements have enabled weapons to operate independently, identify targets in real-time, and make striking decisions, all with varying levels of human involvement, including no human involvement at all. Today, weapons can incorporate AI into their core functionality, featuring smart cameras for target identification, sensor fusion to collate data, and still be equipped with traditional ammunition that can be directed towards any population or location.¹⁹³ Furthermore, the technological overhaul has not only improved and modified decision-making capabilities, but also enabled larger payloads, increased range of attacks, and the safety of weapons operators since these weapons can be operated remotely, far away from the battlefield as it was known.¹⁹⁴

Legal frameworks have been premised on human agency, accountability, and a chain of command that, in most instances, clarifies the origin of an illegal act. Historically, cases tried for war crimes, crimes against humanity, and other similar offenses at the state or international level have been analyzed and adjudicated based solely on the principles and facts of the case.¹⁹⁵ A human has been involved at every stage of the commission of the act, hence solidifying a chain of command. Despite the reluctance of states to release data, the contextual elements of a particular attack have enabled the study of *distinction* and *proportionality* to decide whether the acts were legitimate. Autonomy delegates the most important power and part of an attack, the decision.

¹⁹² UNIDIR, The Weaponization of Increasingly Autonomous Technologies: Artificial Intelligence, *supra* note 180.

¹⁹³ ICRC, Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects, *supra* note 179.

¹⁹⁴ ICRC, Autonomous Weapon Systems: Technical, Military, Legal and Humanitarian Aspects, *supra* note 179.

¹⁹⁵ Kersten, “Algorithms, Automation and Accountability”, *supra* note 189.

The primary discourse to date on the use of AWS largely revolves around the conundrum of removing human emotion and latency from the equation, and how this may benefit or harm parties to a conflict.¹⁹⁶ Even where humans may have a clouded or biased judgment, the assumption is that they also have a better contextual understanding, ethics, and humanity to counter that during conflict. To date, international laws and regulations such as IHL, ICL, and IHRL have not adapted to the dynamics of autonomy. States have primarily focused on advancing their military capabilities, and the scarce policing of autonomous systems that we see on a state level comes from the branch of business and/or privacy laws.¹⁹⁷ Internationally, policymaking has historically been slow. Many international humanitarian organizations and states have argued that new laws are necessary.¹⁹⁸

Artificial Intelligence

The EU Artificial Intelligence Act regulates the micro and macro effects of AI, but fails to specifically mention military use anywhere in the Act. Furthermore, Article 2 of the Act specifically excludes AI systems developed or used exclusively for military, defence, or national security purposes from the scope of the Act.¹⁹⁹ The Act also states that defense policies are policed through public international law, and thus, that is a more appropriate law to govern AI use in military settings. The United States has been promoting the use of AI in every military branch,

¹⁹⁶ M L Cummings, “Lethal Autonomous Weapons: Meaningful Human Control or Meaningful Human Certification?” (23 December 2019), online: IEEE Technol Soc <<http://technologyandsociety.org/lethal-autonomous-weapons-meaningful-human-control-or-meaningful-human-certification/>>..

¹⁹⁷ I Ingvild Bode, Hendrik Huelss, Minna Ålander & Vladimir Avatkov, “Prospects for the Global Governance of Autonomous Weapons: Comparing Chinese, Russian, and US Practices” (March 2023) 25:1 Ethics and Information Technology 5 Online: <https://doi.org/10.1007/s10676-023-09678-x>.

¹⁹⁸ See e.g. discussion in Bryan Jack, “Future of Warfare and Law Series – The Law and LAWS” (7 November 2025), online: Articles of War (Lieber Institute, West Point) <https://lieber.westpoint.edu/law-and-laws/>.

¹⁹⁹ European Parliament and Council, Regulation (EU) 2024/1689 of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act), [2024] OJ L 1689, art 2.

from administrative tasks to weapons development²⁰⁰, and attempting to close off any technological trade when it comes to military technology that uses AI.

For example, the 2026 Defense Authorization Bill has numerous provisions that require and enable the use of AI for defense purposes.²⁰¹ For example, section 1623 establishes requirements for artificial intelligence model assessment and oversight, while section 1627 introduces physical and cybersecurity procurement requirements for AI systems. Additionally, section 1626 establishes an Artificial General Intelligence Steering Committee that seeks to address the Department of Defense's approach to AGI, including matters relating to the development, adoption, and governance of the technology.²⁰²

The 2026 AI-Ready Bio-Data Standards similarly illustrate the increasing institutionalization of AI through the standardization of biological data. Notably, the Biological Data for AI section requires the Department of Defense to, within one year, develop and implement standards ensuring that biological data generated by Department-funded research is collected and stored to enable use in advanced computational methods, including AI.²⁰³

Taken together, these developments demonstrate a growing divergence between the regulation of AI generally and the regulation of AI-enabled autonomous weapons systems. Although AI is increasingly being incorporated into military systems, including systems capable of assisting or undertaking functions within the targeting process, major regulatory frameworks such as the EU AI Act largely leave military applications outside their scope, while states such as

²⁰⁰ Human Rights Watch, "Review of the 2023 US Policy on Autonomy in Weapons Systems" (14 February 2023), online: Human Rights Watch <https://www.hrw.org/news/2023/02/14/review-2023-us-policy-autonomy-weapons-systems>

²⁰¹ National Defense Authorization Act for Fiscal Year 2026, S 2296, 119th Cong, 1st Sess (2025), online: Congress.gov <https://www.congress.gov/bill/119th-congress/senate-bill/2296/text>. See e.g. add some pinpoint provisions from this bill

²⁰² Ibid at s 1623, s 1627, and s1626.

²⁰³ AI-Ready Bio-Data Standards Act, S 4069, 119th Cong, 2d Sess (2026), sec 2.

the United States continue to develop AI capabilities and governance mechanisms within their defence establishments. This creates a fragmented regulatory landscape in which the same underlying AI technologies may be subject to different standards depending on whether they are developed for civilian or military purposes and, in the latter context, on the state employing them. Such fragmentation is particularly significant for AWS because it may produce divergent approaches to meaningful human control, accountability, and transparency, while leaving compliance with distinction and proportionality to existing international humanitarian law without a common regulatory framework governing the technologies used to implement those principles.

3.1 Defining Autonomous and Semi-Autonomous Weapon Systems

A central challenge in governing autonomous weapons lies in the lack of universally accepted definitions. States, international organizations, and scholars employ differing terminologies, often shaped by strategic interests and doctrinal preferences.²⁰⁴

Broadly, autonomous weapon systems (AWS) are understood as systems that, once activated, can select and engage targets without further human intervention.²⁰⁵ In contrast, semi-autonomous weapon systems retain some form of human control over critical functions, particularly target selection or engagement authorization.²⁰⁶

At one end are human-in-the-loop systems, where human operators must approve each use of force. In the middle are human-on-the-loop systems, which can operate independently but remain subject to human supervision and potential override. At the far end are human-out-of-the-loop systems, which operate without real-time human input once deployed. “Human-out-of-the-

²⁰⁴ Taddeo & Blanchard, “Definitions of Autonomous Weapons Systems”, supra note 107.

²⁰⁵ Taddeo & Blanchard, “Definitions of Autonomous Weapons Systems”, supra note 107

²⁰⁶ Taddeo & Blanchard, “Definitions of Autonomous Weapons Systems”, supra note 107.

loop weapons [are] robots capable of selecting targets and delivering force without any human input or interaction.”²⁰⁷

This continuum underscores that autonomy is not an all-or-nothing characteristic but a matter of degree, context, and function.²⁰⁸ Technically, autonomy depends on a system’s ability to perceive its environment, process information, and execute actions based on programmed objectives and learned patterns. However, legal and ethical debates focus less on technical autonomy per se and more on functional autonomy, particularly in relation to lethal decision-making.²⁰⁹ There are numerous variables that are at play within this discourse. Mimicking human thought and human judgment of a situation have crucial differences, and only the former is something that can be trained into an AI-enabled system. This distinction creates challenges for both opacity and meaningful human control: where the basis for an AI system’s output cannot be readily understood or predicted, human operators may be unable to adequately assess or intervene in the system’s decision-making process. The resulting uncertainty also complicates the attribution of responsibility where an autonomous system contributes to a lethal decision.

3.1.1 Autonomous Weapons

Universally, several states have tried to define what qualifies as an autonomous weapon. There have been thresholds established, autonomy defined, and levels of human intervention differentiated, with some similarities and some very stark differences. As of July 2020, 97 countries had publicly elaborated their views on lethal autonomous weapons systems in a

²⁰⁷ Bonnie Docherty, *Losing Humanity: The Case against Killer Robots* (New York: Human Rights Watch & International Human Rights Clinic, Harvard Law School, 2012), online: Human Rights Watch <https://www.hrw.org/report/2012/11/19/losing-humanity/case-against-killer-robots>.

²⁰⁸ *Ibid.*

²⁰⁹ Jens David Ohlin, “The Combatant’s Stance: Autonomous Weapons and the Human-Machine Divide” (2016) 92 *International Law Studies* 1.

multilateral forum.²¹⁰ Most commented via their statements to meetings of the Convention on Conventional Weapons in Geneva and the annual sessions of the United Nations General Assembly in New York.²¹¹ While many advanced weapon systems increasingly incorporate various elements of autonomy, there is no consensus among experts or among countries as to whether a fully autonomous weapon system currently exists.²¹²

While there are varying definitions of autonomous weapons systems, as earlier described, they can be organized pursuant to the Human in, on, or out-of-the-loop categorization. This foundation has been used by various states and organizations to provide a definition that may suit international needs and/or parallels other internationally accepted definitions. The ICRC defines autonomous weapons as “systems with 'critical function' autonomy, allowing them to independently select (i.e., search for, detect, identify, and track) and attack (i.e., intercept, neutralise, damage, or destroy) targets.”²¹³ By focusing on autonomy in these critical functions, the definition narrows the assessment of meaningful human control to the stages of target selection and attack, rather than requiring autonomy across the entire weapons system. A system operating in this manner may therefore fall within an “on-the-loop” or “out-of-the-loop” model depending on the extent and nature of human intervention during these critical functions. The definition consequently provides a useful basis for assessing meaningful human control by asking not simply whether a human is involved, but whether human involvement remains sufficiently effective over the functions that determine the use of lethal force.

²¹⁰ Human Rights Watch, *Stopping Killer Robots: Country Positions on Banning Fully Autonomous Weapons and Retaining Human Control* (10 August 2020), online: Human Rights Watch.

²¹¹ Campaign to Stop Killer Robots, *Country Views on Killer Robots* (7 July 2020), online (pdf): Stop Killer Robots https://www.stopkillerrobots.org/wp-content/uploads/2020/05/KRC_CountryViews_7July2020.pdf.

²¹² Jonah M Kessel, “Killer Robots Aren’t Regulated. Yet.”, *The New York Times* (13 December 2019), online: <https://www.nytimes.com/2019/12/13/technology/autonomous-weapons-video.html>.

²¹³ Taddeo & Blanchard, “Definitions of Autonomous Weapons Systems”, *supra* note 107.

These fully autonomous weapons are more prescriptively defined by different state parties. For example, the United States defines Lethal Autonomous Weapons Systems (LAWS) as “weapon systems that, once activated, can select and engage targets without further intervention by a human operator.”²¹⁴ This concept of autonomy is also known as “human out of the loop” or “full autonomy.”²¹⁵ Similarly, the United Kingdom, the Netherlands, and Germany have definitions that accept the complete exclusion of human intervention in the decision-making process, barring the initial start-up of the system. As of August 2020, 30 states declared their endorsement of a preemptive AWS ban.²¹⁶ The specific use of the term “LAWS”²¹⁷ to define an autonomous weapons system overshadows the grave dangers of AWS and arguably encourages non-regulation of the same by countries like the United States. “LAWS” metaphorically signifies a fully legal and positive system being developed for security and better policing. The reality, however, is quite the opposite.

A new directive on autonomy in weapons systems issued on January 25, 2023, shows the United States Department of Defense (DoD) is serious about ensuring it has policies and processes in place to guide its development, acquisition, testing, fielding, and use of autonomous weapons systems, as well as semi-autonomous weapons systems, such as remotely operated armed drones.²¹⁸ The directive, however, as described by experts, constitutes an inadequate response to

²¹⁴ US Department of Defense, DoD Directive 3000.09: Autonomy in Weapon Systems (25 January 2023) at 21, online: US Department of Defense <https://media.defense.gov/2023/Jan/25/2003149928/-1/-1/0/DODDIRECTIVE-3000.09-AUTONOMY-IN-WEAPON-SYSTEMS.PDF>.

²¹⁵ Kelley M Sayler, Defense Primer: U.S. Policy on Lethal Autonomous Weapon Systems, CRS In Focus No IF11150 (Congressional Research Service, 2 January 2025), online: Congress.gov <https://www.congress.gov/crs-product/IF11150>.

²¹⁶ Taddeo & Blanchard, “Definitions of Autonomous Weapons Systems”, supra note 107.

²¹⁷ United Nations Office for Disarmament Affairs, “Lethal Autonomous Weapon Systems”, online: UNODA <https://disarmament.unoda.org/en/our-work/emerging-challenges/lethal-autonomous-weapon-systems>.

²¹⁸ DoD Directive 3000, supra note 217.

the serious ethical, legal, accountability, and security concerns and risks raised by autonomous weapons systems.²¹⁹

The development of these weapons is facilitated by vague and intentionally open legislation that allows for the proliferation of autonomous weapons and heavy investments in the same. These examples highlight how the incompleteness and adaptability of legal rules allow legal frameworks to be molded over time to accommodate and facilitate new forms of activity, as Pistor claims.²²⁰ From a Pistorian perspective, this raises the possibility that actors with sufficient power, expertise, and resources may influence how malleable legal rules are interpreted and applied in ways that advance their interests. STS similarly draws attention to the reciprocal relationship between technological systems and the legal, political, and institutional environments in which they are developed and deployed.²²¹

3.1.2 Semi-Autonomous Weapons

Any level of human intervention at any stage during the decision-making and implementation stages of a weapons system would shift the categorization of said weapon to semi-autonomous. Literally, a semi-autonomous weapon has partial autonomy over all or some of its procedures that are completed from start to finish of the use of said weapon. A 2023 Human Rights Watch report²²² would put two distinct categories under this umbrella, i.e., human-in-the-loop and human-on-the-loop weapon systems. Any traditional or new weapon systems that, if fitted with the ability to detect, target, identify, strike, or navigate remotely and/or with partial human intervention, could potentially be classified as semi-autonomous weapons.

²¹⁹ Human Rights Watch, “Review of the 2023 US Policy”, supra note 201.

²²⁰ Pistor, *The Code of Capital*, supra note 31 at 17-18.

²²¹ Sheila Jasanoff, “Constitutional Moments in Governing Science and Technology” (2011) 17 *Science and Engineering Ethics* 621.

²²² Human Rights Watch, “Review of the 2023 US Policy”, supra note 201.

A United States Department of Defense Directive (DODD) states that “human judgment over the use of force” does not require manual human “control” of the weapon system but rather broader human involvement in decisions about how, when, where, and why the weapon will be employed.²²³

This definition could potentially be used to create a gap between the intent of a commander and action by adding a non-human entity as the decision maker. Semi-autonomy in this case would mean that the decision to deploy an autonomous weapon and the data fed to the same were the actions of a human commander, but any decision taken by the system is its own. The question comes up about the level of knowledge and awareness the human commander was supposed to have. This also illustrates the relationship between opacity and meaningful human control: where the system’s decision-making process is not fully intelligible to the human operator, determining the extent of the commander’s knowledge and responsibility becomes more difficult. The resulting uncertainty may be further compounded by fragmented legal standards governing human control and accountability, as discussed earlier.

Drones such as the MQ-9 Reaper and Bayraktar TB 2 have autonomous navigation, take-off, and landing features, and can be fitted with radar sensors and cameras that may be infused with AI. The Phalanx Weapon System has naval and land-based uses.²²⁴ Pakistan has the Phalanx Weapon System in its arsenal, and so does India.²²⁵ These developments suggest that both states are increasingly focusing on including autonomy in existing weapons systems. This integration, as discussed before, potentially erodes the existing regulatory mechanisms. This integration also

²²³ Sayler, Defense Primer, *supra* note 218.

²²⁴ Raytheon, “Phalanx Weapon System” (3 December 2024), online: RTX <https://www.rtx.com/raytheon/what-we-do/sea/phalanx-close-in-weapon-system>.

²²⁵ Deagel, “Mk 15 Phalanx Block 0 / CIWS, Close-In Weapon System”, online: Deagel <https://www.deagel.com/Components/Mk-15-Phalanx-Block-0/a001641>.

highlights the incorporation of autonomous capabilities into existing weapons. From an STS point of view, this demonstrates how technological development is shaped by existing military systems, operational practices, and institutional priorities, while simultaneously altering the legal and regulatory questions applicable to those systems.

HARPY is a fully autonomous anti-radiation loitering munition that is equipped to hunt and seek targets in a designated area, locate and identify their frequency, and autonomously pursue a strike from any direction, at shallow or steep dive profiles.” In lay terms, it is a “fire and forget” autonomous unmanned aerial vehicle (UAV) and a missile that is designed to destroy enemy radar installations. It does not need prior intelligence on the target’s location before being launched.²²⁶ India has used HARPY drones extensively in its May 2025 escalations, targeting alleged military infrastructure deep inside Pakistani territory.²²⁷

Lancet-3 is a loitering munition for reconnaissance, surveillance, and strike missions. It is a smart multipurpose weapon, capable of autonomously finding and hitting a target. It can transmit video, which allows for confirming successful target engagement.²²⁸ This Russian-made weapon has, naturally, been extensively used in the present conflict and is concrete proof of the changing dynamics of war to an algorithmic front rather than a soldier-led one.

The HARPY and Lancet-3 therefore illustrate the challenge to meaningful human control posed by systems capable of independently identifying and engaging targets, placing them closer

²²⁶ Israel Aerospace Industries, “HARPY Anti-Radiation Loitering Munition”, online: IAI <https://www.iai.co.il/product/harpy/>.

²²⁷ NDTV News Desk, “India Uses HARPY Drones, S-400 Missile Defence System To Counter Pak Attack” (8 May 2025), online: NDTV <https://www.ndtv.com/india-news/pak-missile-attack-india-15-cities-targeted-india-uses-harpy-drones-s-400-missile-defence-system-to-counter-pak-attack-8362473>.

²²⁸ Army Recognition Editorial Team, “Lancet-3 Loitering Munition Kamikaze Drone Russia Data Fact Sheet” (25 July 2024), online: Army Recognition <https://www.armyrecognition.com/military-products/army/unmanned-systems/unmanned-aerial-vehicles/lancet-3-loitering-munition-kamikaze-drone-russia-data-fact-sheetp>.

to an “out-of-the-loop” model and raising particular concerns about whether human operators can adequately assess distinction and proportionality at the point of engagement.

There is, however, some time before fully autonomous weapons are the norm in any conflict on the international stage. The development of any technology follows similar stages, which can be separated by the development in controlled environments, beta tests, and then testing out in the real world. This also means that the traditionally slow efforts of international lawmaking may have the opportunity to be useful in prohibiting autonomous weapons and mitigating harm.

On the other hand, the period preceding widespread deployment is also a period in which legal and technological systems may develop together. From Pistor’s perspective, the legal framework surrounding emerging technologies can be adapted and applied as those technologies develop, creating incentives and constraints that influence their eventual form and use.²²⁹ From an STS perspective, the stages of testing and deployment are not merely technical processes but sites in which technological capabilities, military practices, institutional priorities, and regulatory expectations are mutually shaped.²³⁰ The opportunity for international law to intervene therefore exists alongside a corresponding opportunity for states and other actors to shape the legal environment around emerging technologies before particular technological practices become entrenched.

3.2 State and Individual Responsibility in Automated Decision-Making

Technological autonomy contributes to a broader reconfiguration of warfare as a continuous, data-driven process rather than a temporally discrete event. Cyber operations, algorithmic surveillance,

²²⁹ Pistor, *The Code of Capital*, supra note 31.

²³⁰ Vertesi et al, eds, *STS*, supra note 35.

and predictive targeting blur the lines between peace and armed conflict, raising questions about when IHL applies and how traditional thresholds of violence are to be understood.

Importantly, existing international law does not operate in a normative vacuum with respect to new technologies. Article 36 of Additional Protocol I²³¹ requires states to review new weapons, means, and methods of warfare to ensure their compliance with international law. However, the effectiveness of such reviews depends on national implementation, technical expertise, and political will. Moreover, weapons review mechanisms are traditionally state-centric and may struggle to account for the transnational, privatized, and dual-use nature of contemporary military technologies, many of which are developed by private corporations operating across jurisdictions.²³²

The current trajectory of states regarding weapon systems is that of advancement, exploitation, and innovation to gain an advantage over opposing states, irrespective of the existence of a conflict. In 2020, a Kargu 2 drone in Libya is alleged to have hunted down and attacked a human target, according to a report from the UN Security Council's Panel of Experts on Libya, published in March 2021.²³³ This is assumed to be the first instance of an autonomous killer robot armed with lethal weaponry attacking human beings. In May 2021, Israel conducted an AI-guided combat drone swarm attack in Gaza.²³⁴ India also claims to have employed AI during the 2025 Indo-Pak

²³¹ Additional Protocol I, *supra* note 28, art 36.

²³² See generally, Neil Davison, "A legal perspective: Autonomous weapon systems under international humanitarian law" in UNODA Occas Pap No 30 Novemb 2017 United Nations Office of Disarmament Affairs (UNODA) Occasional Papers (UN, 2018) 5.

²³³ David Hambling, "Drones May Have Attacked Humans Fully Autonomously for the First Time", *New Scientist* (27 May 2021), online: <https://www.newscientist.com/article/2278852-drones-may-have-attacked-humans-fully-autonomously-for-the-first-time/>.

²³⁴ David Hambling, "Israel Used World's First AI-Guided Combat Drone Swarm in Gaza Attacks", *New Scientist* (30 June 2021), online: <https://www.newscientist.com/article/2282656-israel-used-worlds-first-ai-guided-combat-drone-swarm-in-gaza-attacks/>.

crisis.²³⁵ These developments illustrate how autonomous and AI-enabled technologies are moving from technological experimentation toward operational use while the legal frameworks governing their development and deployment remain fragmented. The resulting concern is not that these technologies exist outside international law, but that their technical design, increasing autonomy, and rapid deployment may create practical gaps between existing legal rules and the systems through which those rules must be applied.

IHL dictates that states remain responsible for ensuring that all weapons comply with the principles of IHL²³⁶. The delegation of life-and-death decisions to machines does not absolve states of these obligations. Article 36 of AP1 provides general guidance for new weapons under the protocol or any other applicable international law.²³⁷ Article 35 states that it is prohibited to employ weapons, projectiles, and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering, and/or which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.²³⁸ Article 51 (4)(c) prohibits indiscriminate attacks which employ a method or means of combat the effects of which cannot be limited as required by this Protocol.²³⁹ These provisions are particularly relevant to AWS because they provide legal standards against which the characteristics and operation of emerging weapons technologies can be assessed.

²³⁵ Ajay Banerjee, “With AI Help, Hit Pak Assets with 94% Accuracy in Op Sindoor: Army”, The Tribune (6 October 2025), online: The Tribune <https://www.tribuneindia.com/news/top-headlines/with-ai-help-hit-pak-assets-with-94-accuracy-in-op-sindoor-army/>.

²³⁶ Additional Protocol I, *supra* note 28, art 36.

²³⁷ Additional Protocol I, *supra* note 28, art 36.

²³⁸ Additional Protocol I, *supra* note 28, art 35.

²³⁹ Additional Protocol I, *supra* note 28, art 51(4)(c).

An argument has been made for the complete ban of autonomous weapons²⁴⁰ based on Article 1(2)²⁴¹ of the AP1, which states that civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity, and from the dictates of public conscience.

The efforts for a complete ban, as will be discussed further below, are attempts to ensure IHL compliance by states during times of conflict. Additionally, these efforts are also a step towards defining and providing a legal status to autonomous and semi-autonomous weapons that complies with international norms.

A complete ban, or even a partial one, however, also highlights that there is clearly a need to adapt the concept of autonomy in warfare with the boundaries set by IHL. These boundaries, namely those located in the rules of *distinction* and *proportionality*, are essential to prevent civilians from unjust harm. At the same time, the debate over a ban reveals a broader question concerning the extent to which existing law adequately defines the boundaries of permissible autonomy.

The existing law may, as analyzed above, create space for states and other powerful actors to interpret and develop the applicable rules in ways that accommodate their technological and strategic interests.²⁴²

²⁴⁰ UNODA, “Lethal Autonomous Weapon Systems”, supra note 220; “UN: Start Talks on Treaty to Ban ‘Killer Robots’ | Human Rights Watch” (21 May 2025), online: <<https://www.hrw.org/news/2025/05/21/un-start-talks-treaty-ban-killer-robots>>; “‘Politically unacceptable, morally repugnant’: UN chief calls for global ban on ‘killer robots’ | UN News” (14 May 2025), online: <<https://news.un.org/en/story/2025/05/1163256>>.

²⁴¹ Additional Protocol I, supra note 28, art 1(2).

²⁴² Pistor, *The Code of Capital*, supra note 31.

3.3 Ethical and Doctrinal Tensions: Delegating Lethality

Human judgment in combat involves normative evaluation, contextual understanding, and moral deliberation that extend beyond pattern recognition. IHL requires assessments of *distinction*, *proportionality*, military necessity, and precautions, all of which rely on value-laden judgments sensitive to context, intent, and uncertainty. Algorithms do not possess consciousness, moral understanding, or intent; they execute rules and statistical inferences derived from training data.²⁴³ Responsibility risks diffusing across programmers, commanders, manufacturers, and political authorities, undermining the doctrinal requirement that lethal force be traceable to a human decision-maker.

Although legal accountability is ultimately attributed to an individual, that individual operates within a broader chain of command, relying on inputs from on-ground soldiers, navigation experts, intelligence systems, senior military officers, and political directives in an environment specifically organized to authorize and regulate violence.²⁴⁴ In this sense, the authority to make lethal decisions is not merely personal but institutionally coded through legal structures that facilitate the allocation of decision-making power, responsibility, and protection across hierarchical actors.

Autonomous weapons systems disrupt this framework by shifting parts of human judgment onto technical systems, and as decisions become increasingly shaped by algorithms, it becomes more difficult to attribute harmful outcomes to a state within the IHL framework and, in turn, pursuant to ICL for purposes of tracing liability back to a clearly identifiable human authority.

²⁴³ As a result, when harm occurs due to an algorithmic decision, attributing mens rea for criminal accountability becomes deeply problematic. Schwarz, *Autonomous Weapons Systems*, supra 53.

²⁴⁴ Schwarz, *Autonomous Weapons Systems*, supra 53, table 1.

This deepening opacity provides an opportunity to convert autonomy into a protected asset under existing law.²⁴⁵ There are numerous legal standards in which the increasing technological dependence during warfare may fit, but currently, none are specific enough to prohibit unjust harm.

Under existing IHL, LAWS are prohibited from being employed where they:

1. are incapable of complying with IHL (e.g., *distinction*, *proportionality*, and *precaution*);
2. are, by their nature, inherently *indiscriminate* or cause superfluous injury or unnecessary suffering;
3. target civilians or civilian objects as such;
4. cannot be anticipated and controlled;
5. are used without human control and judgement, depending on the context; or
6. are intended or expected to result in widespread, long-term, and severe environmental damage.²⁴⁶

Ethically, there is a long list of hurdles that these systems have to pass through. Unfortunately, ethical considerations are not as strong a deterrent for the rapid development and use of such weapons. Autonomous systems rely on algorithms and pattern recognition that struggle with context, surrender, and civilian presence. This raises concerns about technical opacity, where accountability for wrongful harm is diffused among programmers, commanders, and states, undermining moral and legal responsibility.

²⁴⁵ Based on the framework developed in Pistor, *The Code of Capital*, supra note 31 at 15.

²⁴⁶ Group of Governmental Experts on Lethal Autonomous Weapons Systems, Revised Rolling Text as of 8 November 2024 (8 November 2024), online (pdf): United Nations Office for Disarmament Affairs [https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_\(2024\)/Revised_rolling_text_as_of_8_November_2024_final.pdf](https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2024)/Revised_rolling_text_as_of_8_November_2024_final.pdf).

The use of autonomous weapons may also erode human dignity by reducing individuals to mere data points and risks lowering the threshold for war by minimizing danger to one's own forces. The analysis of existing doctrines and the different theories surrounding modern warfare invokes questions on the correct regulatory mechanisms and approaches to handle technological innovation in military actions around the world.

- Public Conscience is a shared moral sense of what is right and wrong that dictates the everyday actions of humans. Could a fully autonomous weapon even be considered a legitimate weapon, as it takes out the morality in question of lethal decisions on the battlefield?
- What should be the appropriate balance between the deployment of autonomous weapons by states and use by commanding individuals, and what are the minimum standards required for both?
- Are remote attacks inherently causing unnecessary suffering, or do the advantages outweigh the consequences of remote attacks?

The next chapter will revisit these conflicts in detail to discuss the applicability of existing international law, and identify shortcomings that allow human suffering and increased damage to people and infrastructure, as evidenced in both the Indo-Pak and Russia-Ukraine situations.

3.4 Emerging Regulatory Norms

Since 2018, United Nations Secretary-General António Guterres has maintained that lethal autonomous weapons systems are politically unacceptable and morally repugnant and has called for their prohibition under international law.²⁴⁷ In his 2023 New Agenda for Peace, the Secretary-

²⁴⁷ António Guterres, "Machines with Power, Discretion to Take Human Life Politically Unacceptable, Morally Repugnant, Secretary-General Tells Lisbon 'Web Summit'" (5 November 2018), online: United Nations <https://press.un.org/en/2018/sgsm19332.doc.htm>.

General reiterated this call, recommending that States conclude, by 2026, a legally binding instrument to prohibit lethal autonomous weapon systems that function without human control or oversight, and which cannot be used in compliance with international humanitarian law, and to regulate all other types of autonomous weapons systems.²⁴⁸ Additionally, different branches of the UN have also expressed their concern and need for prohibiting autonomous weapons, a phenomenon that was previously noted for nuclear weapons, and was concluded by the much-debated Treaty on the Non-Proliferation of Nuclear Weapons.²⁴⁹

These responses to autonomous weapons highlight a shift from the diplomatic responses that are consistent in the international forum. An outright ban and prohibition on completely autonomous weapons suggest that the issue with AWS is structural and needs addressing at the grassroots level. From Pistor's perspective, these gaps are significant because they create space for legal rules to be interpreted and developed in ways that may facilitate particular technological and strategic interests.²⁵⁰ From an STS perspective, they also demonstrate that the development of autonomous weapons and the legal frameworks governing them are not separate processes, but evolve in relation to one another.²⁵¹ The bold statements made by the Secretary-General calling LAWS politically unacceptable and morally repugnant also suggest that the concerns raised by autonomous weapons may extend beyond their ability to comply with existing IHL rules. While principles such as *distinction* and *proportionality* regulate the legality of attacks, they may not fully capture the broader normative concern surrounding the delegation of life-and-death decisions to autonomous systems.

²⁴⁸ UNODA, "Lethal Autonomous Weapon Systems", supra note 220.

²⁴⁹ Treaty on the Non-Proliferation of Nuclear Weapons, 1 July 1968, 729 UNTS 161 (entered into force 5 March 1970) [NPT].

²⁵⁰ Pistor, *The Code of Capital*, supra note 31.

²⁵¹ Vertesi et al, eds, STS, supra note 35.

This reflects a broader recognition that the existing legal framework, while technologically neutral in principle, may not be fully fit for purpose when applied to weapons whose operation challenges established assumptions regarding human judgement.

Following the lines of international law, a related effort has been made to police the use of AI in general in the military domain. Military and security applications of AI are broad and far-reaching, including for weapon-related functions. Applications range from decision support systems for military operations to systems that support maritime security through counter-piracy efforts, counter-terrorism operations, and border security.²⁵² These examples make it clear that an effort to police the use of AI is essential. Some efforts are detailed below.

Furthermore, LAWS have been discussed through the Group of Governmental Experts (GGE) on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems (LAWS).²⁵³ States are split on the need for a complete ban, but mostly agree on regulatory mechanisms for LAWS. However, there are also a few exceptions. A complete or partial ban strongly indicates recognition of a gap in the law that could be strategically leveraged, and resistance to the introduction of regulation arguably demonstrates how states may seek to preserve that legal space while continuing to develop the technology. From an STS perspective, this illustrates how technological development and legal regulation can shape one another: states are not merely regulating an emerging technology, but are also influencing the legal environment in which that technology develops and may ultimately shape the trajectory of future regulation.

²⁵² United Nations Office for Disarmament Affairs, “Artificial Intelligence in the Military Domain”, online: UNODA <https://disarmament.unoda.org/en/our-work/emerging-challenges/artificial-intelligence-military-domain>.

²⁵³ United Nations Office for Disarmament Affairs, “Convention on Certain Conventional Weapons – Group of Governmental Experts on Lethal Autonomous Weapons Systems (2025)”, online: United Nations Meetings Coverage and Documentation <https://meetings.unoda.org/meeting/74853>.

According to Automated Decision Research, a website dedicated to tracking the support and opposition to automated weapons, 129 countries support a legally binding instrument on AWS, while only 12 countries actively oppose it, and the remaining are undeclared. However, it is noteworthy that the states that are opposing this binding instrument are among the strongest states in the international forum.²⁵⁴

The United States asserted that existing IHL principles, along with national efforts to implement them, adequately address the challenges posed by autonomous weapons systems. Israel shares this view.²⁵⁵ India has expressed that a legally binding instrument on autonomous weapons would be “premature” and that it is concerned about widening the “technology gap” between states.

At the same time, India has started investing in the development of autonomous weapons, including through partnerships with manufacturers such as Adani Defense and Aerospace. Russia’s thoughts align with India’s that the need for development and innovation would be hindered by such a regulatory mechanism.²⁵⁶

There are, nonetheless, powerful blocs that support a complete ban on fully autonomous weapons and support the negotiations of a treaty to regulate LAWS. The African group publicly supported the negotiations of this instrument in 2018²⁵⁷, along with Egypt in 2014, Sierra Leone in 2021 (along with 10 states)²⁵⁸, and Austria, Belgium, and the Netherlands, along with multiple European countries since 2021.²⁵⁹

²⁵⁴ Automated Decision Research, “State Positions”, online: Automated Decision Research <https://automatedresearch.org/state-positions/>.

²⁵⁵ Autonomous Weapons Systems, “The Political Landscape.”, supra note 59.

²⁵⁶ Autonomous Weapons Systems, “The Political Landscape.” supra note 59.

²⁵⁷ African Group, “Statement by the African Group to the Group of Governmental Experts on Lethal Autonomous Weapons Systems (LAWS)” (9 April 2018), online (pdf): Reaching Critical Will https://reachingcriticalwill.org/images/documents/Disarmament-fora/ccw/2018/gge/statements/9April_African-Group.pdf.

²⁵⁸ Automated Decision Research, “State Positions”, supra note 257.

²⁵⁹ Automated Decision Research, “State Positions”, supra note 257.

While the international institutions demand an overhaul and extended protections against AWS, some states have chosen a drastically different position. This argument comes from the ability to innovate and having the capital to support this innovation, as noted above. It can be assumed that the efforts to code AWS in existing regulatory frameworks are an attempt to gain some form of military advantage over opposing states – arguably a demonstration of law as code. These opposing arguments, and the current stalemate with respect to the legal positions of AWS, highlight the existence of a perception of power imbalance in the international forum and in the operation of IHL. However, the combined opinions of the United Nations, the African group, and the above-mentioned European nations also expose a level of uncertainty as to whether the current legal frameworks such as *distinction* and *proportionality* remain fit for the purpose of regulating increasingly autonomous forms of warfare. While this could demonstrate recognition of a legal gap (as earlier mentioned), it is important to note here that a state's support for a new treaty or express prohibition does not necessarily demonstrate that it considers existing IHL inadequate. It could accept that *distinction*, *proportionality*, and other IHL rules remain legally applicable to AWS while nevertheless believing that a separate prohibition is desirable for ethical, political, precautionary, or policy reasons.

To substantiate these assumptions, the next chapter discusses the Russia-Ukraine conflict and the India-Pakistan 2025 escalations in the context of the states' use of autonomous weapons. The chapter also utilizes Pistor's theory of coding and STS to provide a useful theoretical lens for the analysis.

Chapter 4: Case Study Analysis: Autonomous Weapons in Russia–Ukraine and India–Pakistan Conflicts

4.1 Russia–Ukraine Conflict

The armed conflict between Russia and Ukraine represents one of the most technologically integrated armed conflict in recent history. As mentioned earlier, it began with Russia’s annexation of Crimea in 2014²⁶⁰ and escalated in 2022.²⁶¹ Both parties have employed unmanned systems, automated targeting mechanisms, electronic warfare, cyber operations, and autonomous defensive technologies at an unprecedented scale.²⁶² Unlike earlier conflicts where autonomous systems were peripheral or experimental, the Russia–Ukraine war demonstrates layered autonomy: automated air-defense systems operate alongside AI-assisted targeting tools, loitering munitions capable of independent search functions, and unmanned maritime platforms incorporating algorithmic navigation and strike capacity.

Since the launch of Russia’s full-scale invasion in 2022,²⁶³ Ukraine has seen a complete overhaul of its defensive capabilities through the rapid integration of AI in almost all its systems. AI now acts as an essential element in real-time battlefield coordination and autonomous drones, to cyber defense and digital forensics. According to a report in the Cairo Review, “In just two years, an entire ecosystem of Ukrainian defense technology has emerged, uniting over 1,500 developers and supporting more than 3,600 projects”.²⁶⁴

²⁶⁰ “BBC News, “Ukraine Profile – Timeline”, supra note 97.

²⁶¹ Tony Keller, “Vladimir Putin Orders Sweeping Exercise of Russia’s Nuclear Forces” (29 October 2024), online: The Globe and Mail <https://www.theglobeandmail.com/world/article-vladimir-putin-orders-sweeping-exercise-of-russias-nuclear-forces/>.

²⁶² Oleg Dunda, “The Art of War Is Undergoing a Technological Revolution in Ukraine” (24 December 2025), online: Atlantic Council <https://www.atlanticcouncil.org/blogs/ukrainealert/the-art-of-war-is-undergoing-a-technological-revolution-in-ukraine/>.

²⁶³ Keller, “Vladimir Putin Orders Sweeping Exercise of Russia’s Nuclear Forces”, supra note 264.

²⁶⁴ “Anna Mysyshyn, “Governing AI Under Fire in Ukraine” (15 June 2025), online: Cairo Review of Global Affairs <https://www.thecairoreview.com/essays/governing-ai-under-fire-in-ukraine/>.

4.1.1 Operational Use of Drones and Defense Systems

The word drone has been used to identify any ‘vehicle’ that is operated remotely in the present conflict. According to the basic definition, the aerial component is a requirement for a weapons system to be classified as a drone.²⁶⁵ Still, it is alleged that Ukraine has used underwater ‘drones’ to attack Russian submarines.²⁶⁶ This classification bundles unmanned underwater vehicles into the same category as aerial unmanned vehicles, posing unique challenges to identifying the applicable laws for proper use. Calling an underwater unmanned vehicle a “drone” may obscure important differences between aerial, surface, and underwater systems, including how they operate, what they are capable of, and which bodies of international law may apply. In building its fleet of naval drones, Ukraine has primarily relied on domestically developed systems. Among these, the Sea Baby Drone²⁶⁷ and the Maritime Autonomous Guard Unmanned Robotic Apparatus (MAGURA)²⁶⁸ are the most notable and significant. Russians have retaliated equally and spent considerable resources to fight back using similar technologies. In August 2025, it notably used an unmanned surface system to attack the Ukrainian Navy’s reconnaissance ship Simferopol in the Danube River. This was the first-ever reported use of a Russian surface drone against a Ukrainian warship or support vessel.²⁶⁹

²⁶⁵ Jaume Saura, “Implications of the Use of Drones in International Law”, online: *Per la Pau / Peace in Progress Magazine* <https://www.icip.cat/perlapau/en/article/implications-of-the-use-of-drones-in-international-law/>.

²⁶⁶ Yuliia Dysa & Tom Balmforth, “Ukraine says underwater drones hit submarine, but Moscow denies damage” (15 December 2025), *Reuters*, online: <https://www.reuters.com/world/europe/ukraine-hits-russian-submarine-first-underwater-drone-attack-2025-12-15/>.

²⁶⁷ Gavin Blackburn “Ukraine Unveils Upgraded Sea Drone It Says Can Strike Anywhere in the Black Sea” (23 October 2025), online: *Euronews* <https://www.euronews.com/2025/10/23/ukraine-unveils-upgraded-sea-baby-drone-it-says-can-strike-anywhere-in-the-black-sea>.

²⁶⁸ Roman Romaniuk, “Target and Eliminate: How Ukraine’s Magura Drones Devastate Russian Ships” (4 March 2024), online: *Ukrainska Pravda* <https://www.pravda.com.ua/eng/articles/2024/03/04/7444793/>.

²⁶⁹ Stavros Atlamazoglou, “Why the Black Sea Is Becoming a Hotbed for Russian Naval Drones” (31 January 2026), online: *The National Interest* <https://nationalinterest.org/blog/buzz/why-black-sea-becoming-hotbed-russian-naval-drones-sa-013126>.

While the Russian Federation never made a formal declaration of war²⁷⁰, its aggressive operations in the northern Black Sea have turned it into a *de facto* zone of armed conflict²⁷¹, trapping dozens of foreign merchant ships there and putting their international crews at risk.

However, trade is still active, and the judgment of military advantages, legitimate targets, and navigating troubled waters has become increasingly difficult for commanders on both sides of the war.²⁷² While commercial ships are stranded in a corridor with a high threat level, the risk of misidentification by an underwater vessel exacerbates the concerns for the safety of these non-combatants.²⁷³

Under traditional naval warfare law, military vessels are legitimate military objectives.²⁷⁴ However, the Black Sea is not an exclusively military zone and integrates with daily life.²⁷⁵ Civilian shipping continues, albeit under constrained conditions. If an unmanned underwater vehicle identifies targets through acoustic signatures or automated classification of vessel identification, *distinction* becomes dependent upon the reliability of sensor interpretation rather than human visual confirmation.²⁷⁶ Unlike a human operator who may reassess ambiguous visual

²⁷⁰ Keller, “Vladimir Putin Orders Sweeping Exercise of Russia’s Nuclear Forces”, supra note 264.

²⁷¹ Alina Frolova, Stepan Yakymiak, “The Changing Military Balance in the Black Sea: A Ukrainian Perspective” (2 April 2026), online: Carnegie Endowment for International Peace <https://carnegieendowment.org/research/2026/04/the-changing-military-balance-in-the-black-sea-a-ukrainian-perspective>.

²⁷² Ruchi Kumar, “‘It’s a Miracle We Survived’: The Civilian Crew Trapped on a Ship in Ukraine as Bombs Rained Down”, The Guardian (3 February 2026), online: <https://www.theguardian.com/global-development/2026/feb/03/crew-ship-ukraine-cargo-seafarers-abandoned-war-zones>.

²⁷³ See “Two Tankers Catch Fire in the Black Sea after Being Struck, Turkish Authorities Report” (28 November 2025), online: AP News <https://apnews.com/article/turkey-gambia-tanker-fire-black-sea-d306912f47fd409170f8bf8ca40e58f2>; see also “Maritime Security in the Northern Black Sea: Operational Realities and Emerging Risks”, online: Hellenic Shipping News Worldwide <https://www.hellenicshippingnews.com/maritime-security-in-the-northern-black-sea-operational-realities-and-emerging-risks>.

²⁷⁴ International Committee of the Red Cross, “Rule 8. Definition of Military Objectives”, online: Customary IHL Database <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule8>

²⁷⁵ “Maritime Security in the Northern Black Sea”, supra note 276.

²⁷⁶ Anqi Jin & Shuang Yang, “UAWC: An intelligent underwater acoustic target recognition system for working conditions mismatching,” Digital Signal Processing 154 (2024), 104652. Underwater acoustic target-recognition systems can analyse passively captured ship-radiated noise to distinguish between target or ship types, with recent research applying machine-learning techniques to improve classification under varying operating conditions.

data, an algorithm functions within predefined probability thresholds. Identifying anomalies and threats immediately and countering them is now increasingly difficult, so paralleling the technological advances of attacks in defense is necessary. AI is having a significant impact on the defense of Ukrainian critical infrastructure against Russian drone and missile attacks. At this stage of AI development, the parameters of what is possible are still being explored, but the critical importance of military response to AI technology is undeniable.²⁷⁷

There are several new scenarios that the current laws are unequipped to address. According to Schwarz,²⁷⁸ “for human decision makers to be able to retain agency over the morally relevant decisions made with AI they would need a clearer insight into the AI black box, to understand the data, its provenance, and the logic of its algorithms, and have time to evaluate contexts and act on them while embedded in a technological setting where information is mediated through screens at high speeds.” Many Russian and Ukrainian drones for reconnaissance and combat missions fly in groups, with one or several operators piloting them. An expected evolution of these tactics is to enable true swarms of UAVs to fly autonomously toward targets, thanks to AI technologies.²⁷⁹ Pistor argues that assets derive their power not merely from their material capabilities but from the legal frameworks that encode and protect them.²⁸⁰ Applied to autonomous weapons, this perspective shifts the inquiry from whether AI can generate new military capabilities to how law as a form of code should structure the authority, responsibility, and permissible uses attached to those capabilities.

²⁷⁷ José Pardo de Santayana, “Artificial Intelligence and the War in Ukraine” (2024), online (pdf): Spanish Institute for Strategic Studies (IEEE) https://www.defensa.gob.es/documents/2073105/2278118/la_inteligencia_artificial_y_la_guerra_de_ucrania_2024_dieceea81_eng.pdf.

²⁷⁸ Schwarz, *Autonomous Weapons Systems*, supra note 53 at 17.

²⁷⁹ Pardo de Santayana, “Artificial Intelligence and the War in Ukraine”, supra note 280.

²⁸⁰ Pistor, *The Code of Capital*, supra note 31 at 1-5, 11-18.

Drone systems, AI-enabled defense platforms, and even communication infrastructures such as satellite networks are not neutral technologies if analyzed through this lens and, in this way, are consistent with STS theory, i.e., that they are shaped by the social, political, institutional, and legal contexts in which they are developed and deployed. Viewed through Pistor's account of the legal construction of assets, their military significance is **also** shaped by the legal and institutional frameworks that determine how they may be controlled, deployed, and held accountable, as mentioned before.

In the context of the Black Sea conflict, this raises important questions about how legal regimes prioritize and protect military technologies over civilian safety. For instance, while IHL mandates *distinction* and *precautions*, it does not yet fully “code” autonomous systems with enforceable constraints equivalent to their destructive capabilities. This asymmetry allows technologically advanced systems to operate with a degree of legal insulation, effectively elevating them to high-value strategic assets without a corresponding expansion in accountability mechanisms.²⁸¹ The difficulty therefore does not arise because these systems fall outside IHL, but because the opacity of their operation and the reduction of meaningful human control may make compliance with, and subsequent assessment of, those obligations more difficult.

Additionally, the laws discussed in the context of the war also provide protection to the now extended range of actors that take part in the striking decision for an autonomous weapon. The combination of capital-intensive technologies and loopholes due to the novelty of the programs, states, and private actors is currently able to circumvent the principles of *distinction* and *proportionality* by various methods. The UN Human Rights Monitoring Mission in Ukraine

²⁸¹ See e.g., Priyesh Mishra et al, “Code, Command, and Conflict: Charting the Future of Military AI” (12 December 2025), online: Belfer Center for Science and International Affairs <https://www.belfercenter.org/research-analysis/code-command-and-conflict-charting-future-military-ai>.

provides a very concrete example.²⁸² In its 2025 report, it documented Russian use of short-range FPV drones against civilians. These drones gave operators a real-time visual feed and allowed them to select and track individual targets. Despite that enhanced ability to distinguish targets, the UN documented attacks against civilians in private cars, buses, ambulances, humanitarian vehicles, and people on bicycles.²⁸³ There is also reporting from 2025 that Ukrainian operators had tested AI-enabled drones with an automatic “lock-on” capability. One Ukrainian drone commander described the results as inconclusive, particularly where targets were camouflaged or difficult to distinguish from their surroundings.²⁸⁴

Global military spending on AI is estimated to have doubled from \$4.6 billion to \$9.2 billion USD between 2022 and 2023 and is expected to reach \$38.8 billion by 2028. Militaries are using AI to achieve greater operational efficiency and accuracy for strategic advantage against adversaries.²⁸⁵

Pistor’s theory emphasizes the fact that private capital requires the state to enforce these rights. In the case of autonomous weapons, governments act as both regulators and customers, providing legal protection and funding for the development of these systems while simultaneously, and often paradoxically, struggling to regulate their ethical use²⁸⁶. Hence, while discussing the ambiguous scenarios that currently plague the battlefield, the novelty and political power of different actors are questioned. This dual role creates a potential tension between the state’s interest in developing military capabilities and its obligation to ensure that their use remains consistent

²⁸² UN Human Rights Monitoring Mission in Ukraine, *Deadly Drones: Civilians at Risk from Short-Range Drones in Frontline Areas of Ukraine*, 24 February 2022—30 April 2025 (26 June 2025).

²⁸³ *Ibid.*

²⁸⁴ David Hambling, “Ukrainian FPV Operator Reviews AI-Enabled ‘Lock On Target’ Drones” (5 March 2025), *Forbes*.

²⁸⁵ Priyesh Mishra, *supra* note 284.

²⁸⁶ Pistor, *Legal Coding Beyond Capital*, *supra* note 33 at 4.

with applicable legal and ethical constraints. With AWS, the state is often the actor that creates the demand for the technology, funds or facilitates its development, procures the systems, deploys them, and then establishes the rules governing their use. That makes the regulatory relationship structurally more complicated. It concentrates the capacity to “code” the technology and its legal environment in the hands of the same actors who stand to benefit from its development.

Ukrainian USVs attempting a cover attack were denied a Starlink connection to complete the assignment, leaving them stranded with heavy explosives in Russian territory.²⁸⁷ Meanwhile, Russia has actively worked on dismantling the communication system, claiming the military advantages gained by it, ignoring the civilian importance, as Starlink remains a key internet enabler for war-stricken areas.²⁸⁸ This illustrates the strategic use of fragmentation: control over a privately operated communications infrastructure can be selectively applied to enable or constrain military capabilities, while the absence of a unified legal framework leaves states and private actors considerable discretion over how that infrastructure is used in conflict.

As each side has found new ways to jam drone signals, the other side has found ways to get around that jamming. As parties adapt communication systems in response to electronic interference, the military utility and civilian consequences of a particular communications network may change during the course of hostilities. The challenge for IHL is therefore not that dual-use communications systems fall outside the existing legal framework, but that their changing military and civilian functions can make the application of *distinction*, *proportionality*, and *precautions* increasingly context-dependent.

²⁸⁷ Alona Mazurenko, “First Surface Vessel Attack on Crimea Failed as Musk Turned off Connection – UP”, online: Ukrainska Pravda <https://www.pravda.com.ua/eng/news/2024/01/01/7435389/>.

²⁸⁸ Dunda, “The Art of War Is Undergoing a Technological Revolution in Ukraine”, *supra* note 265.

Ukraine has significantly improved its radio jamming capabilities and can now disrupt the communications link between Russia's satellite-guided KAB²⁸⁹ and UMPK²⁹⁰ glide bombs and its GLONASS satellite constellation²⁹¹ (Russia's equivalent of GPS), causing Russian glide bombs to veer off course by up to a kilometer and detonate harmlessly in open fields.²⁹² The uncertainty that the next altered detonation would be harmless and not kill civilians is questionable at best.

The need for modification of international law is undeniable. Art 36 (AP I)²⁹³, as described above, provides a useful foundational stone through which harm can be mitigated, and the prohibition of illegal weaponry can be ensured. Strengthening and adapting this review process to account for emerging technologies could mitigate harm by requiring States to identify potential legal and humanitarian risks before novel weapons are deployed. It could also help prevent the development or use of unlawful weaponry by requiring a systematic assessment of whether the weapon, in its anticipated use, would violate existing rules of international humanitarian law. This will be further elaborated upon in Chapters 5 and 6.

However, the foundation is challenged by the integration of technology within largely accepted modern weapons, and hence, a continuous evaluation becomes paramount. Article 36 is framed around the assessment of a weapon at the point at which a State studies, develops, acquires, or adopts it, leaving less clarity as to whether subsequent technological modifications, software

²⁸⁹ "Su-34 Aircraft of the Central Military District Used 500-Kilogram Guided Bombs for the First Time During an Exercise in the Trans-Urals" (3 June 2019), online: TSAMTO (Centre for Analysis of World Arms Trade) <https://armstrade.org/includes/periodics/news/2019/0603/094052657/detail.shtml>.

²⁹⁰ "UMPK: Universal Module for Aerial Bombs" (23 October 2023), online: VZGLYAD <https://vz.ru/information/2023/10/23/1235470.html>.

²⁹¹ Bart Hendrickx, "The Secret Payloads of Russia's Glonass Navigation Satellites", *The Space Review* (13 February 2023), online: <https://www.thespacereview.com/article/4502/1>.

²⁹² David Axe, "Ukraine Is Jamming Russian Glide Bombs All Along the Front Line, Erasing One of Russia's Main Battlefield Advantages", *Forbes* (26 February 2025), online: <https://www.forbes.com/sites/davidaxe/2025/02/26/ukraine-is-jamming-russian-glide-bombs-all-along-the-front-line-erasing-one-of-russias-main-battlefield-advantages/>.

²⁹³ Additional Protocol I, *supra* note 28, art 36.

updates, changes in intended use, or integration with other technologies trigger a renewed review. This does not necessarily preclude continuous evaluation under existing international law; rather, it leaves a potential gap in the explicitness and consistency of the obligation.

Additionally, the increased speed and scale of attacks alter *proportionality* assessments due to the sheer possibility of the same, but should not go against the basic principles of IHL. Similarly, as weapons get smarter, so do people, and the loopholes get exploited. Soldiers using human shields is an assessment that a human may accomplish based on mannerisms, but it is a herculean task for an algorithm. Hence, principles like *distinction* and *proportionality* need stronger enforcement, and compliance becomes imperative.

4.1.2 Distinction, Proportionality, and Civilian Risk in a High-Intensity Conflict

Algorithms may be able to differentiate between a military infrastructure and a civilian building, but during war, traditionally designated infrastructures are often used for different purposes. There have been multiple instances in recent history where it has been alleged that hospitals have been used as military bases. Myanmar²⁹⁴ and Gaza²⁹⁵ are 2 prominent examples of the same. Warehouses supplying the vast majority of Ukraine's pharmacies have been destroyed in a series of Russian attacks. Medical supplies worth about \$200m were destroyed in just two strikes by drones and missiles. Russia denies hitting civilian targets, but when the Optima Pharm warehouse was hit in October, the defense ministry in Moscow said only that it had targeted a factory producing drones.²⁹⁶

²⁹⁴ Al Jazeera, "Myanmar Military Says Armed Groups Used Hospital It Bombed, Killing Dozens" (13 December 2025), online: Al Jazeera <https://www.aljazeera.com/news/2025/12/13/myanmar-military-says-armed-groups-used-hospital-it-bombed-killing-dozens>.

²⁹⁵ NGO Monitor, "In Their Own Words: Hamas Turns Hospitals into Military Assets with NGO Compliance" (10 September 2025), online: NGO Monitor <https://ngo-monitor.org/reports/hamas-misuse-hospitals-docs/>.

²⁹⁶ Vitaly Shevchenko, "Ukraine's Health Supplies Hit in Series of Russian Strikes on Medical Warehouses" (13 December 2025), online: BBC News <https://www.bbc.com/news/articles/cqlkk9qk7vyo>.

Distinction is not limited to personnel and requires that only military objects may be lawfully targeted, while non-military objects, such as civilian objects, remain immune. In the era of disinformation, where a state can claim to hit military targets, claiming deniability becomes easier when the information is gathered by a drone feed and analyzed by an algorithm to determine military presence in what would normally be considered civilian infrastructure.²⁹⁷ There is evidence that AI-assisted targeting and image-recognition systems are already being integrated into drone warfare. For example, reporting from Ukraine describes drones using AI-assisted image recognition to continue toward targets after losing contact with human operators.²⁹⁸ The ICRC likewise recognizes that AI is already being used in military surveillance, intelligence analysis, and decision-support systems, while warning that these systems can create difficulties in distinguishing military objectives from civilian objects.²⁹⁹

The principle of *proportionality* prohibits attacks that are expected to cause incidental civilian harm that is excessive in relation to the anticipated military advantage. Traditionally, this assessment involves a commander balancing qualitative considerations under conditions of uncertainty.³⁰⁰

Russia has been said to have been launching an average of over 180 missiles at Ukraine per month, largely targeting energy and critical infrastructure. These attacks have been seen as grave violations of IHL³⁰¹. Ukrainian UAV units now use AI to automate drone takeoffs and

²⁹⁷ Shiri Krebs, “Above the Law: Drones, Aerial Vision and the Law of Armed Conflict – A Socio-Technical Approach” (1 December 2023) 105:924 International Review of the Red Cross, online: <http://international-review.icrc.org/articles/above-the-law-drones-aerial-vision-and-the-law-of-armed-conflict-924>.

²⁹⁸ Volodymyr Pavlov, “Ukrainian drone pilots look to AI for battlefield edge” (29 November 2025), online: Reuters <<https://www.reuters.com/business/aerospace-defense/ukrainian-drone-pilots-look-ai-battlefield-edge-2025-11-29/>>.

²⁹⁹ International Committee of the Red Cross, “Frequently asked questions: Artificial Intelligence (AI) in the military domain” (11 June 2026), online: ICRC <https://www.icrc.org/en/article/faq-artificial-intelligence-in-military-domain>.

³⁰⁰ Additional Protocol I, note 28, art 51(5)(b), 57.

³⁰¹ United Kingdom, Foreign, Commonwealth & Development Office, “Russia’s Escalating Attacks on Ukrainian Civilians Violate International Humanitarian Law: UK Statement to the OSCE” (11 February 2026), online:

landings and assist in target identification (albeit with human oversight), sometimes reducing the time from detection to destruction to just over 30 seconds.³⁰² This shortened time frame raises concerns over effective human control, the accuracy of decision which lacks historical context, and other issues relating to the accuracy of data and the method and backdrop of analyses of said data on biased targeting profiles set by states and commanders.

The examples above describe the grave situation where the mere use of semi-autonomous or piloted drones may cause unreasonable harm and is likely to be brought up before international courts and adjudicating bodies during and after the end of the conflict. The targeting process's development and integration of software to analyze real-time data has already concluded in unjust attacks being justified by powerful states, giving way to further escalations and incursions into civilian territories, causing unjust harm.

One of the most visible trends at Ukrainian frontlines is the growing use of semi-autonomous target guidance, ranging from programmed tracking to AI-enhanced systems.³⁰³ The system allows drones to lock onto a target and complete their mission even if the operator loses signal. The drones also come with the option of AI software capable of automatically detecting enemy targets. The system is trained on thousands of hours of photos and videos of real combat, drawn mostly from public sources.³⁰⁴ Problems include poor camera quality, difficulty hitting moving targets, and inconsistent software performance. Unfortunately, the problems may not act as a deterrent for the use of these drones, but rather loopholes to avoid accountability.

GOV.UK <https://www.gov.uk/government/speeches/russias-escalating-attacks-on-ukrainian-civilians-violate-international-humanitarian-law-uk-statement-to-the-osce>.

³⁰² Ulrike Franke and Jenny Söderström, "Star tech enterprise: Emerging technologies in Russia's war on Ukraine," European Council on Foreign Relations, September 5, 2023, <https://ecfr.eu/publication/star-tech-enterprise-emerging-technologies-in-russiaswar-on-ukraine/#lesson-1-private-technology-companies-are-playing-an-ever-moreimportant-role-in-warfare>.

³⁰³ Ibrahim Naber, "Why Ukraine Remains the World's Most Innovative War Machine" (27 August 2025), online: POLITICO <https://www.politico.com/news/magazine/2025/08/27/ukraine-drones-war-russia-00514712>.

³⁰⁴ Ibid.

Ukraine's efforts to use AI on the battlefield are aided by willing partners, such as the Germany-based Helsing AI firm³⁰⁵. In December 2024, Helsing announced that the first few hundred of almost four thousand of its AI-equipped HX-2 Karma UAVs earmarked for Ukraine were set to be delivered to the Ukrainian front. Apparently, HX-2 is immune to electronic warfare countermeasures via its ability to search for, reidentify, and engage targets without a signal or a continuous data connection, while allowing a human operator to stay in or on the loop for critical decisions.³⁰⁶

The AI is still flawed, and it brings with it the biases of the people who programmed those systems.³⁰⁷ These biases, combined with the accountability gaps, give way to grave violations of the *distinction* principle. *Distinction* also requires contextual understanding of the elements of an act. However, due to the technical opacity of algorithms³⁰⁸ and intentional opacity of AWS³⁰⁹, the details needed for proper assessments are often incomplete and may lead to inaccurate conclusions for alleged crimes during conflict. For example, where an algorithm's training data, decision-making parameters, or weighting of relevant information cannot be examined, it may be difficult to determine whether the system has accurately distinguished a military objective from a civilian object or whether relevant contextual information has been overlooked. Similarly, where the operation of an AWS is intentionally concealed, investigators may lack the information necessary to reconstruct how a particular target was identified and why the system classified it as a lawful military objective. The opacity of these systems therefore does not, in itself, make a targeting

³⁰⁵ Helsing, "Artificial Intelligence to Protect Our Democracies" (online), online: <https://helsing.ai>.

³⁰⁶ Samuel Bendett, "Battlefield Drones and the Accelerating Autonomous Arms Race in Ukraine" (10 January 2025), online: Modern War Institute <https://mwi.westpoint.edu/battlefield-drones-and-the-accelerating-autonomous-arms-race-in-ukraine/>.

³⁰⁷ United Nations News, "As AI Evolves, Pressure Mounts to Regulate 'Killer Robots'" (1 June 2025), online: UN News <https://news.un.org/en/story/2025/06/1163891>.

³⁰⁸ Lu, Algorithmic Opacity, *supra* note 61.

³⁰⁹ Pasquale, Black Box Society, *supra* note 53 at 7.

decision unlawful; rather, it creates a risk that inaccurate classifications will remain undetected and makes it more difficult to verify compliance with the principle of *distinction* or establish responsibility when an erroneous targeting decision results in harm to civilians.

The principle of *proportionality* is further reinforced by certain rules flowing from the principle of precautions in attack, in particular, the obligation to do everything feasible to assess whether an attack may be expected to be disproportionate, and to cancel or suspend an attack if it becomes apparent that it may be expected to have disproportionate effects.³¹⁰ Algorithms take away many of these enforcement measures from the *proportionality* assessment. Where an algorithm determines or assists in determining the expected civilian harm and military advantage of an attack, the decision-maker may be unable to fully assess how the system weighed those competing considerations, particularly where the system relies on opaque models or incomplete and changing battlefield data. The concern, therefore, is not that algorithms inherently eliminate precautionary measures, but that increasing reliance on automated assessments may make it more difficult for human decision-makers to exercise the judgment required to satisfy those measures throughout the attack.

Agreeably, handing off tasks to an algorithm makes a commander and a soldier's job easier, but going so far as to provide the algorithm the ability to act on those outcomes outrightly negates the obligation to take utmost precaution when planning and executing attacks. Autonomous weapons may calculate probabilities efficiently, but whether they can reliably perform the contextual assessments required by *proportionality* remains a central challenge. Where they cannot,

³¹⁰ Additional Protocol I, supra note 28, arts 57(2)(a)(iii), 57(2)(b); ICRC, Customary International Humanitarian Law, supra note 152, rules 18–19.

reliance on such systems without adequate human verification may itself contribute to a violation of the precautionary obligations imposed by IHL.

4.1.3 Attribution Problems and Diffused Responsibility

More than 70% of casualties in the Russia-Ukraine war have been due to unmanned aircraft, at the borders and within the country, mainly Shahed-136 type UAVs, which strike targets with high precision, sometimes civilian targets as well.³¹¹ In the context of drone operations, the inability to distinguish between combatants and civilians is one of the central issues that often leads to violations of the principle of *distinction*. Given the ambiguity of the decision-making process, the inability of the drones to distinguish between military and civilian objects is yet to be determined. While it can be claimed that the acts are intentional, we can also speculate that the ambiguity of target identification by drones may be used to defend or justify certain actions when they get challenged.

There are various international legal instruments governing the use of weapons in armed conflict.³¹² However, the lack of direct mention of autonomy and the lack of updates to international law principles allow for the use of weapons that exist in the gray areas. Additionally, with uncertainties like the shutdown of Starlink resulting in the loss of control of an armed naval drone in enemy territory,³¹³ the variables that are increased in the decision-making and attacking

³¹¹ Aviv Bar Zohar, “Who Bears Responsibility When Machines Decide to Kill?” (31 August 2025), online: The Jerusalem Post <https://www.jpost.com/defense-and-tech/article-865818>.

³¹² Canadian Red Cross, “IHL Treaties and the Regulation of Weapons” (online), online: <https://www.redcross.ca/how-we-help/international-humanitarian-law/what-is-international-humanitarian-law/weapons-and-international-humanitarian-law/ihl-treaties-and-the-regulation-of-weapons>.

³¹³ “Musk Ordered Shutdown of Starlink Satellite Service as Ukraine Retook Territory from Russia” (25 July 2025), online: Reuters <https://www.reuters.com/investigations/musk-ordered-shutdown-starlink-satellite-service-ukraine-retook-territory-russia-2025-07-25/>; see also European External Action Service, “UN General Assembly Demands Russian Federation Withdraw All Military Forces from the Territory of Ukraine” (online), online: https://www.eeas.europa.eu/eeas/un-general-assembly-demands-russian-federation-withdraw-all-military-forces-territory-ukraine_und.

process spread out into controllers, producers, and private parties that enable the use of these weapons. This introduces additional actors into the technological chain supporting the use of force, including communication providers, software developers, manufacturers, system operators, and other private entities. Where the loss, alteration, or withdrawal of a privately controlled service affects a weapon's ability to receive instructions or complete its mission, questions arise concerning who bears responsibility for the resulting consequences. The primary responsibility for compliance with IHL lies with states and individuals involved in the conduct of hostilities; however, it does not provide a comprehensive framework for determining how responsibility should be understood when the functioning of a weapon depends upon privately controlled technological infrastructure. This does not necessarily demonstrate that existing IHL is incapable of addressing such incidents. Rather, it illustrates a potential accountability gap that becomes more significant as military operations increasingly depend upon privately owned technologies. Accordingly, any modification of the existing legal framework should clarify responsibilities across the technological chain and establish appropriate requirements for human oversight, risk assessment, and accountability where private infrastructure is essential to the operation of autonomous or semi-autonomous weapons.

Moreover, Pistor emphasises how legal text enables its own exploitation given the linear and unmodified language being applied to constantly developing and dynamic situations. This helps explain the fragmentation of accountability in algorithmic warfare.³¹⁴ Just as capital is structured through layered legal devices that distribute risk and obscure responsibility, AI-driven targeting systems are developed through a network of state actors, private firms, software engineers, and data providers. This modularity allows responsibility for unlawful harm to be

³¹⁴ Pistor, *The Code of Capital*, supra note 31.

diffused across multiple actors, making it significantly harder to attribute violations of IHL principles to a decision-making entity. Russia is not a perfect example, but it allows us to view the intensity and severity of autonomous targeting and striking in a real-world situation where the scales are already imbalanced, and states are intentionally striking civilians.

As previously mentioned, international bodies have condemned and commented on the liability of Russian authorities for the commission of remote attacks.³¹⁵ However, the targeting process, the software use, and individual responsibility are yet to be analyzed as factors in a trial that would decide the culpability in these attacks. Individual criminal responsibility³¹⁶ presents greater difficulty. The Rome Statute of the International Criminal Court³¹⁷ requires intent or knowledge for war crimes. If an operator relies on algorithmic outputs reasonably believed to be reliable, establishing the requisite *mens rea* becomes complex.

For example, an AI-enabled targeting system may generate an output identifying an object as a probable military target, classify a person or vehicle as a combatant, or assign a confidence score to a proposed target based on sensor data and previously collected images. An operator who relies on such an output may genuinely believe that the target satisfies the requirements of *distinction* and that the attack will comply with the applicable rules of international humanitarian law. If the system subsequently misidentifies a civilian object, establishing that the operator possessed the knowledge or intent required for individual criminal responsibility may therefore

³¹⁵ North Atlantic Council, “Statement of Condemnation by the North Atlantic Council Concerning Russian Malicious Cyber Activities” (18 July 2025), online: NATO <https://www.nato.int/en/about-us/official-texts-and-resources/official-texts/2025/07/18/statement-of-condemnation-by-the-north-atlantic-council-concerning-russian-malicious-cyber-activities>.

³¹⁶ Rome Statute of the International Criminal Court, 17 July 1998, 2187 UNTS 3 (entered into force 1 July 2002), art 25.

³¹⁷ Ibid.

depend on whether the operator knew, or was aware of circumstances indicating, that the system was unreliable or that its output could not safely be relied upon in the circumstances.

Hence, in an AWS context, effective control may require knowledge of system limitations. This creates a significant accountability issue in the context of autonomous weapon systems. The use of an algorithm cannot itself transfer or eliminate the legal responsibility of the human decision-maker. Rather, responsibility must be assessed by examining the individual's knowledge of the system's capabilities and limitations, the information available before the attack, the extent of human supervision, and whether the individual took reasonable measures to verify the system's output.

A commander who deploys a system known to be unreliable in urban environments could incur individual criminal responsibility if civilian harm results. The temporal distance between programming and harm complicates evidentiary reconstruction but does not eliminate liability. Autonomous and semi-autonomous systems diffuse operational control across software engineers, defense contractors, satellite service providers, and field operators, making it increasingly difficult to isolate intent or negligence. This diffusion does not negate responsibility but requires a reconceptualization of “effective control” and foreseeability in technologically mediated warfare.

As discussed earlier, principles such as individual criminal responsibility provide areas of potential exploitation to avoid accountability for an algorithmic action. If a commander orders a drone strike, and the drone processes information autonomously and strikes a civilian, who bears the ultimate responsibility?

The problem, unfortunately, is that the allocation of individual responsibility for AI-assisted or autonomous attacks has not yet been comprehensively tested before a court of law. This uncertainty, however, should not permit actors to rely on the complexity of autonomous systems

to evade accountability. Consider, for example, an autonomous drone whose target-recognition system identifies a civilian vehicle as a military objective. The operator relies on the system's classification and does not independently verify the target, while the commander has authorized the deployment on the understanding that the system can make the relevant identification. Following the attack, the operator may argue that they acted on the commander's authorization and the system's output, while the commander may argue that the system's unexpected classification was not reasonably foreseeable. The manufacturer, in turn, may argue that the system was altered, improperly operated, or used outside its intended parameters. If the algorithm's operation, training data, or system logs are protected by national security or proprietary restrictions, investigators may also face difficulties in reconstructing why the system classified the object as a military target.

This scenario illustrates how the introduction of autonomous technology can complicate, rather than eliminate, individual accountability. The relevant question is not whether an algorithm can itself bear criminal responsibility, but whether the human actors involved possessed the requisite knowledge or intent and whether they fulfilled their obligations before and during the attack. A commander who knowingly deploys a system with recognized target-identification limitations may be in a materially different legal position from a commander who relies on a system that has been properly tested and whose failure was genuinely unforeseeable. Similarly, an operator's reliance on an automated classification may be relevant to *mens rea*, but it should not automatically constitute a defense where the operator was required to verify the target or was aware of circumstances indicating that the system's output was unreliable.

4.2 India-Pakistan Escalation

Unlike Russia-Ukraine, India-Pakistan hostilities fluctuate between low-intensity exchanges and episodic escalations.³¹⁸ Nevertheless, both states possess advanced drone capabilities and maintain nuclear arsenals. In such a context, automation carries strategic consequences beyond immediate tactical effects. India's procurement of platforms such as the Heron TP³¹⁹ reflects the increasing integration of surveillance and strike autonomy. Along the Line of Control, automated sensors and AI-assisted surveillance systems detect cross-border movement. These technologies reduce the time between detection and response.³²⁰ In International Law, alleged crimes are analyzed on multiple factors, including the existence of a conflict at the time of the commission of acts, geographical boundaries of the conflict, and the legitimacy of the target itself. The border escalations complicate almost every element of this adjudication with blurred and dynamic geographical lines, escalating and sporadic escalations over the years, and claims from both parties on the legitimacy of a target. The escalations in 2025, irrespective of the reasoning by either party, constituted an international armed conflict and legitimized the applicability of IHL principles for any and all acts committed during the time period mentioned.

However, the precise duration and scope of the hostilities, the status of the targets struck by each side, and the *proportionality* of the responses remain contested, creating uncertainty in the legal assessment of individual incidents. It is essential to integrate drone warfare, a recent development, with the history of escalations and analyze the results of such escalations to better understand the legitimacy of responses from India and the justifications of retaliations by Pakistan.

³¹⁸ Reuters, Timeline: Flashpoints and Flare-Ups in India-Pakistan Ties, *supra* note 68.

³¹⁹ Israel Aerospace Industries, "HERON TP" (online), online: <https://www.iai.co.il/product/heron-tp/>.

³²⁰ Bharat Electronics Limited, "Battlefield Surveillance System (BSS)" (online), online: <https://bel-india.in/product/battlefield-surveillance-system-bss/>.

While the details remain unclear, the allegations from both sides hint at civilian casualties caused by drone and missile strikes. The opposing claims are that drones offer targeted strikes and allow for precision tactics that avoid escalations into a full-fledged war.³²¹ However, the reality differs contextually, as the same drones are now sent into densely populated areas that would have previously been unreachable from manned aircraft, and would be outside the military scope of the persisting armed conflict. The Pakistani drones were allegedly largely ineffective in their mission, as Cold War-era Indian anti-aircraft guns that were rigged to modern military radar and communication networks were able to successfully cut down on the deployment of these swarms. Contrarily, India claimed that its strikes on May 7 killed more than 100 “terrorists”. Pakistan said the Indian missiles had hit mosques and residential areas, killing 40 civilians, including children, apart from 11 military personnel.³²²

The conflict shares similarities with the Ukrainian fight with respect to the reliance on other states with individual political motivations for their technologically enhanced weaponry. Chinese restrictions on the sale of drones and components to Ukraine have weakened Kyiv's ability to produce critical combat drones³²³, and India relies on certain basic technologies from China as well.³²⁴ In the evolving dynamics of India-Pakistan relations, where tensions remain high, the risk of miscalculation is ever-present. With the anticipated rise of more advanced autonomous and swarm drones operating near sensitive borders, the potential for rapid, unintended escalation grows.

³²¹ Soutik Biswas, BBC News, “India and Pakistan: The First Drone War Between Nuclear-Armed Neighbours” (9 May 2025), online: BBC News <https://www.bbc.com/news/articles/cwy6w6507wqo>.

³²² Hussain, What Did India and Pakistan Gain – and Lose – in Their Military Standoff? *supra* note 114.

³²³ Aosheng Pusztaszeri, “Why China’s UAV Supply Chain Restrictions Weaken Ukraine’s Negotiating Power” (16 December 2024), online: Center for Strategic and International Studies (CSIS) <https://www.csis.org/analysis/why-chinas-uav-supply-chain-restrictions-weaken-ukraines-negotiating-power>.

³²⁴ N H Digital, “China’s Dominance Overshadows India’s Drone Ambitions Despite Breakthroughs” (28 May 2025), online: National Herald <https://www.nationalheraldindia.com/national/chinas-dominance-casts-shadow-over-indias-drone-ambitions-despite-battlefield-breakthroughs>.

4.2.1 Drone Warfare and Escalation Risks

Before discussing the ability of IHL to regulate cross-border drone strikes in an armed conflict, a major legal hurdle in situations like the 2025 escalations between the two states is defining what constitutes an "imminent threat" that justifies the use of force. Leading states, such as the United States, have argued that drone strikes against terrorist targets serve to prevent imminent attacks.³²⁵

During the four-day conflict, as discussed before, the conflict shifted in terms of the technology used. The Indian army claimed to have employed 23 AI applications. One of them was "Anuman 2.0," which enabled real-time weather forecasting up to 48 hours in advance with precision within a 200-kilometer radius along Pakistan's border, helping the artillery regiments of the Indian army direct precise fire on Pakistani positions. Additionally, AI-enabled drones were also employed in the conflict to provide a real-time data feed with no delay.³²⁶

According to some commentaries, "In invoking the language of international law, particularly the right of self-defense, India and Pakistan were not engaging with law in a doctrinal sense, but rather staging performances of legitimacy for international and domestic audiences³²⁷."

The presumed retaliatory strikes then project the risk of escalation without proper classification, leading to a battlefield that is not entirely bound by humanitarian principles, and states are reluctant to any international intervention for allegedly harmful reasons. The dichotomy of an international legal justification of attacks and the denial of international intervention in the matter raises several eyebrows.

³²⁵ Barack Obama, "Remarks by the President at the National Defense University" (23 May 2013), online: The White House (Archived) <https://obamawhitehouse.archives.gov/the-press-office/2013/05/23/remarks-President-national-defense-university>.

³²⁶ Usman Haider & Komal Khan "India's Use of Artificial Intelligence During the Indo-Pak Four-Day Crisis" (October 2025), online: The Diplomat <https://thediplomat.com/2025/10/indias-use-of-artificial-intelligence-during-the-indo-pak-four-day-crisis/>.

³²⁷ "Oh Self-Defence, Where Art Thou?" (2025), Völkerrechtsblog (online), online: <https://voelkerrechtsblog.org/oh-self-defence-where-art-thou/>.

The increasing resort to cross-border drone operations targeting alleged militant infrastructure further complicates the application of core principles of IHL, particularly *distinction* and *proportionality*. The difficulty arises from the limited and potentially contested information available to the attacking State when identifying targets across a border. Where infrastructure is alleged to be associated with militant activity, determining whether it constitutes a military objective requires reliable information establishing both its nature and its effective contribution to military action. This assessment becomes more difficult where civilian and military functions coexist or where intelligence is obtained remotely and cannot be independently verified on the ground.

Autonomous and semi-autonomous systems are capable of processing large volumes of sensor data to identify behavioral patterns associated with militant activity, including vehicular clustering, communications metadata, movement trajectories, and thermal signatures.³²⁸ However, such indicators remain inherently probabilistic rather than determinative. Civilian presence may be incidental, coerced, or indistinguishable from targetable actors in densely populated or dual-use environments. Such dynamic operational conflicts should ideally be protected by way of treaties and targeted regulations. However, variables such as feasible verification, reasonable certainty, and selection of lawful military targets are not cohesive enough to encompass algorithmic decision-making processes. Reiterating Pistor's theory, the current regulations provide a definitive coding that allows for the use of these algorithms to circumvent norms for civilian protection.

³²⁸ Arensic International, "AI in Aerospace & Defence: Autonomous Systems, Surveillance & Decision Support" (23 November 2025), online: Arensic International <https://arensic.international/ai-in-aerospace-defence-autonomous-systems-surveillance-decision-support/>.

4.2.2 Distinction and Proportionality in Cross-Border Targeting Practices

As highlighted earlier, India asserted that its strikes neutralized “terrorists,” framing the targets as lawful military objectives and defining the terrorists as combatants who inflicted harm via the Pahalgam terror attacks. Pakistan, however, contended that the same strikes impacted mosques and residential neighborhoods, resulting in civilian casualties, including children.³²⁹ These competing narratives illustrate an evidentiary dilemma inherent in remote warfare: target classification is often based on intelligence assessments that remain confidential, unverifiable, or politically contested.

Distinction in cross-border strikes becomes increasingly difficult, especially when the intended targets are non-state actors, who do not follow military code and uniforms. The existence of dual-use structures further clouds the assessment. Intelligence gathered via non-human methods, subsequently fed into algorithms to set target parameters, exposes the decision-making process to a plethora of problems and uncertainty. Algorithmic analysis of behavioral signatures, metadata, or heat patterns cannot by itself satisfy the requirement of *distinction* unless corroborated by reliable intelligence and subjected to meaningful human verification.³³⁰ In the South Asian subcontinent, this problem is multiplied by the reluctance to release adequate evidence and political standings.

Proportionality also remains highly debated due to the deep incursions attempted by India into Pakistani territory for what it claims to be terrorist infrastructure.³³¹ The deep incursions led to the inclusion of densely populated areas into an alleged conflict zone, whereas the zone was earlier restricted to borders surrounding the two states.

³²⁹ Hussain, What Did India and Pakistan Gain – and Lose – in Their Military Standoff?, *supra* note 114.

³³⁰ Vasja Badalič, “The Metadata-Driven Killing Apparatus: Big Data Analytics, the Target Selection Process, and the Threat to International Humanitarian Law” (2023) 9:4 *Critical Military Studies* 619.

³³¹ Hussain, Why Did India Strike Pakistan? All We Know About Operation Sindoor, *supra* note 110.

An attack on its civilians was confirmed by terrorists laying claim to the same, leading to retaliatory strikes as an answer, and pre-emptive strikes as a precaution.³³² The principle of proportionality further restricts attacks that may be expected to cause incidental civilian harm excessive in relation to the concrete and direct military advantage anticipated.

If the anticipated military gain was the disruption of specific militant networks, the scale of force employed, including missile strikes and drone swarms, must be assessed against the foreseeable civilian risk in affected areas. The shortened decision cycles produced by AI-assisted surveillance and automated targeting systems complicate this calculus³³³. The use of drones as instruments of frontline or large-scale attack against a state alleged to be harboring terrorists raises particular concerns under this standard. While drones are often described as precision weapons, their technological accuracy does not by itself guarantee compliance with proportionality.

If deployed in coordinated waves, armed swarms, or in conjunction with missile strikes against targets located in or near populated areas, the cumulative civilian risk may be significant. In such circumstances, even if individual strikes are directed at purported military objectives, the overall scale and intensity of force may exceed what is necessary to neutralize the specific threat posed by non-state actors.³³⁴ Moreover, Pakistan's invocation of self-defense does not remove the constraints imposed by *distinction* and *proportionality*. Even if the initial drone strikes are justified as measures against terrorist infrastructure, Pakistan and India's subsequent military response does not grant a legal basis to escalate into broader, high-intensity conflict³³⁵.

³³² Hussain, Why Did India Strike Pakistan? All We Know About Operation Sindoor, *supra* note 110.

³³³ Sneesh Alex Philip, "Op Sindoor is India's first AI-enabled operation: How heavy use of modern tech by Army played out" (7 October 2025), online: ThePrint. India used AI for target identification and it is claimed that the system has pinpoint targeting with 94% accuracy. Additionally, the capabilities are being upgraded with military-specific LLM, expected to become operational in 6 months.

³³⁴ Krebs, Above the Law: Drones, Aerial Vision and the Law of Armed Conflict – A Socio-Technical Approach, *supra* note 300.

³³⁵ See generally Chris O'Meara, "Reconceptualising the Right of Self-Defence Against 'Imminent' Armed Attacks" (2022) 9:2 *Journal on the Use of Force and International Law* 278–323.

In the absence of transparent post-strike investigations or independent fact-finding mechanisms, competing claims concerning civilian casualties remain unresolved, diminishing the normative authority of IHL principles. The integration of AWS into cross-border targeting practices, therefore, intensifies longstanding doctrinal concerns: how to ensure reliable *distinction* in probabilistic environments and how to evaluate proportionality within compressed decision cycles.

In the India-Pakistan context, where hostilities fluctuate between limited engagements and broader crises³³⁶, compliance with the principles of *distinction* and proportionality serves not only as a legal requirement but also as a stabilizing function. Failure to apply these principles rigorously risks turning escalations into legally ambiguous and strategically destabilizing patterns of violence, undermining humanitarian protections and crisis stability within a nuclear-armed regional order.

The growing reliance on algorithmic systems in warfare in South Asia, similar to the Russia-Ukraine war, can also be understood as an extension of how law encodes and protects forms of power. Pistor argues that capital is not merely economic, but is created and sustained through legal coding that assigns priority, durability, and enforceability to certain assets. In the context of AI-assisted targeting (the alleged terrorist infrastructure attacked by India)³³⁷, the “assets” being protected and optimized are no longer just physical infrastructure or military advantage, but also data, algorithmic systems, and the strategic dominance they enable. These technological resources acquire strategic value because they increase a state's capacity to conduct military operations and the legal protection and governance of these resources can therefore contribute to the concentration and preservation of technological power.

³³⁶ Reuters, Timeline: Flashpoints and Flare-Ups in India-Pakistan Ties, *supra* note 68.

³³⁷ Flora Drury, BBC News, “What We Know About India’s Strikes on Pakistan and Pakistan-Administered Kashmir” (7 May 2025), online: BBC News <https://www.bbc.com/news/articles/cj6868pdpw4o>.

The legal frameworks governing armed conflict risk being instrumentalized in a similar way to how private wealth is legally shielded. These may be interpreted and applied in a manner that privileges technologically advanced states capable of producing and controlling these targeting systems. When a drone strike is justified based on algorithmic analysis, the “decision” is effectively embedded within a chain of coded processes that are shielded by technical complexity and, often, corporate secrecy.³³⁸ In this sense, the integration of AI into warfare reflects not only a technological shift but also a legal transformation.

The parallels are hidden behind algorithmic complexity, but the ‘coding’³³⁹ of conflict shows the similarities it carries with the idea of coding of capital, where the current legal systems support the spread of accountability and weaken other regulatory measures intended to hold a human perpetrator accountable.

4.2.3 The Problem of Conflict Classification

The Line of Control³⁴⁰ has long constituted a contested and volatile de facto boundary between India and Pakistan, each asserting sovereign claims over the disputed territory of Kashmir. Its ambiguous legal character has contributed to recurrent crises, periodic ceasefire violations, and episodic escalations³⁴¹. In a diplomatic context, both states have consistently invoked international legal principles to frame their respective actions as legitimate, particularly during phases of intensified hostilities preceding the most recent reaffirmation of ceasefire arrangements.³⁴² This legal argumentation is also aimed at legitimizing the actions undertaken during an escalation and

³³⁸ See, Pasquale, *Black Box Society*, supra note 53.

³³⁹ Pistor, *The Code of Capital*, supra note 31 at 158-182.

³⁴⁰ Robert G. Wirsing, *War or Peace on the Line of Control? The India-Pakistan Dispute over Kashmir Turns Fifty*, *Boundary & Territory Briefing*, vol 2 No 5 (Durham, UK: International Boundaries Research Unit, Durham University, 1999), online: Durham University https://www.durham.ac.uk/media/durham-university/research-research-centres/ibru-centre-for-borders-research/maps-and-databases/publications-database/boundary-amp-territory-briefings/btb_2-5.pdf.

³⁴¹ Reuters, *Timeline: Flashpoints and Flare-Ups in India-Pakistan Ties*, supra note 68.

³⁴² Biswas, *India and Pakistan: The First Drone War Between Nuclear-Armed Neighbours*, supra note 324.

maintaining an alleged compliance with international norms, even though the on-the-ground situation may differ drastically.

India has defended its airstrikes as lawful countermeasures, contending that Pakistan bore responsibility for harboring or failing to prevent the activities of those implicated in the Pahalgam attack. In this formulation, the use of force was presented as necessary and proportionate to address an ongoing threat emanating from across the Line of Control. Pakistan, by contrast, has maintained that its responsive measures fall squarely within the inherent right of self-defense recognized under Article 51 of the United Nations Charter, characterizing India's strikes as constituting unlawful aggression. By formally notifying the United Nations of its position and grounding its justification in established doctrines of necessity and proportionality, Islamabad has sought to situate its conduct within the accepted framework governing the lawful use of force.³⁴³

Under Common Article 2 of the Geneva Conventions³⁴⁴, the classification of a conflict depends upon the factual occurrence of hostilities between states rather than upon formal declarations or political terminology. A pattern of sustained conflict, even if calibrated to remain below the threshold of full-scale war, may therefore trigger the applicability of the law of international armed conflict as a matter of legal fact. The integration of automated systems into this environment potentially lowers the threshold as compared to historical conflicts, given the remote nature of attacks and the lack of war-like situations around the borders of the opposing states. The remote and potentially rapid nature of automated attacks may therefore complicate the factual assessment of when and how hostilities between states have occurred, particularly where individual attacks are brief, geographically dispersed, or difficult to attribute.

³⁴³ See generally, *Oh Self-Defence, Where Art Thou?*, *supra* note 330.

³⁴⁴ Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950), art 2.

These thresholds, rather than serving as escape mechanisms from international adjudication, should transform the legal status of the confrontation, reshaping both the regulatory framework governing the parties' conduct and the region's broader strategic stability. Similar to the regulatory escapes currently being used to justify autonomy in long-range weapons systems, the idea of invoking outdated but legitimate international principles to negate responsibility is at play here as well. Pistor's idea connects back not just to the use of the weapons but to circumvent the applicability of the full force of international laws by carefully toeing the line of conflict classification, despite the transparent language in which it is written.

Conclusion

International law defines each category of the conflict to ensure the protection of civilians and non-combatants, taking into account the variable differences that may occur in different situations.³⁴⁵ It also defines parameters of wars, geographical restrictions for the adjudication of illegal acts, and responsibilities of commanders, soldiers, and direct and indirect participants in any conflict.

Autonomous Weapons Systems have enabled warfare that extends beyond these defined boundaries and separated the core responsibilities that were well defined under conventions and treaties. It extends the range of attacks to heavily populated cities without foot soldier intervention, therefore extending the geographical boundaries of acts beyond that, which may be classified as a warzone. Additionally, it introduces technical and non-combatant variables in the chain of command, introducing elements that are currently not controlled or even mentioned in international law.

³⁴⁵ International Committee of the Red Cross, "Classification of Conflict" (online), How Does Law Protect in War? – Online Casebook, online: https://casebook.icrc.org/a_to_z/glossary/classification-conflict.

These unique challenges present us with opportunities to revisit the applicability of IHL principles in conflicts, study global norms for algorithmic warfare, and find solutions for a specialized set of principles for the use of new weapons systems. Chapter 5 would focus on revisiting these international norms and ideating, in a new light, possible ways to integrate language in existing laws and create new ones that uphold the traditional principles of safety of civilians and legitimate conduct of war.

Chapter 5: Rethinking International Norms

Violence has been a consequence of evolution from the earliest stages of life. The primary function of tools like hand axes was to hunt and cut meat, but they were also used to facilitate violence. Similarly, any new development, be it in the industrial or technological sector, has resulted in injury, given the biased nature of the powers responsible for the said innovation. AI is no different. It has fundamentally changed the way warfare is imagined and conducted. Unlike previous technological advances that primarily improved existing weapons, AI has the capacity to influence nearly every stage of conflict, from intelligence gathering and surveillance to targeting and autonomous decision-making.³⁴⁶ This expansion has generated widespread concern among governments, humanitarian organizations, and the general public about the possibility of conflict extending into new and previously protected spaces, including digital infrastructure, civilian technologies, and everyday communication systems.³⁴⁷

For IHL, this transformation presents one of the most complex challenges in recent decades. Past innovations mentioned in the introductory chapter and chapters discussing the evolution of weapons, such as nuclear weapons, forced the global community to reconsider the limits of warfare, but AI introduces a different kind of difficulty. Because AI systems can be embedded in countless technologies, drones, cyber tools, surveillance networks, and even commercial platforms, almost any aspect of modern life can potentially be adapted for military use.³⁴⁸

³⁴⁶ Dominika Kunertova, “How NATO Can Integrate AI to Prevail in Future Algorithmic Warfare” (30 March 2026), online: Atlantic Council <https://www.atlanticcouncil.org/in-depth-research-reports/report/how-nato-can-integrate-ai-to-prevail-in-future-algorithmic-warfare/>.

³⁴⁷ NATO's Strategic Warfare Development Command, *Harnessing Artificial Intelligence: Allied Command Transformation at the Forefront of NATO Innovation* (16 April 2025), online: NATO Allied Command Transformation <https://www.act.nato.int/article/harnessing-artificial-intelligence/>.

³⁴⁸ See, John Allen & Darrell West, “Op-Ed: Hyperwar Is Coming. America Needs to Bring AI into the Fight to Win — With Caution” (12 July 2020), online: CNBC <https://www.cnbc.com/2020/07/12/why-america-needs-to-bring-ai-into-the-upcoming-hyperwar-to-win.html>.

Consequently, policymakers and legal scholars are now grappling with how existing frameworks of humanitarian law can adapt to a world in which the tools of conflict are increasingly autonomous, scalable, and deeply integrated into everyday technological systems.³⁴⁹

Another important factor shaping the risks of emerging technologies is the bias and incentives of those who create and deploy them. Innovation does not occur in a neutral environment; it is influenced by political priorities, economic interests, and institutional pressures. Human Rights Watch lays down six core obligations and principles of international human rights law that autonomous weapons inherently implicate.³⁵⁰ One of them is non-discrimination, i.e., algorithmic bias can disproportionately and negatively affect already marginalized groups. For example, biases of developers, including in their programming or choice of training data, could influence a system's design and later decision-making.³⁵¹

As analyzed before, legal frameworks often develop more slowly than technological capabilities; states and other powerful actors may exploit these gaps to pursue strategic objectives while avoiding clear violations of established law. AI-driven surveillance, autonomous weapon systems, and algorithmic targeting tools can, for instance, obscure lines of responsibility or shift decision-making away from direct human control, making accountability more difficult to establish. These concerns intensify when AI systems participate in decisions affecting human life, as they reflect not neutral technological progress but the legal and economic architectures that privilege certain interests over others.

³⁴⁹ International Committee of the Red Cross, "Views of the ICRC on Autonomous Weapon Systems" (13 April 2016), online: ICRC <https://www.icrc.org/en/document/views-icrc-autonomous-weapon-system>.

³⁵⁰ Bonnie Docherty, *A Hazard to Human Rights: Autonomous Weapons Systems and Digital Decision-Making* (28 April 2025), online: Human Rights Watch <https://www.hrw.org/report/2025/04/28/a-hazard-to-human-rights/autonomous-weapons-systems-and-digital-decision-making>.

³⁵¹ *Ibid.*

The incorporation of AI into military decision-making thus raises profound ethical and legal questions, particularly regarding how the “code” that governs conflict also shapes who controls, delegates, and ultimately legitimizes the use of force.³⁵² Pistor, in her article “Legal Coding Beyond Capital?”³⁵³ states that legislation has become primarily a framework with the details left to be filled in by judges, administrators, or regulators. This gap can also be interpreted to be filled by private actors, as inspired by her works on how law codes in favor of entities with power and capital.³⁵⁴ As discussed in this thesis, what the private actors and states wish for AWS is expansion and innovation at an unprecedented level.

International consensus holds that people should never give up “meaningful human control” over a kill decision.³⁵⁵ Yet debate lingers as to the meaning and scope of meaningful human control. Is monitoring enough? Target selection? And does the prescription extend to defensive systems as well, or only to offensive tactics and weapons? None of these important questions appears settled.³⁵⁶ It is difficult to imagine any major military power willingly accepting slower or more constrained operational capabilities than its competitors because of stricter control requirements.

If one state believed that another could deploy faster, more adaptive AI-supported systems in combat, it would face strong pressure to adopt similar capabilities to avoid a strategic disadvantage. Even if governments were able to agree on a general principle such as maintaining human oversight in lethal decisions, this alone would not resolve the problem when autonomous systems take actions that violate international law. As discussed above, the existence of human

³⁵² Pistor, *The Code of Capital*, supra note 31 at 15-18.

³⁵³ Pistor, *Legal Coding Beyond Capital*, supra note 33 at 6.

³⁵⁴ Pistor, *Legal Coding Beyond Capital*, supra note 33 at 4.

³⁵⁵ See Heather M Roff & Richard Moyes, *Meaningful Human Control, Artificial Intelligence and Autonomous Weapons* (April 2016), online: Article 36 <http://www.article36.org/wp-content/uploads/2016/04/MHC-AI-and-AWS-FINAL.pdf>; ICRC on Autonomous Weapon Systems, supra note 353.

³⁵⁶ See, e.g., Rebecca Crootof, “A Meaningful Floor for ‘Meaningful Human Control’” (2016) 30:1 *Temple International and Comparative Law Journal* 53 (“There is no consensus as to what ‘meaningful human control’ actually requires.”).

oversight does not necessarily establish meaningful human control: a commander or operator must also have sufficient knowledge of the system's capabilities, limitations, and reliability to intervene effectively. A general requirement of “human oversight” would consequently be insufficient unless accompanied by specific obligations concerning the testing, supervision, predictability, and limitations of autonomous systems.

5.1 AI as an inherently political technology

AI in warfare is often described in neutral or technical terms, emphasizing efficiency, precision, and data-driven decision-making. However, this risks obscuring the inherently political nature of algorithmic systems deployed in military contexts. Autonomous and semi-autonomous weapon systems are not merely technological tools. They are the combined result of political choices, institutional priorities, and strategic assumptions that shape the conduct of war. Recognizing AI as a political technology is therefore essential to understanding its implications for IHL.

The efforts to circumvent the legal standards are evident in the positioning of states when it comes to these weapons, as explained below. Multiple states have submitted working papers to the Group of Governmental Experts of the High Contracting Parties related to emerging technologies in the area of lethal autonomous weapons systems (LAWS)³⁵⁷, through which we can highlight the political nature and bias behind the active use and development of these weapons. It is important to reiterate the positions of some of these states to gauge the barriers to effective regulation.

U.S.A.³⁵⁸ claims that “fire and forget” or “lock-on-after launch” homing munitions have been designed to be used only to engage individual targets or specific target groups that have been

³⁵⁷ UN Office for Disarmament Affairs, “CCW – Group of Governmental Experts on LAWS”, supra note 256.

³⁵⁸ United States of America, The Autonomy Aspect of Lethal Autonomous Weapon Systems, UN Doc CCW/GGE.1/2025/WP.6 (2025), online: Convention on Certain Conventional Weapons – Group of Governmental Experts on Lethal Autonomous Weapons Systems <https://docs->

selected by an operator; it makes sense not to include them within the characterization of LAWS. However, technological systems are designed within specific social, political, and military environments. The political nature of AI becomes particularly evident when examining the role of states in shaping algorithmic warfare. Military institutions define what constitutes a legitimate military objective, determine acceptable levels of collateral damage, and set the operational rules governing autonomous platforms. Consequently, algorithmic targeting decisions may reinforce existing power asymmetries and strategic biases rather than simply implementing neutral legal standards, as can be presumed by the United States' position on LAWS.³⁵⁹

India positions its approach on principles that claim technology is value-neutral and that regulations must be limited to the use and effects of the system, and not to the constituent technology and technological inputs.³⁶⁰ India's position lacks acknowledgment of the political and structural biases embedded in technological development and deployment. By framing AI as value-neutral, the argument assumes that harm arises only from how a system is used, rather than from how it is designed, trained, funded, or strategically integrated into military structures.

5.2 Coding: Highlighting emerging issues of emerging technologies

Katharina Pistor's legal coding theory described in the code of capital³⁶¹ highlights how certain legal modules bestow critical attributes to certain assets. These attributes, in turn, provide a comparative advantage over similar assets and protect them from litigation and promote exploitation. There are four distinct attributes that are highlighted through the theory, i.e., priority,

library.unoda.org/Convention_on_Certain_Conventional_Weapons_-
Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2025)/CCW-GGE.1-2025-
WP.6.pdf.

³⁵⁹ Viveros Álvarez, The Risks and Inefficacies of AI Systems in Military Targeting Support, *supra* note 66.

³⁶⁰ India, Working Paper – Emerging Technologies in the Area of Lethal Autonomous Weapons Systems, UN Doc CCW/GGE.1/2025/WP.3 (2025), online: United Nations <https://docs.un.org/en/CCW/GGE.1/2025/WP.3>.

³⁶¹ Pistor, The Code of Capital, *supra* note 31.

durability, convertibility, and universality.³⁶² These attributes are analyzed through an economic lens by Pistor, and the following sub-chapter will focus on analyzing the rise and misuse of AWS through these attributes attached to them by legal systems prevalent in both states and international bodies of law.

The core idea of law encoding assets via capital is of unique importance to the discussion of algorithmic warfare, as it provides a two-faced problem with the current set of laws surrounding AWS. One, the legitimate use of certain weapons enables states to modify and encode software programs that can run the same rudimentary weapons that have been allowed as a tool of war in modern conflicts. Two, these laws were made by states in power at the time of creation and contained inherent biases that are now exaggerated via the use of AI-assisted weaponry that is faster, more lethal, and provides an expanded range of attacks.

This inequality is highlighted through the different attributes discussed below, with the addition of loss of civilian life and infrastructure, which makes the sphere of international laws of war even more complicated to analyze. Pistor drew upon legal history to explain how, starting with land, the same “core modules” have been used “time and again” to code capital.³⁶³ This is also complemented by the fact that laws are incomplete and incapable of predicting future scenarios.³⁶⁴

Priority, as defined as an attribute under the code of capital, refers to the power of an asset holder against those actors on whom the asset is being imposed. In financial terms, this refers to the power dynamics between a creditor and a debtor and how, without adequate legal protections to safeguard the debtor, the other party holds an inherently stronger hand in the transaction. This attribute can be applied to the concept of accountability on a battlefield. Traditionally,

³⁶² Pistor, *The Code of Capital*, supra note 31 at 11-14.

³⁶³ Pistor, *The Code of Capital*, supra note 31 at 3-5.

³⁶⁴ Pistor, *Legal Coding Beyond Capital*, supra note 33 at 3.

accountability presumes a hierarchical chain of command in which responsibility can be traced to identifiable actors.³⁶⁵ However, when targeting decisions are distributed across programmers, data curators, engineers, and command structures, priority becomes fragmented. Legal claims, whether from victims, states, or institutions, must compete against a layered system of technical delegation.³⁶⁶

In practice, this diffusion risks privileging institutional and state actors, as they retain control over the underlying code and its interpretation, while those harmed face significant barriers in asserting competing claims. However, priority is enabled by the next principle in discussion, i.e., durability. In the context of warfare, states will and have contested to keep innovation on a higher pedestal than advancing legal protections for civilians.³⁶⁷ This pattern is not just for momentary protections in conflict, but also to code their assets to remain protected through time.

In Pistor's terms, **durability** refers to the capacity of legal coding to stabilize assets across time. In algorithmic warfare, this durability manifests in the legitimization of AWS and the general inclusion of AI in matters of targeting.

Encoded judgments in an AI system for targeting can be reused, replicated, and scaled across conflicts, producing a plethora of issues given the geographical, topographical, and contextual differences. Referring back to the efforts of states to include novel innovations such as AWS in existing law, these efforts aim to stabilize the position of these weapons in law with the aim of avoiding accountability and legitimizing the use of the same. Once autonomy as a concept

³⁶⁵ International Committee of the Red Cross, "Rule 151. Individual Responsibility", Customary International Humanitarian Law Database (online), online: <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule151>.

³⁶⁶ International Bar Association, "Autonomous Weapons" (online), online: <https://www.ibanet.org/Autonomous-weapons>.

³⁶⁷ See generally, Azad, *supra* note 64.

is embedded in law, historical efforts to change international law³⁶⁸ signal a very difficult and improbable path for any international reform to ensure the protection of civilians from the same.

The principle of **universality**, which in Pistor's framework refers to the portability and enforceability of legal claims across jurisdictions, is also transformed. In simple terms, universality turns private rights into widely enforceable guarantees, which helps retain value in complex, global systems.³⁶⁹ Autonomous systems operate across borders and are often developed through transnational supply chains and dual-use technologies.³⁷⁰ Yet the legal regimes governing their deployment remain territorially bounded and unevenly enforced. This mismatch creates gaps in accountability. Additionally, legal and technical opacity protects the actors from any claim that is justified, and the legal mechanisms fall short of the operational reach of algorithmic systems³⁷¹. As a result, the harms produced by such systems may evade consistent legal recognition, undermining the universality that traditionally underpins IHL.³⁷²

Finally, **convertibility** appears in the strategic advantages conferred by algorithmic warfare. In Pistor's sense, convertibility is about turning something into a legally recognized, usable asset. States convert technological capabilities into military and geopolitical power, leveraging speed, scalability, and data dominance as forms of strategic capital.

With AWS, one key transformation is that software and data are converted into a lawful weapon system. What begins as code and machine learning models becomes, through legal

³⁶⁸ European Society of International Law, "ESIL Reflection – 'Change in International Law – Rules of Change or Changing Rules?' Series Concluding Note" (online), online: <https://esil-sedi.eu/esil-reflection-change-in-international-law-rules-of-change-or-changing-rules-concluding-note/>.

³⁶⁹ Pistor, *The Code of Capital*, supra note 31 291–326.

³⁷⁰ Austin Wyatt, "Examining Supply Chain Risks in Autonomous Weapon Systems and Artificial Intelligence" (2023) 2:1 *Applied Cybersecurity & Internet Governance* 1, online: <https://www.acigjournal.com/Examining-Supply-Chain-Risks-in-Autonomous-Weapon-Systems-and-Artificial-Intelligence,184305,0,2.html>.

³⁷¹ Pasquale, *Black Box Society*, supra note 53 at 14.

³⁷² Patrick Taylor Smith, "Resolving Responsibility Gaps for Lethal Autonomous Weapon Systems" (2022) 5 *Frontiers in Big Data* 1038507, online: <https://www.frontiersin.org/journals/big-data/articles/10.3389/fdata.2022.1038507/full>.

classification and military procurement rules, a recognized and deployable instrument of warfare. In situations that may bring about the discussion of how that is possible, states have argued that if the principles of international law are met through system design and human oversight at the planning stage, then automation can still be lawful.³⁷³

Rather than treating autonomous systems as neutral instruments that simply require legal adaptation, it becomes necessary to examine how these technologies transform the underlying assumptions of IHL. This perspective opens the door to interdisciplinary approaches that recognize the social and political dimensions of technological systems. If algorithms encode strategic priorities and political judgments, legal regulation cannot focus solely on the technological artifact itself. Instead, it must address the broader socio-technical networks within which these systems operate. Understanding these networks requires analytical tools capable of examining the interaction between technology, institutions, and legal frameworks. One field that provides such tools is Science and Technology Studies (STS)³⁷⁴.

5.3 STS approach to reforming legal norms

Science and Technology Studies (STS)³⁷⁵ provides a useful framework for understanding the relationship between technological innovation and legal regulation. Rather than viewing technology as an external force acting upon society, STS emphasizes the co-production of technological systems and social institutions. In other words, technologies shape legal and political

³⁷³ Human Rights Watch, “US: New Policy on Autonomous Weapons Flawed” (14 February 2023), online: Human Rights Watch <https://www.hrw.org/news/2023/02/14/us-new-policy-autonomous-weapons-flawed>; see also Austria, Belgium, Canada, Costa Rica, Germany, Ireland, Luxembourg, Mexico, Panama & Uruguay, Addressing Bias in Autonomous Weapons, UN Doc CCW/GGE.1/2024/WP.5 (8 March 2024), online: United Nations Office for Disarmament Affairs [https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_\(2024\)/CCW-GGE.1-2024-WP.5.pdf](https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2024)/CCW-GGE.1-2024-WP.5.pdf).

³⁷⁴ Vertesi et al, eds, STS, *supra* note 35.

³⁷⁵ Vertesi et al, eds, STS, *supra* note 35.

structures, while those structures simultaneously influence how technologies are designed, deployed, and governed.

Applying an STS perspective to autonomous weapons systems reveals that legal norms governing warfare cannot be separated from the technological infrastructures through which military operations are conducted.

This line of analysis helps us integrate Pistor's theory into a new field of IHL scholarship. There are various instances in which the questions asked by STS help us provide clarity to key debates around AWSs. For instance, in the context of algorithmic warfare, algorithmic targeting systems could be designed to incorporate constraints derived from IHL. These constraints might include built-in mechanisms for civilian risk assessment, exclusion zones around protected sites, and thresholds for uncertainty in target identification. Such design features could help ensure that autonomous systems operate within legally acceptable parameters. However, implementing such constraints raises significant challenges. One major issue is the difficulty of translating qualitative legal principles into quantitative computational rules.³⁷⁶

The principle of proportionality requires balancing anticipated military advantage against potential civilian harm, a process that traditionally relies on human judgment and contextual interpretation. Encoding this form of reasoning into algorithmic systems is inherently complex and may risk oversimplifying legal standards. Another challenge involves the problem of data.³⁷⁷ If these datasets reflect incomplete or biased information, the resulting algorithms may produce

³⁷⁶ Human Rights Watch, "Q&A on Fully Autonomous Weapons" (21 October 2013), online: Human Rights Watch <https://www.hrw.org/news/2013/10/21/qa-fully-autonomous-weapons>.

³⁷⁷ Ibid.

flawed or discriminatory targeting outcomes. Ensuring the reliability and neutrality of training data, therefore, becomes a critical governance issue.³⁷⁸

Another area of clarity is transparency. From an STS perspective, the “black box”³⁷⁹ nature of many contemporary machine-learning systems creates significant accountability gaps.³⁸⁰

If the internal reasoning processes of an algorithm cannot be reconstructed or explained, it becomes extremely difficult to determine whether an autonomous system’s targeting decision satisfied these legal requirements. The algorithm being opaque is complemented by the state’s need or wish to keep the system a secret itself. As coined by the University of Virginia law professor Ashley Deeks, this “double black box”³⁸¹ makes it extremely difficult to expose the root cause of an action, layering the accountability problem with impenetrable layers.

STS’s recommendations thus allow us to provide concrete solutions to the problems posed. When an autonomous weapon identifies and engages a target, investigators must be able to assess how the system classified objects, evaluated threats, and weighed potential collateral damage.

5.4 Finding the right regulatory mechanism

Pistor argues that the law already “codes” in favour of those who have power and responsibility.³⁸² So if autonomous weapons create accountability gaps, it’s partly because the legal system is currently structured in a way that doesn’t align with how these technologies actually work. Right now, international law mostly focuses on states and individual soldiers or

³⁷⁸ Human Rights Watch, “The Need for and Elements of a New Treaty on Fully Autonomous Weapons” (1 June 2020), online: Human Rights Watch <https://www.hrw.org/news/2020/06/01/need-and-elements-new-treaty-fully-autonomous-weapons>.; see also Human Rights Watch, Q&A on Fully Autonomous Weapons, supra note 379.

³⁷⁹ Pasquale, Black Box Society, supra note 53 at 6.

³⁸⁰ Nagadivya Balasubramaniam et al, “Transparency and explainability of AI systems: From ethical guidelines to requirements” (2023) 159 Information and Software Technology 107197.

³⁸¹ Robins-Early, “AI’s ‘Oppenheimer Moment’”, supra note 55.

³⁸² Pistor, The Code of Capital, supra note 31 at 15-18.

commanders.³⁸³ Expanding categories would include others involved in autonomous weapons, such as engineers, tech companies, and defense contractors. The law may need to be rebuilt to reflect that network. That could include:

- New rules about how liability is shared across multiple actors
- Legal obligations built into contracts, procurement, and design processes
- Clear accountability chains that track how a system was built and used

One possible response is to maintain the existing framework of international humanitarian law while adapting its interpretation to accommodate technological change. This approach emphasizes the resilience and flexibility of established legal principles such as *distinction* and proportionality. However, the interpretation is subjective, and the adaptation would depend on post-action trials in tribunals or courts, which would be counter-productive to the aim of establishing regulatory mechanisms for AWS. Changing the language of the law then becomes the more desirable option. Though there is strong, widespread support for international laws on autonomous weapons, a handful of states are opposed to the development of binding regulations. Proponents argue that these principles are sufficiently general to apply to new forms of warfare, including those involving autonomous systems.³⁸⁴

Autonomous systems introduce new forms of targeting uncertainty, distributed responsibility, and operational speed that were not anticipated when current legal frameworks were developed. These characteristics may require more substantial conceptual revisions. The functionality of the existing framework is being promoted by states actively utilizing AI-enabled autonomous weapons in conflict against evidently weaker states. India, Israel, Russia, and the

³⁸³ International Committee of the Red Cross, Rule 151. Individual Responsibility, *supra* note 368.

³⁸⁴ Autonomous Weapons Systems, “The Political Landscape.”, *supra* note 59.

U.S.A have all actively opposed the formulation of a legally binding instrument against autonomous weapons, while actively engaging in conflict via the use of the same.³⁸⁵ This opposition comes from a variety of directions, ranging from the fear of hindering competitiveness to claiming that it would extend the technology gap between nations. Although the adaptation of the existing framework may be an ideal solution for bridging the gap between law and tech, the strong opposition hints towards an active effort to throw the current legal landscape into a stalemate to exploit the norms.

A **second approach** involves the development of specialized regulatory regimes for autonomous weapons. This approach draws inspiration from previous international efforts to regulate specific categories of weapons, such as chemical weapons or anti-personnel landmines. As noted in Chapter 2, these efforts are the Convention on Cluster Munitions, 2008, and the Treaty on the Prohibition of Nuclear Weapons, 2017.³⁸⁶ The Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects³⁸⁷ was adopted in 1980 and contained protocols that prohibited weapons such as non-detectable fragments, mines, incendiary weapons, etc. A few other treaties and conventions have been developed, based on the innovations that weapons have seen over time. Under this model, states could negotiate new treaties establishing limits on the development or deployment of autonomous weapon systems.

In 2023, the Secretary-General of the United Nations, António Guterres, and the President of the International Committee of the Red Cross, Mirjana Spoljaric, jointly urged states to establish

³⁸⁵ Autonomous Weapons Systems, “The Political Landscape.”, *supra* note 59.

³⁸⁶ International Committee of the Red Cross, “Treaties and States Parties” (online), IHL Databases, online: <https://ihl-databases.icrc.org/en/ihl-treaties/treaties-and-states-parties>.

³⁸⁷ 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, *supra* note 88.

new prohibitions and restrictions on autonomous weapons.³⁸⁸ They emphasized that such systems, capable of selecting targets and applying force without human intervention, raise serious humanitarian, legal, ethical, and security concerns. Their joint appeal highlighted the need to maintain meaningful human control over the use of force, particularly in life-and-death decisions, and called for the prohibition of weapons that autonomously target humans or whose effects are unpredictable.

They further recommended that other autonomous weapons be subject to strict regulations governing their use, including limits on operational contexts, targets, scale of force, and requirements for effective human supervision and the ability to intervene or deactivate the system. The appeal concluded with a call for states to negotiate a new legally binding international instrument on autonomous weapons by 2026.

As noted in previous chapters, while such proposals have gained attention in international forums, they face significant political and practical obstacles. More than 120 countries support calls to negotiate a treaty that prohibits and regulates autonomous weapons systems.³⁸⁹

The ICRC, civil society groups, and many governments say the treaty should prohibit autonomous weapons systems that operate without meaningful human control or that target people. Regulations should ensure that all autonomous weapons systems not covered by the prohibitions operate only with meaningful human control.³⁹⁰ However, since 2014, certain states have used

³⁸⁸ United Nations Secretary-General & International Committee of the Red Cross, Joint Call by the United Nations Secretary-General and the President of the International Committee of the Red Cross for States to Establish New Prohibitions and Restrictions on Autonomous Weapon Systems, News Release (5 October 2023), online: International Committee of the Red Cross <https://www.icrc.org/en/document/joint-call-un-and-icrc-establish-prohibitions-and-restrictions-autonomous-weapons-systems>.

³⁸⁹ Human Rights Watch, UN: Start Talks on Treaty to Ban ‘Killer Robots’, *supra* note 243.

³⁹⁰ Human Rights Watch, UN: Start Talks on Treaty to Ban ‘Killer Robots’, *supra* note 243.

proceedings within the Convention on Conventional Weapons (CCW) in Geneva to repeatedly block efforts to negotiate a legally binding agreement.

India, Israel, Russia, and the United States, as noted before, have invested heavily in building autonomous weapons and are reluctant to police them at such an early stage of their development and use.³⁹¹ A complete ban may not be the best way forward, but elements from the various literature provide us with critical elements that are non-negotiable when it comes to forming a regulatory mechanism for autonomous weapons or autonomy in warfare in general. These include meaningful human control over the use of force, mandatory and continuous weapons reviews under Article 36 of Additional Protocol I, and rigorous testing and validation of autonomous systems in conditions reflecting their intended operational environments

A **third approach** emphasizes the integration of interdisciplinary perspectives into legal analysis. Rather than treating technological innovation as a purely technical issue, this framework incorporates insights from fields such as computer science³⁹², political theory³⁹³, and STS³⁹⁴.

By examining how technological systems interact with social and institutional structures, scholars can develop more nuanced regulatory strategies. This interdisciplinary approach may offer the most promising pathway for adapting international law to the realities of algorithmic warfare. Additionally, looking at an interdisciplinary approach through the previously analyzed lens of Pistor³⁹⁵ provides a solid foundation that parallels the universality of AI. This means that

³⁹¹ Autonomous Weapons Systems, “The Political Landscape.”, *supra* note 59; Human Rights Watch, UN: Start Talks on Treaty to Ban ‘Killer Robots’, *supra* note 243.

³⁹² Northwestern Engineering, “Exploring the Intersection of Computer Science and Law” (13 September 2022), online: Northwestern Engineering <https://www.mccormick.northwestern.edu/computer-science/news-events/news/articles/2022/exploring-the-intersection-of-computer-science-and-law.html>.

³⁹³ See generally, United Nations News, “Autonomous Weapons That Kill Must Be Banned, Insists UN Chief” (25 March 2019), online: UN News <https://news.un.org/en/story/2019/03/1035381>

³⁹⁴ Vertesi et al, eds, STS, *supra* note 35.

³⁹⁵ Pistor, *The Code of Capital*, *supra* note 31.

we need to look at integrating regulatory mechanisms at every step to ensure that loopholes can not be exploited and negligence is not excused.

By looking at how technology interacts with social systems, institutions, and politics, scholars can develop better and more realistic rules for regulating autonomous weapons. This approach recognizes that autonomous weapons are not just machines; they are part of larger military and political systems. Therefore, regulation should address not only how the technology works but also how militaries and governments use it. Within this broader framework, the concept of *lex specialis*³⁹⁶ remains particularly important. IHL continues to serve as the primary legal regime governing armed conflict, even as technological innovation transforms the nature of warfare. Rather than abandoning this framework, legal scholars should focus on clarifying how its principles apply to algorithmic decision-making processes.

For example, the principle of *distinction*, which requires that combatants and civilians be clearly distinguished, may need clearer standards to determine how reliable machine-based target identification systems must be.³⁹⁷ Creating these standards will require cooperation between lawyers, military experts, and technology specialists.³⁹⁸ Similarly, the principle of proportionality, which requires that civilian harm must not be excessive compared to the military advantage, may need new methods for evaluating how algorithms predict civilian casualties. Ultimately, rethinking international norms in the age of autonomous warfare involves balancing continuity and adaptation.

³⁹⁶ Aaron X Fellmeth & Maurice Horwitz, “Lex Specialis Derogat Legi Generali” in *Guide to Latin in International Law*, 2nd ed (New York: Oxford University Press, 2022).

³⁹⁷ Paola Gaeta, “Who Acts When Autonomous Weapons Strike?: The Act Requirement for Individual Criminal Responsibility and State Responsibility” (2023) 21:5 *Journal of International Criminal Justice* 1033–1055, online: <https://academic.oup.com/jicj/article/21/5/1033/7591635>.

³⁹⁸ International Committee of the Red Cross, *Artificial Intelligence and Machine Learning in Armed Conflict: A Human-Centred Approach*, *supra* note 178.

The final chapter of the thesis would provide recommendations on the interdisciplinary approach mentioned above and aim to shed light on how the core questions of this thesis, i.e., *distinction* and proportionality, can be reworked effectively to regulate AWS. The chapter would reaffirm *lex specialis* in the age of autonomous warfare, discuss changes to the principles of *distinction* and proportionality, and offer a final recommendation for integrating language that regulates AWS effectively.

Chapter 6: Conclusion and Recommendations

6.1 Overview

The preceding chapters have examined the intersection of autonomous weapon systems (AWS), international humanitarian law (IHL), and the evolving character of contemporary armed conflict³⁹⁹. Through case studies of the Russia–Ukraine war and the recurrent escalations between India and Pakistan, this thesis has demonstrated that autonomous and semi-autonomous systems increasingly play a central role in operational decision-making⁴⁰⁰. Additionally, the analysis highlighted how IHL principles that were meant to regulate the weapons of conflict often enable the use of this advanced machinery for disproportionate harm.

The absence of a universally accepted legal definition of autonomy in weapons systems has enabled increasingly autonomous functions to be incorporated into existing weapons platforms without corresponding regulatory safeguards. Scholars argue that this trend risks diminishing meaningful human control over the use of force, thereby undermining accountability, expanding opportunities for use, and challenging compliance with core principles of international humanitarian law that depend upon human judgment in targeting and proportionality assessments.⁴⁰¹ These elements are crucial in the international sphere to regulate and ensure that the conduct of warfare is just and fair.⁴⁰²

³⁹⁹ International Committee of the Red Cross, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, supra note 18.

⁴⁰⁰ MacDonald et al, “Russia’s Bombardment of Ukraine Is More Lethal Than Ever”, supra note 99; Nazir, “India’s Airstrikes: A Dangerous Precedent and Fraying International Norms – OpEd”, supra note 156.

⁴⁰¹ Daniele Amoroso & Guglielmo Tamburrini, “Autonomous Weapons Systems and Meaningful Human Control: Ethical and Legal Issues” (2020) 1:4 *Current Robotics Reports* 187–194, online: Springer <https://doi.org/10.1007/s43154-020-00024-3>.

⁴⁰² Edward Hunter Christie, Amy Ertan, Laurynas Adomaitis & Matthias Klaus, *Regulating Lethal Autonomous Weapon Systems: Exploring the Challenges of Explainability and Traceability* (2024) 4:2 *AI and Ethics* 229–245, online: Springer <https://doi.org/10.1007/s43681-023-00261-0>.

These developments raise profound questions regarding the continued adequacy of traditional legal frameworks governing armed conflict. One of the central legal doctrines examined throughout this study is the principle of *lex specialis*. Within international law, the doctrine of *lex specialis derogat legi generali*⁴⁰³ establishes that a more specific legal regime governs over more general legal rules when both apply to the same subject matter. In the context of armed conflict⁴⁰⁴, IHL operates as the *lex specialis* governing the conduct of hostilities, superseding the broader norms of international human rights law where the two intersect.

However, the emergence of algorithmic warfare complicates this doctrinal framework. IHL was historically designed around the assumption that human agents, commanders, soldiers, and decision-makers exercise direct judgment in targeting operations. Autonomous systems challenge this assumption by introducing computational processes capable of selecting and engaging targets with limited or varying degrees of human intervention.⁴⁰⁵ Additionally, the thesis analyzed the research questions and the validity of IHL principles on the foundational theory of Katharina Pistor, the Code of Capital. The theory highlights how certain legal modalities (as code) bestow critical attributes to certain assets. These attributes, in turn, provide a comparative advantage over similar assets and protect them from litigation and promote exploitation. Autonomy, when conceptualized as an asset and embedded within weapons systems that are otherwise lawful under IHL, acquires similar characteristics.

⁴⁰³ Aaron X Fellmeth & Maurice Horwitz, “Lex specialis derogat legi generali” in *Guide to Latin in International Law* (Oxford University Press, 2022).

⁴⁰⁴ International Committee of the Red Cross, How Is the Term “Armed Conflict” Defined in International Humanitarian Law? International Committee of the Red Cross Opinion Paper 2024 (15 April 2024), online: ICRC <https://www.icrc.org/en/document/icrc-opinion-paper-how-term-armed-conflict-defined-international-humanitarian-law>.

⁴⁰⁵ Michel, *Computation and Artificial Intelligence in Military Decision-Making*, *supra* note 49.

Although STS theory was utilized to a lesser extent in this analysis, it provides a complementary perspective: rather than focusing primarily on how law confers advantages on assets, STS draws attention to how technologies themselves are shaped by the social, political, institutional, and legal contexts in which they emerge. From this perspective, autonomy is not simply a technical attribute added to an otherwise existing weapons system; its design, capabilities, and uses are influenced by the institutions and regulatory frameworks surrounding it. Pistor therefore helps explain how legal structures may facilitate and protect technological capabilities, while STS helps explain how those technological capabilities and the legal structures governing them develop together.

In the Russia–Ukraine conflict, the integration of unmanned aerial systems, automated defensive platforms, and maritime drones has accelerated the pace of targeting decisions while increasing the scale of distributed combat operations. Similarly, the India–Pakistan escalation demonstrates how drone warfare and automated border surveillance systems contribute to rapid cycles of retaliation and escalation. Viewed through Pistor’s framework, autonomy operates as a coded asset that derives value not merely from technological innovation but from legal indeterminacy. The legal system’s failure to expressly regulate autonomy grants developers and military actors flexibility to strategically expand their use while preserving the appearance of compliance with established IHL obligations. Consequently, the integration of autonomous functions into weapons systems may increase the scale, speed, and geographical reach of military operations while simultaneously weakening traditional mechanisms of accountability that depend upon identifiable human decision-makers.⁴⁰⁶

⁴⁰⁶ Gaeta, “Who Acts When Autonomous Weapons Strike?”, *supra* note 400.

These operational realities raise important questions regarding the continued applicability of *lex specialis* as traditionally interpreted. If autonomous systems participate in targeting decisions, the legal framework governing the conduct of hostilities must address not only human behavior but also the technological architectures through which decisions are executed. Importantly, this does not imply that IHL is rendered obsolete by technological innovation. On the contrary, the core humanitarian principles underlying the law of armed conflict remain essential for regulating violence in war. Rather, the challenge lies in adapting the interpretation and implementation of these principles to account for algorithmically mediated decision-making processes. Instead of viewing IHL solely as a set of rules governing human actions in battle, it must also be understood as a framework capable of regulating complex socio-technical systems.

6.2 Revisiting the Research Questions

6.2.1 Are the principles of distinction and proportionality under International Humanitarian Law capable of regulating autonomous weapons systems?

Distinction and Autonomy

Contemporary conflicts frequently involve irregular forces, civilian participation in military support roles, and dual-use infrastructure. Civilians may temporarily engage in hostilities or operate in close proximity to military assets. Determining the status of individuals in such environments often requires contextual judgment that extends beyond visual identification. Autonomous systems may have difficulty interpreting these complex social cues. For example, distinguishing between a civilian vehicle and a military logistics platform may require contextual information about behavioral patterns, location, and intent. Algorithms trained primarily on visual or sensor data may misclassify such targets, increasing the risk of unlawful attacks. Unlike human soldiers, algorithms rely on pattern recognition processes that classify objects based on sensor data

and statistical models. These classification processes may struggle to account for the ambiguity and fluidity that often characterize modern battlefields⁴⁰⁷.

Additionally, machine-learning models depend heavily on the quality and representativeness of training data. If datasets are incomplete or biased, the resulting algorithms may systematically misidentify certain types of objects or individuals⁴⁰⁸. These errors could have serious humanitarian consequences when autonomous systems are deployed in densely populated environments. Weapons review processes under Article 36 of Additional Protocol I to the Geneva Conventions provide an existing mechanism for evaluating new weapons technologies. Before autonomous systems can be deployed, states should demonstrate that they are capable of consistently distinguishing between lawful and unlawful targets under realistic operational conditions.

- Expanding the scope and rigor of Article 36 reviews for autonomous systems could play a critical role in ensuring compliance with the principle of *distinction*. Such reviews should include not only technical performance testing but also assessments of algorithmic transparency, data integrity, and operational reliability.
- Furthermore, international cooperation may be necessary to develop shared standards for evaluating autonomous targeting technologies. Without common benchmarks, states may adopt inconsistent criteria for determining whether a system meets the requirements of IHL.
- Ultimately, preserving the principle of *distinction* in the age of autonomous warfare requires a combination of legal oversight, technological design safeguards, and institutional accountability. Ensuring that autonomous systems operate within these

⁴⁰⁷ Christie et al, “Regulating Lethal Autonomous Weapon Systems”, supra note 405.

⁴⁰⁸ Viveros Álvarez, “The Risks and Inefficacies of AI Systems in Military Targeting Support”, supra note 66.

constraints will be essential for maintaining the humanitarian foundations of the law of armed conflict.

Proportionality and Algorithmic Decision Making

The principle of proportionality represents one of the most challenging aspects of IHL to operationalize within autonomous systems. Proportionality standards inherently involve qualitative judgment and contextual evaluation. Commanders must consider the tactical environment, available intelligence, and the potential consequences of an attack. These assessments require not only technical information but also moral and strategic reasoning.

Autonomous systems, however, rely on computational models that transform complex real-world conditions into quantifiable inputs. Machine-learning algorithms process large datasets to identify patterns and generate predictions, but they do so through statistical correlations rather than normative reasoning⁴⁰⁹. As a result, translating the proportionality principle into algorithmic form presents significant conceptual difficulties.

One challenge lies in determining how an algorithm should calculate military advantage. Military value is often context-dependent and subject to strategic interpretation. A target that appears tactically insignificant in isolation may have broader operational importance within a larger campaign. Human commanders frequently rely on experiential knowledge and strategic judgment when making such determinations. These capacities are difficult to replicate through automated systems. Another difficulty concerns the prediction of civilian harm. Algorithms may estimate potential collateral damage using geospatial data, population density models, or sensor inputs. However, real-world environments are dynamic and unpredictable. Civilian movement, infrastructure damage, and changing battlefield conditions can rapidly alter risk calculations.

⁴⁰⁹ Viveros Álvarez, “The Risks and Inefficacies of AI Systems in Military Targeting Support”, *supra* note 66.

These challenges also help answer the second research question by highlighting the regulatory gaps existing at the interface of IHL and AWS. Despite these challenges, autonomous systems can also enhance certain aspects of proportionality analysis. These solutions are adapted as the answers to our third research question and mentioned below.

Advanced sensing technologies, real-time surveillance data, and improved situational awareness may enable more accurate identification of civilian presence and infrastructure. In some cases, algorithmic tools may help commanders evaluate potential collateral effects more effectively than traditional methods.

- Rather than replacing human judgment, autonomous systems should function as decision-support tools that assist commanders in evaluating complex operational information. Maintaining meaningful human oversight is crucial in this regard.
- Commanders must retain the authority and responsibility to evaluate algorithmic recommendations within the broader context of legal and strategic considerations. This approach aligns with emerging international discussions emphasizing the importance of human control over lethal decision-making processes.
- Legal reform efforts should therefore focus on establishing guidelines for the appropriate use of algorithmic decision-support systems in proportionality assessments. These guidelines could include requirements for transparency in algorithm design, validation of predictive models, and mechanisms for auditing targeting decisions after operations.

6.2.2 What reforms are required to address the regulatory gap created by autonomous warfare?

As autonomous systems continue to evolve, international legal frameworks must adapt to address the new challenges posed by algorithmic warfare. Based on the analysis presented in this thesis, several key policy and legal reform pathways emerge.

- First, states should strengthen the implementation of weapons review mechanisms for emerging military technologies. Article 36 reviews should be expanded to include rigorous testing of algorithmic systems, including evaluation of training data, decision-making transparency, and system reliability in complex operational environments.⁴¹⁰
- Upholding the general rules and standards set in treaty law is essential. The autonomous technology must pass through all the current tests, including the prohibition on employing indiscriminate weapons, means, and methods of warfare that fail the tests of *distinction* and proportionality. However, this strengthening needs to be implemented with concrete mentions of autonomy in international law in its respective parts, and creation of targeted treaty law as well. **Autonomy as a concept, if integrated in any existing weapon, should lead to the reconsideration of the weapon system under Article 36 with its now enhanced capabilities.**
- Second, international legal discussions should prioritize the development of standards for meaningful human control over autonomous weapon systems. While complete prohibition of autonomy in warfare may be politically unrealistic, ensuring that human decision-makers retain oversight and responsibility over lethal actions remains essential.
- **Assessments conducted for an autonomous weapon in a particular environment may not allow for the same to be legal in another conflict**, but would aid in creating standards, rules of engagement, and baseline tests that should be added in the Art 36 review, separately for these systems. These rules of engagement will further the regulatory strength

⁴¹⁰ Vincent Boulanin, Implementing Article 36 Weapon Reviews in the Light of Increasing Autonomy in Weapon Systems, SIPRI Insights on Peace and Security No 2015/1 (Stockholm: Stockholm International Peace Research Institute, November 2015), online: SIPRI <https://www.sipri.org/publications/2015/sipri-insights-peace-and-security/implementing-article-36-weapon-reviews-light-increasing-autonomy-weapon-systems>.

of international law, which is built upon a more rigid review of autonomy as a crucial element in weapons under the first recommendation.

- Third, greater transparency and accountability mechanisms should be established for algorithmic military systems. States deploying autonomous technologies should maintain records of system design, operational parameters, and decision-making processes. These records could be crucial for investigating alleged violations of international humanitarian law. The concerns regarding national security remain valid. **However, an autonomous weapon, as suggested before, should have the capability to record and present the process of its decision-making** to ensure a holistic review in cases that may be tried in a court of law.
- Finally, interdisciplinary collaboration must play a central role in shaping future regulatory frameworks. **Legal scholars, engineers, military practitioners, and ethicists should work together to develop governance models that address the socio-technical nature of autonomous warfare.**

Conclusion

The thesis argued that the central challenge posed by autonomous weapons systems is not solely technological but fundamentally legal. Existing IHL principles remain formally applicable. However, their practical effectiveness is undermined when decision-making processes are partially or wholly delegated to algorithmic systems whose reasoning, predictability, and accountability structures differ from those of human actors. In this context, autonomy expands the scope and use of weapons systems while exploiting gaps in the current legal framework to avoid accountability for unjust harm. Unless international law develops clearer rules governing the deployment, supervision, and accountability of autonomous functions, the continued integration of autonomy into military operations risks creating a regulatory asymmetry whereby increasingly powerful weapons systems enjoy the benefits of legal recognition without being subject to corresponding legal constraints.

A cohesive set of regulations developed in collaboration with technology experts, legal scholars, and international jurists can serve as a framework that integrates with the current IHL principles in effectively regulating the aspect of autonomy in warfare.

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