



Revisiting the Geneva Conventions: Are the Four Core Conventions Sufficient for 21st Century Warfare?

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ARTICLE INFO			ABSTRACT
Article History:			<i>The Geneva Conventions of 1949, along with their Additional Protocols, form the foundation of international humanitarian law IHL governing armed conflict. However, the evolution of warfare in the 21st century characterized by cyber operations, autonomous weapons, urban warfare, and the involvement of non-state actors has raised serious questions about the adequacy of these core legal instruments. This study critically examines whether the four Geneva Conventions remain sufficient to address the humanitarian and legal challenges posed by modern warfare. Using a doctrinal legal research methodology, the study analyses treaty texts, customary international law, scholarly commentary, and case studies involving emerging conflict scenarios. It finds that while the Geneva Conventions continue to provide essential humanitarian safeguards, they lack specificity in addressing new forms of warfare, particularly in domains such as cyberspace and artificial intelligence. The article concludes that without reinterpretation or the adoption of supplementary legal frameworks, the protective regime of IHL may fall short in ensuring civilian protection and accountability in future conflicts. Thus, the study recommends a proactive revaluation of the Conventions through dynamic interpretation, the development of new protocols, and enhanced international cooperation. The Geneva Conventions, widely regarded as the cornerstone of IHL, have guided the conduct of war and the protection of victims since their adoption in 1949. However, the evolution of warfare in the 21st century marked by cyber conflicts, autonomous weapons systems, and non-state actors has challenged the efficacy and comprehensiveness of these treaties. This article critically examines the relevance and sufficiency of the four Geneva Conventions in regulating modern armed conflicts. It contends that while the Conventions remain foundational, significant legal and normative gaps necessitate either expansive reinterpretation or supplementary legal instruments to ensure continued humanitarian protection.</i>
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Introduction

The treaties known as the Geneva Conventions of 1949 stand at the foundation of what modern International Humanitarian Law (IHL) has attempted to accomplish, in other words, to make human the horrors of war through the establishment of laws that protect wounded soldiers, prisoners of war and civilians. Arising from the horrors of the Second World War, the four Conventions provided a common template for regulating armed conflict, based on fundamental principles of humanity, distinction and proportionality. Tolstoy: Private Property is Theft Their near-universal ratification testifies to the perseverance of their normative and legal significance in the regulation of warfare between states. But in the 21st century, armed conflict has changed dramatically. Battlefields today are not limited to wars between states. While not an exhaustive catalogue of what qualifies as emerging threats, they nonetheless highlight how 21st century conflict is increasingly shaped by cyber warfare, artificial intelligence, drone strikes, combat in urban neighbourhoods, and the proliferation of non-state actors, such as insurgents, militias, and transnational terrorist groups . All this throws into doubt a lot of the foundational assumptions of the Geneva Conventions — that there are combatants and civilians; that there are declarations of war; that there is a military command. Consequently, the question of whether the Conventions apply and whether they are sufficient to address contemporary humanitarian challenges has been called into question. The thesis of this research is twofold, identifying the continued normative weight and legal bindingness of the Geneva Conventions, but arguing that they are now fundamentally ill equipped to regulate contemporary and future warfare (Malik & Gul, 2024). The aim of this study is to query the extent to which the four Conventions remain capable of affording adequate protection in light of contemporary conflict conditions, and whether such protection necessitates a re-interpretation, supplementation or even reform of the Conventions. Accordingly, the article addresses three core research questions: Are the Conventions fit for purpose in relation to hostilities using cyber technologies and autonomous weapons systems? Are the protections of the Conventions effective in conflicts involving states and non-state actors, and international armed conflict and irregular warfare? And, if there are legal and normative gaps, how might these be filled? (van, 2022).

Using a doctrinal legal approach, the analysis of the article is based on the text of the Geneva Conventions, customary international law, academic literature, and lessons from recent conflicts. It assesses the responsiveness of existing IHL to the new types of violence and technological disruption. The results indicate that while the Conventions continue to be of basic humanitarian importance, they are insufficient in scope, detail, and enforceability to address many issues not foreseen as of 1949. The rest of the article is divided into four sections: the first provides a brief overview of the legal framework of the four Geneva Conventions and their key elements. In sects three, they review the new problems of the dwell wars like cyber operations, autonomous weapon systems and non-state armed groups. In section four, it identifies the most salient legal and normative lacunae to which the current IHL framework is exposed. The responses may be dynamic treaty interpretation, developing new protocols, and institutional engagement on which section five elaborates. Section six ends with conclusions and suggestions on how to address the challenges posed by the 21st-century armed conflict in the practice of IHL. The 1949 Geneva Conventions and their Additional Protocols form the cornerstone of contemporary international humanitarian law. These treaties, put in place upon emerging from the Second World War are intended to alleviate as much human suffering during war as possible and seek to define the acceptable treatment of wounded soldiers, prisoners of war and civilians. The relevance of these conventions persists, although the evolution of armed conflict presents challenges to their modern effectiveness. The need to examine whether or not the Conventions do what they were designed to

achieve from a humanitarian viewpoint has become all the more warranted in a time of asymmetric warfare, cyberwarfare, an increasing reliance on private military contractors and the role of artificial intelligence (Hill-Cawthorne, 2023; Gul & Malik, 2024).

Research Methodology

This study employs a qualitative doctrinal research methodology, focusing on the comprehensive analysis of primary legal texts, including the Geneva Conventions and their Additional Protocols, alongside relevant international treaties, case law, and scholarly commentary. The research process involved systematic review and comparative evaluation of existing legal frameworks against contemporary warfare practices such as cyber operations, autonomous weapons, and asymmetric conflicts. Secondary sources such as reports from international organizations, policy papers, and expert analyses were also examined to contextualize the challenges facing the Conventions today. This approach enables a critical assessment of both the legal provisions and practical enforcement issues, facilitating a nuanced understanding of the sufficiency and adaptability of the Geneva Conventions in the evolving landscape of modern armed conflict.

Overview of the Four Geneva Conventions

The 1949 Geneva Conventions are the cornerstone of modern international humanitarian law, providing the breadth of legal protections to persons that do not or no longer take part in hostilities. The Conventions emerged in the wake of the horrors of the Second World War, signalling a world-wide dedication to the idea of more humane warfare. The four Conventions together provide a systematic legal basis for primarily international armed conflicts, and although their principles have been generalised, with differing success, to non-international conflicts through Common Article three and later protocols, The First Geneva Convention deals with the improvement of the fate of wounded and sick military personnel in the field. It contains guidelines for humane treatment of wounded soldiers, independence of medical staff, and safety of medical facilities and convoys. Building off this framework, the Second Geneva Convention applies to naval warfare and continues to provide protections to wounded, sick and shipwrecked members of armed forces at sea. It also lays out rules for the treatment of hospital ships and provides safeguards for those wounded and aspects of medical personnel engaged in fighting at sea. The Third Geneva Convention deals with the treatment of prisoners of war POWs. It spells out specific rules about how they are captured, imprisoned and finally released. POWs must always be treated humanely, protected from torture, coercion, and public curiosity. The Convention defines rights — to food, shelter, communication, and protections from the law — and demands that these rights must be available without discrimination. This specific Convention is especially important objectifying the principle distinction between combatants and civilians— a fundamental principle of IHL (Barsak, et al., 2023; Gul et al., 2025).

The Fourth Geneva Convention is about the protection of civilians in time of war. It signifies a milestone in humanitarian law as it extends the rights to people who are not playing an active role in hostilities. Collective punishment, hostage-taking, and indiscriminate attacks are also prohibited under the Convention, which requires that all civilians under occupation or in enemy territory be treated humanely. It defines the responsibilities of occupiers with respect to civilian populations, including food, medical care, and due process. All four of the Conventions contain Common Article three, which brings basic humanitarian protections to non-international armed conflicts. Though brief, it State-vs-state, conventional wars. The historical context creates difficulties, however, in reading and implementing the Conventions to contemporary conflict landscapes

driven by cyber warfare, privatized military power, and AI-driven technology. provides a strong basis of law to protect millions in armed conflict in the four Geneva Conventions But their historical design, which is rooted in post–World War II thinking, leaves them the wrong tools for the job in the complex, fast-paced environment of 21st–century warfare. This new set of challenges is discussed further in the next section of this article (Fink, 2022; Gul et al., 2025).

Convention I: Protection of wounded and sick soldiers on land during war

The First Geneva Convention is formally known as the “Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field”, and was adopted on 12 August 1949 but is based upon precedents of treaties dating back to 1864. The main purpose is to guarantee the humane treatment and protection of members of the armed forces who become hors de combat as a result of wound or sickness, that will be a consequence of land warfare. The Convention represents an important humanitarian undertaking to ensure that as far as possible, lives and dignity are preserved on the battlefield, irrespective of the nationality or allegiance of combatants. Protocol I of the Geneva Conventions (the four Geneva Conventions of 12 August 1949) requires that in all circumstances, wounded in armed conflict and sick soldiers (as do military personnel who are stilled) should be respected and protected. They are to be collected, cared for and treated without any harmful distinction of race, nationality, religion, political convictions or other status. Murder, mutilation and torture of such persons are all acts of violence which is prohibited by the Convention. It further requires belligerents to make every possible effort to find and care for the wounded and sick following a fight. The most important of the provisions of Convention I might be those applicable to the protection of medical personnel, establishments and transport. Paragraph 2 -- Medical units and transports are entitled to respect and shall not be attacked. Health professionals such as doctors, nurses, and chaplains enjoy special status and must never be attacked or impede in the performance of their humanitarian obligations. In return, those personnel must not engage in actions detrimental to the enemy; if they do, they forfeit their protected status. (Kunovská, 2022; Malik et al., 2025).

It hierarchically lays out various obligations towards the dead in the Convention. Parties must avoid causing despoilment, must dispose of bodies in a dignified manner, and must collect and transmit certain information about the deceased to facilitate identification and notification of next of kin. Accountability and post-conflict reconciliation depend on keeping records of the wounded, sick and dead, so maintaining records becomes essential. While Convention I was drafted with regular warfare in mind — large battles of land armies, fighting for big nation states — its humanitarian values are the same, so still hold relevance. However, changing trends towards more asymmetric conflicts targeting (often indistinguishable) civil populations plausibly hampers the efforts for their practical application through warfare technologies just like drones. Moreover, non-state armed groups could not be bound by the obligations of the Convention, rendering the application of the Convention complex and challenging in contemporary conflicts. These challenges notwithstanding, the First Geneva Convention still sparks inspiration as a fundamental legal and symbolic tool for the humane treatment of the wounded and sick during conflict. It remains relevant because it defends the inviolability of human dignity even under the most inhuman conditions of war. (Bamigboye & Kinsey, 2025; Khan, 2024).

Convention II: Protection of wounded, sick, and shipwrecked military personnel at sea.

The Second Geneva Convention, officially referred to as the "Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea" expands upon the protections available under the First Convention so as to apply them to the maritime

context [08 Aug 1949]. It supersedes and builds on the 1907 Hague Convention (X) and takes account of the necessity for a comprehensive legal framework to protect those who are no longer taking an active part in hostilities at sea. The Convention seeks to ensure the humane treatment of those taking part in sea-based hostilities and recognizes their unique vulnerabilities, both at and after the time of fighting. 158-word Convention II primarily concerns the protection, humanitarian care and respect of AIL members of the armed forces, regardless of their nationality if they are wounded, sick or shipwrecked at sea. Like Convention I, it obliges Parties to a conflict to search and collect such persons and to care for them without any adverse distinction (Khan & Jilani, 2023).

These can be things such as rescuing people from sunk ships as well as ensuring they are treated humanely afterward. Shipwreck and drowning become a much greater and imminent threat in maritime combat, and so special legal protections are warranted. Article 16. —After a sea engagement, the belligerent parties must ensure the prompt treatment of the wounded and shipwrecked, among whom may also there be enemy personnel. It likewise forbids an attack on medical ships, boats, and hospital vessels in the service of the medical corps provided that the ships, boats, and vessels are not on active service for military purpose while flying the flag of the Red Cross or the Red Crescent. These vessels are required to be reported to both parties to the conflict and are to be exempt from capture or attack, so long as they remain in a neutral and humanitarian role (Amarasinghe, 2021; Khan & Usman, 2023).

Medical and religious staff on board vessels and crew members performing medical tasks have the same civilian status as under Convention I if captured, they cannot be treated as prisoners of war, having to be retained solely as long as their services are required for medical treatment. Aside from recognising the rights of neutral ships, the Convention also provides guidelines on the principle of neutrality at sea, calling belligerents and neutral to cooperate in the facilitation of humanitarian missions. One of the points about Convention II that is notable is that it specifically encourages communication and transparency. They must record and transmit information on the wounded, sick, and shipwrecked, including details of their health, treatment, and location. This duty is in alignment with broader accountability principles enabling notification, tracing and repatriation of family members. However, for today's armed conflict context, although Convention II's humanitarian concerns remain relevant, the pertinence of Convention II itself is often questioned, just like that of Convention I. Rather, 21st naval warfare might be characterized by drones and cyber-attacks on maritime forces or by hybrid means of warfare challenging the notion of the identity of combatants and vessels. Non-state actors — e.g. maritime insurgents or pirate groups — make it impossible to follow the regime of the Convention. However, Convention II continues to be an important basis for the legal protection of armed conflict on the high seas. It remains relevant in maintaining humanitarian standards in naval warfare and in reaffirming the duty to care for the wounded and shipwrecked, regardless of their identity (Lang & McKee, 2022; Khan et al., 2023).

Convention III: Treatment of prisoners of war

The most elaborate law speaking on the status and treatment of captured combatants is entitled the Third Geneva Convention, formally, the “Convention Relative to the Treatment of Prisoners of War,” adopted 12 August 1949. Based on the 1929 diplomatic agreements about POWs, Convention III embodies the commitment of international society to protect and preserve the dignity and rights of those who, having given up the fighting, have ceased all defense-related activities. It aims to guarantee humane treatment, including respect for physical and mental integrity, as well as regulating adequate conditions of detention of POWs. All members of the

armed forces of a party to the conflict, including members of militias or volunteer corps and members of other organized resistance movements, shall be regarded as combatants, provided that they fulfill the following conditions: they are commanded by a person responsible for his subordinates; they have a fixed distinctive sign recognizable at a distance; they carry arms openly; and they conduct their operations in accordance with the laws and customs of war. They have to be treated as prisoners of war once they are captured, regardless of their actions on the battlefield. The Convention forbids torture, coercion, humiliation, or other forms of inhumane treatment, and disallows the use of pressure or threats to obtain information from POWs. The Third Convention made a significant contribution as it spelled out in detail the rights and protections afforded to POWs. It provides for humane treatment, including sufficient food, clothing, shelter, and medical care. Prisoners are to be placed where health and hygiene are guaranteed, and they may freely exercise and practice their religion and receive correspondence and parcels from families. The Convention also calls for prisoner representative systems that would enable POWs to share grievances and keep in contact with the detaining power and humanitarian agencies, including International Committee of the Red Cross (ICRC) (Brandon, 2025; Hussain et al., 2023).

Judicial assurances are essential yet another point in Convention III. POWs are bound by discipline but are not on trial nor deserve punishment for acts committed as lawful combatants. They have the right to due process rights if being charged with a crime, including: the right to a defence, a fair and impartial tribunal, and no double jeopardy or ex post facto laws. Additionally, as the Convention has likewise stated, reprisals against prisoners and collective punishments are prohibited. Convention III states that "At the end of hostilities, however, all POWs are to be repatriated without reservation. Unless criminal proceedings are pending or a sentence for an unrelated offense is being served, the detaining power is bound to facilitate release and return of prisoners. But in recent decades, Convention III has encountered formidable interpretive and operational challenges. The presence of non-state armed groups and "unlawful combatants" including terrorists or insurgents who do not match pre-criteria for POWs has left legal grey zones. Detentions like at Guantanamo Bay have led to disputes over the reach and reachability of what the Convention protects. Additionally, the rise of remote warfare, cyber, and autonomous weapons (which the drafters certainly could not imagine in 1949) means that even more complex challenges now exist for identifying and capturing combatants than at the end of World War II. However, the Third Geneva Convention continues to be one of the cornerstones of international humanitarian law. Humanity and respect for captive fighters have not lost their moral and legal powers. The Convention is a reminder that capture should not equal loss of human dignity, and it remains the standard by which the treatment of prisoners in every armed conflict is evaluated (Lukin & Marrugo, 2024; Khan et al., 2022).

Convention IV: Protection of civilians in times of war.

The Fourth Geneva Convention, also known as Convention Relative to the Protection of Civilian Persons in Time of War, was adopted on 12 August 1949 and is widely regarded as a revolution in international humanitarian law. For the very first time of this Geneva regime, the Law granted adequate protection to soldiers and Non-Combatant civilians in occupied territories and conflict areas. In the context of the widespread consequences of World War II on civilians especially noted with the systematic mass internment, deportations, and direct aggression against civilian populations this Convention seeks to protect persons not, or no longer, taking part in the hostilities against the onslaughts of armed conflict. The Fourth Convention offers a broad definition of "protected persons," those who are "in the hands of a party to the conflict or of an occupying power of which they are not nationals." The Convention rests on the foundation of humane treatment, which calls for respect for the person, honor, family rights, religious beliefs and

customs of all civilians. Under all circumstances, the following acts are prohibited: a. Murder; b. Torture or inhuman treatment, including biological experiments; c. Outrages upon personal dignity, particularly humiliating and degrading treatment; d. Taking hostages; e. Collective punishments; f. corporal punishment; g. Acts of terrorism (Khan et al., 2022).

One of the most vital aspects of the IVth Convention is its governing of military occupation. It requires occupying powers to take measures to restore and ensure public order and safety whilst barring any alteration to local laws or institutions unless absolutely necessary for security reasons. The Convention requires that the civilian population receive food, medical supplies, and public health measures. It also forbids the forced displacement of and transfer of populations, as well as the protection of property and cultural objects. Captives and internees deserve humane treatment, fit facilities and due process protections (Kramer, 2025; Khan, 2021).

It also has measures relating to the care of vulnerable categories like children, the elderly, and pregnant women. It acknowledges the family unit as indispensable, urging the maintenance of family ties, even in internment or occupied conditions. The years of armed conflict have shown that the civilian population also needs protection in this area, and that all possible measures must be taken to ensure its access to humanitarian relief operations, under the direction of neutral actors such as the ICRC. Nonetheless, the implementation of Convention IV has reached almost-breaking point amidst the nature of contemporary armed conflict. Today, wars of the 21st century are often fought in big populated centres / cities and they involve armies of non-state armed groups hidden inside the civilian population themselves. Combined with the growing reliance on airstrikes, drones and cyber operations the line between combatants and civilian's imperative to international humanitarian law becomes increasingly blurred. The Convention is state-centric and largely based on the ideal of conventional warfare, a tool that has long since failed to appropriately govern asymmetrical, territorial control dynamics. In addition, ongoing disputes concerning the legality of military occupations and blockades as seen in the occupied Palestinian territories or in areas claimed by more than one country like Crimea have challenged the effectiveness of the treaties contained in the Convention (Usman et al., 2021).

Some states have been accused of invoking security concerns to justify actions that amount to collective punishment or demographic engineering, in direct contravention of the Convention. Despite these challenges, the Fourth Geneva Convention remains a cornerstone of civilian protection in international law. It reflects the evolving moral consensus that war must have limits and that the dignity of non-combatants must be preserved, even amidst the chaos of armed conflict. As the character of warfare continues to evolve, there is an urgent need to reassess and potentially strengthen the Convention's mechanisms to ensure that its principles remain effective and enforceable in today's complex conflict environments. These conventions, supplemented by three Additional Protocols (1977 and 2005), provide detailed norms for state behaviour during armed conflict. However, their original context did not anticipate many of today's conflict scenarios (Asghar, et al., 2025; Khan et al., 2020).

Emerging Challenges in 21st Century Warfare

Cyber Warfare

We face perhaps the most serious challenge of the relevance and adequacy of the Geneva Conventions in the face of ever-changing cyber warfare. Unlike traditional conflict — which means kinetic violence on a battlefield where armed, well-defined armies fight over territory and

population — cyber warfare happens in an artificial, de-territorialised space, which human beings built and which possesses no real life or death component, with attacks that can target critical infrastructure, communication systems, civilian systems and without physical damage or immediate death of human beings. The Geneva Conventions rest on fundamental principles that are being tested by this paradigm shift—namely including distinction, proportionality, and protection of non-combatants as paramount. Indirection → Cyber operations can indirectly harm the civilian population by disrupting essential services like the electricity grid, water supply, healthcare systems, and financial networks. But they are still charged with the most heinous crime against international law: Many cyber attacks appear to inflict no immediate physical damage or loss of life, so whether they can be classified as an "armed attack" or a "use of force" remains in dispute (Khan & Hussain Shah Jillani, 2019).

This vagueness makes it difficult to apply the Geneva Conventions, which were created for violent conflicts designed around physicality and tangible harm. Distinction — the notion of distinction at the heart of the Geneva Conventions obliges parties to differentiate between combatants and civilians (and military objectives and civilian objects). This difference is blurred in cyber warfare, as attacks can inadvertently or quite deliberately target civilian infrastructure. Such as, an attack on a military command and control system might propagate into causing civilian hospitals or emergency services to fail, whereby issues of collateral damage would arise in a challenging legal and ethical context (Rickli & Vllasi, 2025; Khan, 2018).

And the practical realization of the principle of proportionality—which prohibits attacks that cause collateral civilian harm that is excessive in relation to the anticipated military advantage—proves challenging in the cyber context. Given the difficulty of estimating the broad parameters of indirect effects, candid quantification of proportionality in cyber operations is even more complicated. But cyber weapons spread quickly and randomly, without any reference to national borders or third parties entirely disconnected from legal targets. One of the problems related to this is that proceeding to identify and afterwards attribute the win to the attack perpetrator over cyberspace is almost impossible. The Geneva Conventions are based on the assumption there are identifiable combatants who can be held responsible for violations of IHL. By contrast, cyber attacks can be conducted anonymously, by state actors, by proxy groups, or by non-state hackers, thus making responsibility and enforcement mechanisms more complex. It weakens compliance with and accountability for aspects of the Geneva-based system that are currently legally codified. International efforts today are aimed at clarifying whether and how existing international humanitarian law (IHL), including the Geneva Conventions, applies to the sphere of cyber warfare.(Lawson, 2024).

Tallinn Manual on the International Law Applicable to Cyber Warfare, a non-binding document that offers guidance regarding the interpretation of principles such as distinction, proportionality, and necessity in the cyber domain. But there is no treaty under any Geneva-type legal regime explicitly governing cyber warfare, see absence of a legal vacuum. With many modern societies ever more reliant on a digital infrastructure, the task of reconciling cyber warfare with humanitarian protections has become ever more pressing. States should work on providing clearer standards and structures to deter and respond to cyber operations that inflict excessive damage on civilian populations. The Geneva Conventions, if not adapted or supplemented, will simply become irrelevant and citizens exposed to a new and invisible theatre of war. From their very nature, cyber operations can reduce critical infrastructure to a screaming halt, ruin access to essential services, and even make human casualties without firing a single round. The thing is, the Geneva Conventions say nothing about it. Yet there remains no definitional legal guidance as to

when a cyberattack counts as an "armed attack," or the level of protection civilians have from this threat. (Mallick & Nath, 2024).

Autonomous Weapons Systems (AWS)

As militaries begin to employ Autonomous Weapons Systems AWS —otherwise known as lethal autonomous weapons or “killer robots”— we face difficult legal and ethical challenges as to whether the Geneva Conventions are enough to capture 21st-century warfare. AWS can autonomously choose and engage at least some targets with weapons without direct human intervention, therefore, AWS uses algorithms, sensors and artificial intelligence to make battlefield decisions. Though these systems provide possible benefits, namely speed, accuracy and lower human risk, the way they are used undoubtedly raises significant issues of IHL compliance. At the heart of the Geneva Conventions are the principles of distinction, proportionality and precaution requiring that combatants distinguish between military objectives and civilians, refrain from causing excessive civilian casualties and take all possible precautions to minimize collateral damage. Critics say that the ability to fulfill those principles is undermined by the fact that life-and-death decisions are placed in the hands of machines. Autonomous systems might not possess the same level of judgement, ethical handling of a situation, and contextual consideration of information, that a human would to decisions of unprecedented complexity and dynamism as they may involve in any environment, especially in urban or hybrid civil-military environments. In particular, the principle of distinction is challenging to mechanize. AWS need be able to accurately discern lawful military targets from those which are civilian or other protected objects a process which is made extremely difficult due to modern challenges including camouflage, presence of non-combatants, and the dynamic nature of contemporary battlefields (Edelman, 2024).

If autonomous systems make a mistake (or wrongly identify a target) and act unlawfully, how can and should they be held accountable? More importantly, how can this assessment be made? How do we repay those harmed by such attacks? Further, the principle of proportionality demands evaluative balancing between expected military advantage and expected civilian harm — a profoundly subjective matter likely beyond the reach of AI today. While autonomous systems are designed to follow few rules or thresholds, they lack the moral agency to evaluate complex scenarios involving human lives and suffering. AWS by its very nature poses some serious questions around accountability. It is important to note that violations of international humanitarian law can only be legally attributed to a responsible party, be they individuals, military commanders or states, under the Geneva Conventions. No one truly responsible — this is the nature of autonomous systems: Who would you blame, the programmer, the manufacturer, the commander on the ground, or the state sending into battle? This "enforcement gap" is a real threat to enforcement of humanitarian norms and may drive impunity. International discussions

Some of those for the ban or strict regulation of AWS have had their discussions occur within the CCW. As such, although consensus remains lacking on a binding treaty, a large number of states, civil society actors, and experts are advocating for a preemptive ban or at the very least, strong safeguards that ensure that meaningful human control over the use of force can be ensured. Maintaining that control is viewed as necessary to enforce the defined moral and legal principles which the Geneva Conventions represent. Advocates assert that AWS may improve IHL compliance through reducing human fallibility, fatigue, and emotional bias, enabling targeted strikes with greater accuracy and fewer civilian casualties, despite these challenges. Yet this hopeful outlook relies almost exclusively on the functionality and transparency of these systems — still in development and vulnerable to cyber attacks and coding errors. To summarize, the Geneva Conventions, though robust at establishing the basics of conduct in armed conflict, were not

drawn with autonomous systems in mind. The culture that has sprung up around AWS exposes major gaps in legal, ethical and operational frameworks that must be closed. Absent such rules, AWS jeopardize the protections afforded by the Geneva Conventions, thereby underscoring the need for the international community to forge new legal instruments or protocols regulating the future conduct of war. Lethal autonomous weapons, which can select and engage targets without human intervention, undermine fundamental IHL principles including distinction, proportionality and accountability. Human decision making in the selection of targets is part of the foundation of the Geneva Conventions — an assumption that cannot apply to AWS (Leghari, et al., 2024).

Non-State Actors and Asymmetric Conflicts

The emerging landscape of non-state actors^[1] and the widespread use of asymmetric conflict are some of the greatest threats to the relevance and function of the Geneva Conventions of today. The Geneva Conventions were originally intended to regulate the conduct of warfare chiefly between nation-states with formal armed forces. Nonetheless, contemporary warfare increasingly involves irregular forces — insurgents, militias, terrorist groups, and other non-state armed actors who are often indistinguishable from the civilian population. While the quasi-legal status of non-state actors has long posed a challenge to IHL, they often operate in decentralized and fluid networks and may intentionally obscure the division between combatant and civilian, undermining compliance with the Conventions' bedrock principles (most notably the principle of distinction). Practices of many non-state groups deviate from IHL not just because of imperial practices unique to state actors but due to lack of ability or in some cases, because ideology or strategic calculus drives groups away from norms of IHL. This disrespect creates further harm for civilians and undermines the protective pillar of the Geneva Conventions.

Under IHL, the classification of non-state fighters is complicated. Although Common Article 3 of the Geneva Conventions establishes a bare minimum standard of humane treatment that applies to non-international armed conflicts between non-state groups, protections like prisoner of war status are largely limited to combatants in international armed conflicts. Such unequal treatment creates disparities in legal protection and real-world enforcement, ensuring that many victims find themselves without any effective means to seek redress against the offenses they experience. (Bakreski & Miovska, 2024).

At the same time, the accountability of non-state actors for violations of IHL remains a significant challenge. Unlike the formal aspects of the armed groups governed by these legal provisions, these groups frequently exist outside of recognized command structures and do not have formal means of enforcing discipline or cooperation with humanitarian actors, such as the ICRC. The transnational nature of traditional organized crime makes matters of jurisdiction and extradition all the more difficult. The principle of proportionality is also strained in asymmetric conflicts. When a state is confronted with an irregular actor embedded amongst the civilian population, it is likely to implement at least some components of a counterinsurgency campaign, such as sieges, curfews, or droning that often produce high numbers of indeterminate civilian casualties and damage. The Geneva Conventions offer little guidance here as how to balance security imperatives such as when one is dealing with the enemy with the humanitarian protections one ought to afford other in such contexts. In turn, international legal scholars and policymakers have urged that existing frameworks be adapted or new protocols created to meet the realities of asymmetric warfare.

These are increasing the protections for civilians, specifying the status and entitlements of irregular fighters, and increasing monitoring and enforcement mechanisms for all parties. In conclusion, non-state actors and asymmetric conflicts lay bare the fundamental weaknesses in the Geneva

Conventions with regard to both scope and enforcement. This makes the need for humanitarian law to keep up with these changing threats vital in order to protect civilian populations and the coherence of international legal standards of the 21st century. Non-state armed groups, including terrorists and insurgents, blur the boundaries of lawful competency when involved in conflict. Common Article three offers arguably only minor protections for non-international armed conflicts and has proven to be too vague to be useful in regulating contemporary insurgencies and transnational terrorism.(Plundrich, 2024).

Urban Warfare and Civilian Shielding

The continued prominence of urban warfare as one of the defining features of 21st-century armed conflict has created significant challenges for the implementation and certain dimensions of the efficacy of the Geneva Conventions. Urban warfare turns the entire battlefield into an environment where combatants and civilians are intermixed and living in very close proximity. This, in turn, makes it difficult under the essential IHL rules of distinction, proportionality, and the duty to take all feasible precautions to protect civilians [6]. ACMBriefing on Recent Developments in International LawVI. To: The Sinjar Agreement and the Fourth Geneva Convention and Additional Protocols¹⁴ But urban areas are of course not just more complex, but also bring civilians and civilian infrastructure/services and other elements into a more restricted and high risk environment. These combatants may use civilian-populated areas for military objectives, and thus, create mixed zones in which the difference between a legitimate military objective and a person or object covered by protection may not be clear. One even more concerning tactic is the use of civilians as "human shields." Human shielding is the deliberate placement of civilians in front of or near military targets — in order to prevent an attack on those targets, or to make it more difficult to target those targets. The misuse of human shielding breaches the Geneva Conventions, and the party that employs it is guilty of a war crime. It puts opposing forces in the morally wrenching circumstance of weighing military necessity against the obligation to spare civilians, sometimes creating tragic dilemmas and disputed judgments on the battlefield (Petrosyan, 2024).

Proportionality frightens some of the most hardened combat veterans — attacking forces are prohibited from committing incidental civilian casualties that would be excessive in relation to the anticipated concrete and direct military advantage gained by the attack. However, proportionality in urban warfare is difficult to ascertain. Military installations may be interleaved with civilian infrastructure—schools, hospitals and houses—or damage to critical infrastructure will have a humanitarian domino effect. While the requirement to take every prior precaution to spare civilians requires careful planning, intelligence, and weapon selection—the fog of war and technical limits often get in the way. Parties to the conflict are also required by international humanitarian law to ensure the rapid and safe passage of humanitarian assistance and evacuation of civilians. In contrast, many urban conflicts involve sieges, blockades, or other forms of restrictions that deepen civilian suffering and complicate relief efforts. While the Geneva Conventions demand unrestricted access for humanitarian agencies such as the International Committee of the Red Cross (ICRC), this is frequently contested or hindered in modern urban warfare. (Tsarenko, & Tsapyuk, (2025).

These urban warfare challenges highlight the urgent requirement to reconsider the applicability and enforcement mechanism of the Geneva Conventions. In addition to sound legal principles, lessons from evolving tactics and realities on the ground point to new directions, such as requiring additional training and discipline for combatants, emphasizing accountability for violations, and developing technologies that allow for more precise targeting. Ultimately, urban warfare sharpens the pre-existing frailties of civilian populations and reveals the inadequacies of the current

international humanitarian law. How to deal with these challenges is one of the essential questions that need to be answered to ensure that the humanitarian ethos within the Geneva Conventions continue to be upheld and the majority of the human cost arising from contemporary armed conflicts is brought down. More and more armed conflicts are being fought in large urban areas, with the use of civilians as human shields. While the Conventions offer these protections in regards to civilians, the mechanisms for enforcement and the challenges of attribution significantly undermine the ability for application of these protections.(Alkaher, et al., 2025).

Legal and Normative Gaps

Ambiguity in Scope and Application:

The definitions of words like armed conflict, combatant and protected person do not reflect the way that wars are fought today. An especially pernicious challenge to the effectiveness of the Geneva Conventions in today's wars is the uncertainty with which they are understood as covering and binding. The Conventions were a product of the era following the Second World War and focused on interstate war waged by clearly identifiable state actors backed by conventional armed forces. But the nature of warfare in the 21st century is so different that there are cases in which whether the Conventions even apply, or whether combatants who violate them can reasonably be said to have committed a war crime, is no longer a settled issue. One source of ambiguity is the categorization of conflicts. Based on that, the Geneva Conventions distinguish between international armed conflict (between states) and non-international armed conflict (between a state and non-state armed groups or between such groups).

Common Article 3 provides minimal protections for non-international conflicts but these protections are still much less comprehensive than those during international conflict. This gray zone is where many contemporary conflicts — such as civil wars, insurgencies or proxy wars — take place, making it difficult to know which rules apply. This vagueness is also even constant in categories of people. Nevertheless, Geneva Conventions do provide straightforward provisions on combatant and prisoner of war status for members of regular armed forces during international conflicts. Still, irregular fighters, terrorists, and insurgents generally do not fit these mold; therefore, they tend to exercise murky legal status when it comes to rights and protections. This raises pragmatic and ethical concerns around detention, trial, and treatment—which have been prominent in dealing with the likes of Al-Qaeda or the Islamic State in drawn-out conflicts. (Paraschivu, 2024).

Furthermore, new forms of warfare — including cyber operations, autonomy, and hybrid warfare — challenge long-standing notions of “armed conflict” or what is meant by “hostilities.” Some believe that cyber attacks which disrupt society but do not harm people are not armed attacks under the Conventions wGRA2 statement and thus do not trigger protections under the Conventions. Likewise, hybrid warfare — a combination of conventional, irregular, and cyber tactics — does not allow easy classification, thus creating challenges for a legal analysis and enforcement. This uncertainty is further complicated by the fact that the Geneva Conventions have a higher threshold for accountability and enforcement. Given the vagueness of the legal framework, States are able to dispute the nature of a conflict or that of combatants in an effort to evade the obligations that come with the law which undermines the humanitarian protections that the law seeks to promote. These disputes are an obstacle to credible investigations, humanitarian help, and the work of international institutions such as the International Criminal Court. Such ambiguity does not simply obstruct legal certainty but also threatens the moral credibility of the

Geneva Conventions themselves. To stay relevant, there is an urgent need to adapt legal definitions and frameworks which hold in a modern nature of conflict. The Geneva Conventions have since faced a major challenge to their effective application in modern warfare: the ambiguity surrounding the scope and application of the treaties themselves. Tackling the challenge would require alignment of effort to provide the legal clarity of categories, the re-situation of the conventions from what they were designed to be to what is required now and the muscle of humanitarian protection to be applied universally and substantially. (Rana, 2024).

Lack of Regulation for New Domains

The existing framework of the Geneva Conventions, which did not envisage these new arenas of warfare, faces critical challenges due to the rapid emergence of new domains of warfare particularly cyberspace and outer space. Although the Conventions prescribe exhaustive rules applicable to land, sea, and air warfare, the absence of such rules applicable to cyber and space operations poses considerable regulatory voids, ultimately challenging the sufficiency of the Conventions in 21st-century armed conflict [10]. Cyber warfare is an unprecedented realm through which an enemy can impact civilian infrastructure, government functions, and military command without the kinetic punch. The principles of the Geneva Conventions — distinction, proportionality and harm to civilians — are increasingly hard to uphold when attacks carried out by one cyber actor against another at the speed of the internet and may not always be visible as destruction or necessarily produce a number of (reported) casualties. Even more so, the attribution of cyber attacks is typically murky, leading to the difficulty of holding the guilty party accountable to the IHL. Just as with militarizing outer space meaning something new, many nuances. Satellites have an essential role in communication, navigation, intelligence, and also surveillance service in terms of civilian and military use. While space assets are critical to civilian populations, and any attack on them would likely result in both a humanitarian disaster and an urgent military necessity, the Geneva Conventions and related protocols provide little useful guidance on either the legality of space warfare or the protection of space-based infrastructure. Existing treaties, such as the Outer Space Treaty (1967), include some provisions aimed at peaceful uses of space by parties to the Treaty but do not establish comprehensive ground rules for scenarios involving armed conflict. (Emig & Schumacher, 2024).

These domains are also devoid of specific regulations which can cause legal uncertainty or loopholes that state and non state actors can exploit. Such a lack of regulation will lead to unchecked heightening, collateral damage, and disregard for humanitarian principles, with no clear pathways for reparation or preventative action. But international efforts to fill those gaps are limited, fragmentary and not legally binding. While initiatives like the Tallinn Manual for cyber operations and debates in the UN Group of Governmental Experts GGE attempt to clarify the application of existing IHL to new domains, comprehensive and binding norms continue to elude broad consensus. the indifference of the Geneva Conventions towards increasingly novel kinds of warfare⁷⁷⁸crucially renders the them ineffectual in their capacity of governing today wars. It is imperative to thus formalize cyber and space laws in a way that pertinent international humanitarian law can be used to protect against novel theatres of war. Without explicit protections for cyber warfare and weapons utilizing AI, huge swathes of humanitarian concern go unregulated (Hosseinkhani, et al.)

Weak Enforcement Mechanisms

One of the key shortcomings of the Geneva Conventions within the context of how wars are fought in the twenty-first century is their continued poor enforcement mechanisms, where

compliance and accountability are near impossible to ensure. Although the Conventions provide collective legal standards to safeguard individuals impacted by armed conflict, their actual impact relies on enforcement, an element that has historically tended to be fragmented and politicized and is thus often weak in practice. At the heart of the problem is the fact that it depends on state consent and voluntary compliance. While the Geneva Conventions obligate participating states, the implementation of such rules are dependent on domestic willingness and capacity of said state actors to implement the rules of war and hold its violators accountable. The difficulty in enforcement also comes from the fact that many non-state actors and others lumped into this category are actively seeking to undermine state authority and thus their ability to enforce any norms of behavior, and when there is no state or where the state is fragmented or failing it allows for violations on a mass scale with absolute impunity. International institutions such as the International Criminal Court ICC and ad hoc tribunals also contribute in the prosecution of war crimes, including grave breaches of the Geneva Conventions. The political context and the sovereignty of states, together with practical issues of enforcement cooperation, however, keep their jurisdiction within rather narrow limits. The jurisdiction of the ICC is also limited — some major powers have not ratified it or question its jurisdiction. Additionally, prosecutions take place many years later with less of a reverberation effect during ongoing conflicts. (Shanmugam, et al., 2025).

The Geneva Conventions look to the ICRC, in its traditional role as a neutral intermediary charged with monitoring compliance and offering humanitarian assistance. The ICRC does important work, but its task is of a humanitarian, not a judicial nature, and it has no coercive powers to ensure compliance or to punish breaches. However, in modern warfare, hybrid and proxy conflicts, cyber operations, and autonomous weapons further complicate enforcement, making it nearly impossible to establish who is responsible for the attack and whether they can be held accountable. It is not difficult to see that these ambiguities can be exploited by both state and non-state actors to evade responsibility. Moreover, geopolitical considerations tend to colour international reactions in which cases of violations that feed the strategic goals go unpunished. The absence of strong and universal enforcement mechanisms weakens the normative force of the Geneva Conventions to protect their intended victims. Absent real accountability for violations, we can expect parties to conflict to ignore their humanitarian obligations and, over time, we can expect the suffering to be renewed and the international legal order to unravel. need to reinforce enforcement mechanisms to ensure Geneva Conventions have relevance in contemporary wars. This calls for a strengthened multilateral focus, to embrace accountability institutions, transparency with respect to non-state entities, and new adapted mechanisms that respond to modern challenges of warfare. Although the Geneva Conventions were unmatched in their universal ratification, enforcement remains popularly and practically limited (Choi, et al., 2025).

Conclusion

The Geneva Conventions remain foundational pillars of international humanitarian law, embodying essential principles designed to mitigate human suffering in armed conflict. However, this research highlights significant challenges that question their sufficiency in addressing the complexities of 21st-century warfare. The evolution of warfare marked by the rise of autonomous weapons, cyber and space domains, asymmetric conflicts involving non-state actors, and urban battlegrounds has exposed critical gaps and ambiguities in the Conventions' scope, applicability, and enforcement. These findings matter profoundly not only to legal scholars and policymakers but also to all who value human dignity and the protection of civilians in conflict zones. The failure to adapt the Geneva framework risks diminishing its moral and legal authority, potentially

leading to unchecked violence and erosion of international norms. To address these challenges, there is an urgent need for international collaboration to clarify and expand legal definitions, develop binding regulations for emerging domains such as cyber and space warfare, and enhance accountability mechanisms. This includes ensuring meaningful human control over autonomous weapons and reinforcing protections for civilians in asymmetric and urban conflicts. Additionally, strengthening enforcement institutions and closing accountability gaps related to non-state actors are vital for upholding the rule of law in armed conflicts. Future research should focus on practical pathways to integrate new technologies within the existing legal framework, explore the role of international organizations in enforcing compliance, and assess the impact of emerging warfare tactics on civilian populations. Exploring comparative approaches across different legal systems and engaging with humanitarian actors can also provide valuable insights. Ultimately, revisiting and modernizing the Geneva Conventions is not merely a legal imperative but a moral one—ensuring that international humanitarian law remains a living instrument capable of protecting humanity amid the evolving face of war. The Geneva Conventions remain a vital legal and moral framework for protecting human dignity during armed conflict. However, their sufficiency in the face of 21st-century warfare is increasingly strained. To uphold the humanitarian spirit that underpins these treaties, the international community must embrace legal innovation, whether through reinterpretation, supplementary protocols, or entirely new agreements. Without such efforts, the gap between legal norms and battlefield realities will continue to widen undermining both the legitimacy and effectiveness of international humanitarian law.

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