



THE IMPACT OF TECHNOLOGY ON THE PRINCIPLES OF INTERNATIONAL HUMANITARIAN LAW

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Abstract

International Humanitarian Law (IHL) served as a cornerstone of global efforts to mitigate suffering during armed conflict. However, emerging technologies such as artificial intelligence, autonomous weapons systems, and cyberwarfare challenged the core principles of IHL, including distinction, proportionality, necessity, and humanity. This article explored how these technological advancements blurred the lines between combatants and civilians, increased the potential for civilian harm, and complicated assessments of proportionality. The paper highlighted the need for a comprehensive re-evaluation of IHL to ensure its continued effectiveness in the face of these evolving threats. It proposed strategies such as leveraging technology for monitoring and enforcement, adapting IHL to the digital age, and fostering international cooperation to create a more robust legal framework for regulating warfare in the 21st century.

INTRODUCTION

International Humanitarian Law (IHL), is a cornerstone of the global legal order, designed to mitigate the suffering caused by armed conflict. It is founded on the bedrock of principles of distinction, proportionality, precaution and necessity as it impacts the means and methods of armed conflict.¹ These principles, enshrined in treaties like the Geneva Conventions and their Additional Protocols, have served as the cornerstone of humanitarian protection for decades. However, the rapid pace of technological advancement in fields such as artificial intelligence, robotics, biotechnology, and cyber warfare, is fundamentally altering the nature of conflict. This changing nature of conflict, has brought with it new challenges regarding how IHL is applied, compliance, monitoring, and where necessary, prosecuting perpetrators of acts that run contrary to agreed IHL principles and laws.

¹ International Committee of the Red Cross

Recent challenges in conflict include the use of drones in conflicts such as Yemen and Syria has blurred the lines between combatants and civilians, raising serious concerns about the application of the principle of distinction.² Cyberattacks on critical infrastructure, as witnessed in Ukraine, have underscored the difficulty of assessing proportionality when the effects of an attack are far-reaching and unpredictable.³ Additionally, the increasing use of autonomous weapons systems pose profound questions about accountability and the feasibility of applying the principles of precaution and necessity.

As the digital revolution deepens, IHL and its implementation faces dire challenges. This article, examines the specific challenges posed by emerging technologies to the core tenets of IHL and explores potential avenues for adaptation. By understanding the interplay between technological innovation and the rules of war, we can work towards ensuring the continued protection of civilians and the preservation of human dignity in an increasingly complex and dangerous world. These developments, necessitate a critical re-evaluation of IHL to ensure its continued effectiveness in safeguarding human life and dignity. By examining the interplay between technological innovation and the core principles of IHL, this article seeks to identify the challenges posed by emerging technologies and to explore potential avenues for adapting IHL to address these challenges. This article will attempt to deepen understanding of the technological advances that impact the means and methods of war before discussing how these new methods impact the cornerstone principles of IHL. The paper will then take a closer look at what needs to be done for IHL to remain effective in modern warfare and therefore continue to mitigate the impact of conflicts.

EMERGING TECHNOLOGIES AND THEIR IMPACT ON MODERN WARFARE

The rapid evolution of technology has transformed the character of warfare. Emerging technologies such as artificial intelligence (AI), autonomous weapons systems (AWS), cyber space and the internet of things, biotechnology, and space-based systems, have led to the introduction of new methods and means of conducting hostilities. AI and AWS, for instance, have the potential to revolutionize warfare as seen in systems such as Israel's Iron Dome which employs AI to intercept incoming rockets while other systems in sync, acquire the locations from which these missiles are fired. These exemplify the rapid development of AI-driven

²Human Rights Watch, *Yemen: Civilian Deaths From U.S Drone Strikes* (Human Rights Watch, 2023).

³ Amnesty International, *Ukraine: Cyberattacks Targeting Critical Infrastructure*. (Amnesty International 2022).

defence systems.⁴ While there are positives for the protection of civilians and civilian objects in this system, there are nevertheless challenges with where retaliatory fire may be directed given these may have been fired from the midst of civilian locations without their consent. Moreover, the increasing employment of AWS, as seen in conflicts across the globe, raises significant ethical and legal questions about the use of force.

Cyberwarfare has irrevocably transformed the global security landscape, presenting unprecedented challenges to traditional concepts of warfare and international law. As a relatively new domain, it blurs the lines between state and non-state actors, making attribution of attacks difficult. The challenge of attribution is compounded by the nature of cyberspace.⁵ Unlike physical warfare, where evidence of an attack is often tangible, cyberattacks can be executed remotely, leaving very few traces that can be used to determine the origin of an attack. This ambiguity creates a permissive environment for states and non-state actors to operate with relative impunity, undermining international accountability. The NotPetya that took place in June 2017 which did not impact Ukraine, but affected shipping around the world and affecting nearly every country in the world⁶, exemplifies this issue. The NotPetya attack was designed to create destruction and while it may have targeted systems in Ukraine, it quickly spread globally exploiting vulnerabilities in commonly used software. The attack's global footprint was vast, indiscriminately hitting organizations across different sectors including Chernobyl's nuclear radiation monitoring system.⁷ Despite the devastating effect this attack had and the overwhelming circumstantial evidence of the attack, definitive attribution has remained elusive, hindering the application of international law to hold perpetrators responsible.

Moreover, the targeting of civilian infrastructure in cyberattacks raises profound ethical and legal questions. While traditional warfare adheres to principles of distinction between combatants and civilians, the digital realm offers attackers a wide range of targets, including power grids, transportation systems, and financial institutions. In our highly interconnected world today, these critical infrastructures often serve civilian populations, making them disproportionately vulnerable to collateral damage. The 2022 Colonial Pipeline ransomware

⁴ Singer, P.W, and Savitt, A. *Like War: The Weaponization of Social Media* Houghton Mifflin Harcourt. (McGraw-Hill, New York, 2019).

⁵Lopez T, *In cyber, differentiating between state actors, criminals is a blur*. News-Stories. May 14, 2021. <https://www.defense.gov>> Accessed 3rd August 2024..

⁶Greenberg A, *The Untold Story of NotPetya, the Most Devastating Cyberattack in History*, <<https://www.wired.com/story/notpetya-cyberattack-ukraine-russia-code-crashed-the-world/>> Accessed 3rd August 2024.

⁷ Ibid.

attack, which caused widespread fuel shortages in the United States, underscores the potential for cyberattacks to disrupt essential services and inflict significant human, economic, and societal costs.⁸ The 2017 WannaCry ransomware attack, which crippled critical infrastructure worldwide, serves as another stark reminder of the devastating potential of cyberattacks. While the attack was attributed to the Lazarus Group, a North Korean state-sponsored hacking group, the precise origins and motivations remain shrouded in uncertainty.⁹ With cyberwarfare emerging as a potent tool of state and non-state actors alike, the cyberattacks underscore the devastating impact of cyberattacks.¹⁰ The attribution challenge, complicated by our inability to separate state versus non-state actions, actions in a proxy war where the attacker is a non-state actor, significantly complicates the application of international law to cyber operations.¹¹

Similar to cyber warfare, biotechnology, while offering immense potential for human welfare, also carries significant risks. The development of synthetic biology, as exemplified by the creation of synthetic life forms, raises concerns about the potential misuse of these technologies for hostile purposes (National Academies of Sciences, Engineering, and Medicine.¹² Recent and anticipated innovations in synthetic biology, artificial intelligence, and nanotechnology have solved the weaponization, delivery, and precision problems that had previously made biological weapons impractical and technically kept biological warfare at the minimum.¹³ Biological warfare suffers the same challenges with identifying perpetrators once the biological agent is out. This makes it very difficult to hold perpetrators to account. Additionally, it is nearly impossible to limit the effect of the biological agent to combatants only. Although Rule 73 of the Additional Protocols covers biological warfare, recent advances in technology and the challenges these bring implies a need for review.¹⁴

Space-based systems have become indispensable for military operations in recent times. Global Positioning System (GPS) technology, for example, has revolutionized warfare by enabling precise navigation and targeting.¹⁵ However, there are other non-military systems that are

⁸ *Cybersecurity's Defining moments/ 7 lessons from History's most infamous Breaches- January 9, 2024.* <www.sentinelone.com> Accessed 3rd August 2024

⁹ Ibid

¹⁰ CISA. *WannaCry Ransomware*, (CISA, 2017).

¹¹ Sanger, D.E. *The Perfect Weapon: How Cyberattacks will Change Everything*. (Simon and Schuster, 2018).

¹² National Academies of Sciences, Engineering, and Medicine. *Gene Editing and Human Gene Drives: A Framework for Responsible Development* (National Academies Press, 2019).

¹³ Biberman Y, The Technologies and International Politics of Genetic Warfare, *Strategic Studies Quarterly*, Fall (2021).

¹⁴ Garwin, R.L. *GPS: A Global Positioning System*. (John Hopkins University Press, 2017).

¹⁵ Ibid.

dependent on these systems for their function. Key among these are autonomous or self-driving vehicles which are dependent on space-based technologies to remain safe, and avoid catastrophic accidents. However, the increasing militarization of space, as evidenced by the development of anti-satellite weapons, means such systems could be directly targeted, exposing passengers of autonomous vehicles to harm. This poses a new challenge to international security and stability (Office of the Director of National Intelligence).¹⁶

While many of these technologies can be used independently, we are witnessing a convergence of technologies to enhance outcomes in positive ways as well as make warfare increasingly more dangerous. The emergence of new technology in warfare is increasingly transforming the battlefield into a complex and dynamic environment, posing unprecedented challenges to international law and governance. Technologies such as artificial intelligence (AI), autonomous weapons systems (AWS), and cyber warfare have outpaced the development of legal frameworks to regulate their use. It has therefore become imperative that these are reviewed.

THE IMPACT OF EMERGING TECHNOLOGIES ON THE PRINCIPLES OF INTERNATIONAL HUMANITARIAN LAW.

While international humanitarian law (IHL) provides foundational principles for the conduct of armed conflict, its application to emerging technologies (as well as means and methods of warfare) is fraught with difficulties. The abstract nature of cyberattacks, for instance, challenges the traditional concepts of territory, occupation, and belligerent status.¹⁷ Similarly, the potential for autonomous weapons to make life-or-death decisions without human intervention raises profound ethical and legal questions about accountability and the principles of humanity and proportionality.¹⁸

The absence of clear and comprehensive legal frameworks for these technologies, creates a legal vacuum that can be exploited by states and non-state actors alike. This lack of regulation, coupled with the rapid pace of technological advancement, has significant implications for international security and humanitarian protection. To address these challenges, the

¹⁶ International Committee of the Red Cross, *New Technologies and Warfare*. <<https://www.icrc.org/en/law-and-policy/new-technologies-and-warfare>> Accessed 3rd August 2024.

¹⁷ Tallinn C, *Tallinn Manual on the International Law Applicable to Cyber Warfare*. (Cambridge University Press, 2013).

¹⁸ Ibid. n.16

international community must engage in concerted efforts to develop and implement effective legal and regulatory regimes for emerging technologies. This will require collaboration among states, international organizations, and other relevant stakeholders to establish common standards, build capacity, and foster a culture of compliance.¹⁹ Here we will look more closely at how the foundational principles of IHL – distinction, proportionality, necessity, and humanity – have been impacted by modern warfare.

The Principle of Distinction: One of the cardinal principles of the law of war is distinction. Based on the premise laid down in articles 48 and 52 of the 1977 Additional Protocol 1 of the 1949 Geneva conventions, the provision expressly enshrines that in order to ensure respect for and protection of the civilian population and civilian objects, the parties to a conflict shall at all times distinguish between civilian population and combatants.²⁰ Belligerents are also to distinguish between civilian object and military objectives and accordingly direct their operations only against military objectives.²¹ It is clear that neither the civilian population nor its object are legitimate targets in armed conflicts. However, various emerging technologies, including but not limited to unmanned aerial systems, Autonomous Weapon Systems, AI, cyber capabilities, have already begun to test the principle of distinction.

One of the most pressing concerns, is the blurring of lines between combatants and civilians. The increasing use of drones and other remotely piloted aircraft has complicated the identification of individuals on the battlefield.²² Civilian casualties may inadvertently occur due to misidentification, particularly in urban environments where the distinction between combatants and civilians is often ambiguous. Moreover, the rise of non-state armed groups, often indistinguishable from the civilian population, further erodes the principle of distinction.²³

The concept of military objectives has also been impacted by technological advancements. The use of precision-guided munitions (PGMs) while intended to minimize civilian casualties, can also target infrastructure essential for civilian life, such as power plants, water treatment

¹⁹ Shami E, *Analysis/ Avoiding Civilian Harm During Military Cyber Operations /Humanitarian Action/ New Technologies*. June 22, 2001. <icrc.org/law-and-policy/2021/06/22/risks-civilian-harm-cyber-operations>. Accessed 3rd August 2024.

²⁰ ICRC, *Study on Customary International Humanitarian Law (Articles 48, and 52, Additional Protocol 1977, Rules 1 and 7.)*, (ICRC, 2005).

²¹ Diakonia International Humanitarian Law, *The Principle of Distinction* Centre. <<http://www.diakonia.se>> Accessed 3rd, August 2024.

²² Ibid. n. 16.

²³ Ibid.

facilities, and hospitals, potentially qualifying them as civilian objects. Additionally, cyber warfare has introduced new challenges, as attacks on critical infrastructure, such as power grids or communication networks, can have severe humanitarian consequences, blurring the lines between military and civilian objectives.²⁴

The convergence of technologies exacerbates these issues. For example, the integration of artificial intelligence (AI) into autonomous weapons systems raises concerns about the ability of machines to accurately distinguish between combatants and civilians. Furthermore, the use of big data and predictive analytics can be employed to identify potential targets, but there is a risk of inadvertently targeting civilians based on patterns of behaviour or social media activity.

The rapid evolution of technology has created a complex and challenging environment for the application of the principle of distinction. The blurring of lines between combatants and civilians, the difficulty in identifying military objectives, and the increased potential for civilian harm necessitates a critical re-examination of IHL. International cooperation is essential to develop new norms and standards to address these challenges and ensure the protection of civilians in armed conflict.

The principle of proportionality: The principle of proportionality, closely linked to distinction, is also impacted. The increasing lethality of weapons, coupled with the challenges of assessing the military advantage of an attack against the expected civilian harm, makes it difficult to comply with this principle. The use of cyber weapons, for instance, can have cascading effects, leading to unintended civilian casualties.

The principle of proportionality, is important for protecting civilians and critical infrastructure in situations of armed conflict. The principle is codified in Article 51(5)(b) of the Additional Protocol 1, it stipulates that an attack is disproportionate, and thus indiscriminate, if it may be expected to cause incidental loss of 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.²⁵ The emergence of new technologies presents significant challenges in assessing proportionality in contemporary armed conflicts.

²⁴ Ibid. n. 17.

²⁵ ICRC, *Study on Customary International Humanitarian Law (Articles 48, and 52, Additional Protocol 1977, Rules 1 and 7.)*, (ICRC, 2005)..

One major difficulty lies in Precision-guided munitions (PGMs) which have revolutionized warfare, increasing accuracy and minimizing collateral damage. However, their use has also led to the expansion of the concept of military objectives, often resulting in the targeting of infrastructure essential for civilian life.²⁶ For instance, the destruction of bridges, power plants, and water treatment facilities, while potentially disrupting military operations, can also have severe humanitarian consequences, disproportionately affecting the civilian population.²⁷

Cyber warfare presents even greater challenges to the proportionality principle. The intangible nature of cyberattacks, coupled with the difficulty in predicting and assessing collateral damage, makes it challenging to determine whether an attack is proportionate to its military advantage. The NotPetya cyberattack, for example, while primarily targeting Ukrainian government and financial institutions, had widespread impact on civilians not just in Ukraine, but globally. The consequences of the attack included disruptions to critical infrastructure and economic losses.²⁸

The use of artificial intelligence (AI) in autonomous weapons systems raises concerns about the ability of machines to accurately assess the proportionality of an attack in real-time.²⁹ Additionally, the increasing reliance on cyber-enabled intelligence, surveillance, and reconnaissance can lead to the identification of potential targets based on algorithms and data analysis, without fully considering the potential civilian impact.

Biological weapons, though prohibited under international law, pose a unique challenge to the proportionality principle. The potential for widespread and indiscriminate harm to civilians, coupled with the difficulty in containing the effects of such weapons, makes it virtually impossible to conduct a proportionate attack using biological agents. Although Additional Protocol 1 Article 51(4) of the Geneva Conventions amongst other rules and articles address the use of indiscriminate weapons and attacks, the potential still exists especially when it is difficult to trace perpetrators. The emerging domain of space warfare also raises proportionality concerns. The potential for anti-satellite weapons to disrupt critical infrastructure, such as

²⁶Liivoja R, Technological change and the evolution of the law of war, *International Review of the Red Cross* Vol. (9), No, (900), (2015), p. 113.

²⁷ Ibid. n. 16.

²⁸Sanger, D. E. *The Perfect Weapon: How Cyber Attacks Will Change Everything*. (Simon and Schuster, 2018).

²⁹ William H. B, *Weapons and The Law of Armed Conflict*, (Oxford University Press, 2009) p. 9.

communication and navigation systems, with cascading effects on civilian populations, highlights the difficulty in assessing proportionality in this context.

The principle of necessity: The fourth principle of IHL, necessity, permits military actions that are essential for achieving a legitimate military objective. The 1968 St Petersburg Declaration, for example, explicitly recognize the need to strike such a balance, seeking to fix the technical limits at which the necessities of war ought to yield to the requirement of humanity.³⁰ Military necessity, allows armed forces to engage in actions that would otherwise be prohibited under IHL, provided they are essential for achieving a legitimate military objective. This principle, however, is not absolute. It must be applied with proportionality and humanity, ensuring that the harm caused is not excessive in relation to the expected military advantage.³¹ The advent of modern technology has significantly influenced the application of the necessity principle, introducing both challenges and opportunities for its interpretation and implementation. Technologies such as drones and missiles have increased the accuracy of targeting, allowing for more precise strikes on military objectives, potentially reducing civilian casualties. However, even with improved precision, the complexity of modern warfare and the potential for human error can still lead to unintended civilian harm.³²

The increasing reliance on digital infrastructure for critical national functions has transformed the battlefield into the cyberspace. Cyber warfare, characterized by the use of computer and network tools to attack an adversary's information systems, has raised complex questions about the applicability of traditional IHL principles, including necessity. The principle of necessity in cyber warfare is particularly challenging due to the intangible nature of the target and the potential for collateral damage. To justify a cyberattack under the principle of necessity, a state must demonstrate that by defining military objectives. Unlike physical warfare however, identifying a legitimate military objective in cyberspace can be ambiguous. Critical infrastructure, for example, often serves both civilian and military purposes. Determining the perpetrator of a cyberattack can be complex, hindering the ability to assess the legality of the attack under the principle of necessity.

³⁰ Declaration Renouncing the use, in Time of War, of Explosive Projectiles under 400 Grammes weight pmbl, Nov. 29, 1968, 18 Martens Nouveau Recueil

³¹ Australian Red Cross, *A Delicate Balance of Humanity and Military Necessity*. <www.redcross.org.au> Accessed 3rd August 2024.

³² Doctors Without Borders, *Military Necessity: The Practical Guide to Humanitarian Law Guide* <law.org.www.britannica.com> Accessed 3rd August 2024.

The principle of necessity remains a critical component of IHL, but its application in the age of technology is increasingly complex. While technology offers opportunities to minimize civilian harm, it also introduces new challenges and ethical dilemmas. Striking a balance between military necessity and humanitarian imperatives is essential for ensuring the effective and lawful conduct of armed conflict.

The principle of humanity: The principle of humanity, is another fundamental tenet of IHL. Article 57(1) of the Additional Protocol 1, asserts that in the conduct of military operations, constant care shall be taken to spare the civilian population, civilians and civilian objects.³³ This principle seeks to mitigate the brutality of armed conflict and protect the dignity of human life. However, the advent of new technologies, methods, and means of warfare has significantly challenged the application of this principle.

Autonomous weapons systems (AWS), enabled by artificial intelligence (AI), raise profound questions about the principle of humanity. The potential for machines to make life-or-death decisions without human intervention, challenges the fundamental notion of human control over the use of force.³⁴ The removal of the human element from the decision-making process can lead to a detachment from the consequences of armed conflict, potentially eroding the respect for human dignity inherent in the principle of humanity.

Cyber warfare also poses significant challenges to the principle of humanity. While physical injuries may be less apparent in cyberattacks, the economic and societal consequences can be devastating, causing immense suffering. Again, the NotPetya cyberattack, and others mentioned earlier serve as examples of attacks that disrupted critical infrastructure worldwide, inflicted significant hardship on civilians and businesses.³⁵

The ability to target specific individuals with high accuracy using Precision Guided Munitions (PGMs) can create a sense of detachment from the consequences of warfare, potentially desensitizing combatants to the suffering caused. Moreover, the use of PGMs against civilian

³³Article 57(1), Additional Protocol 1(1977) to the Geneva Convention of 12 August 1945.

³⁴Shane R. and Johnson R V W J, Autonomous Weapons: Can We Talk About It? *Army Lawyer*, Vol. (014), No (4), (2014), p.7.

³⁵ Ibid. n. 28.

infrastructure, such as hospitals and schools, can have a profound impact on the civilian population, undermining the principle of humanity.

Overall, the cornerstone principles of International Humanitarian Law (IHL) – distinction, proportionality, necessity, and humanity – are under severe strain due to advancements in military technology. The increased lethality of modern weaponry, coupled with the expansion of what constitutes a military objective, has made it increasingly difficult to spare civilians from harm, undermining the principles of proportionality and humanity. The complex nature of cyber, biological, and space warfare further blurs the lines between civilian and military targets, exacerbating these challenges. Moreover, the capacity to inflict widespread damage with minimal resources jeopardizes the principle of necessity, as the use of force beyond what is strictly required becomes more tempting. This calls for action to make the necessary changes to uphold IHL in modern warfare.

ENHANCING IHL IN MODERN WARFARE

The evolving nature of emerging technologies, convergence of these technologies and emerging means and methods of warfare necessitates a comprehensive rethinking of international law and norms that govern warfare. Existing treaties and conventions, primarily designed for conventional warfare, may be inadequate to address the unique challenges posed by evolving battlespaces due to technology. Developing clear rules of engagement, establishing international mechanisms for attribution and accountability, and strengthening international cooperation are essential steps towards mitigating the risks associated with technologically driven evolution of today's battlespace. Some of the ways these could be achieved include leveraging existing and evolving technology, adapting IHL for the digital age, and strengthening international cooperation on IHL.

Leveraging Technology: To effectively safeguard civilians in the face of evolving warfare, a multifaceted approach is essential. Firstly, enhancing monitoring and enforcement is crucial. By leveraging technology, such as social media platforms for crowd-sourced reporting and advanced data analytics for evidence gathering, it's possible to create a comprehensive oversight system. Establishing independent monitoring bodies empowered to regulate the development and use of technology in warfare is also vital.

Adapting IHL to the digital age: It is imperative to adapt IHL to the digital age as the world continues to become more digital. This involves incorporating IHL principles into the design of autonomous weapons systems and implementing robust automated reporting mechanisms within digital infrastructures. This will require significant lobbying and a shift in approach for one where countries are the target audience to one where multinational technology companies wield significant power and have a much bigger say in how technology evolves. Most governments, including developed countries, lack the cutting-edge man-power required to effectively regulate the technology companies that are having a huge impact on the evolution of warfare. By leveraging technology and expanding the stakeholders, the International Community could begin to use technology to regulate, monitor, and report, effectively mitigating the risks posed by emerging technologies.

Building Capacity and Fostering International Cooperation: While fostering international cooperation among governments has been a cornerstone of IHL, the landscape has evolved. Today, multinational corporations wield significant influence over the tools and technologies that shape the conduct of armed conflict. Their software, hardware, and services can directly impact the application of IHL principles, from the targeting of military objectives to the protection of civilians. Therefore, it is imperative to expand the scope of international cooperation to include these influential corporations. This requires investing in training, education, and public awareness to ensure that these entities understand and adhere to IHL principles. Additionally, establishing strong partnerships between governments, international organizations, and multinational corporations is crucial for sharing expertise, resources, and best practices. By working collectively, we can create a more resilient and effective framework for safeguarding human life in the 21st century. This integrated strategy, combining technological advancements, legal adaptation, and global cooperation, is essential to address the challenges posed by emerging technologies and ensure the continued protection of civilians in armed conflict.

CONCLUSION

In conclusion, the rapid advancement of technology has fundamentally altered the landscape of modern warfare, presenting unprecedented challenges to the core principles of International Humanitarian Law (IHL). The blurring of lines between combatants and civilians, the difficulty in assessing proportionality, and the potential for widespread harm through emerging technologies such as autonomous weapons systems and cyber warfare, demand a

comprehensive reevaluation of IHL To ensure the continued protection of civilians and the preservation of human dignity in the 21st century, the international community must adopt a multifaceted approach. By leveraging technology for monitoring and enforcement, adapting IHL to the digital age, and fostering international cooperation, we can create a more robust legal framework for regulating warfare. While the challenges posed by emerging technologies are significant, it is imperative to remember that IHL remains the cornerstone of humanitarian protection. By proactively addressing these challenges, we can ensure that IHL continues to serve its vital function in mitigating the suffering caused by armed conflict.