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Impact of Contemporary Weapons and Technology on International Humanitarian Law: A Case For Consideration

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Abstract

The principles and rules of IHL have always sought to ensure that there is fairness between combatants and that its primary role of protecting civilians is achieved. The world today is experiencing rapid developments in nearly every sphere of human life including the means and methods of warfare. Artificial intelligence technology has dramatically informed the tactics and strategies of warfare. In the present day and age, there are autonomous artillery and armaments, unmanned aircraft, militarized drones and other novel weapons. This precipitates a new legal issue in International Humanitarian Law. Besides, IHL is yet to develop to adequately and comprehensively address the legal and ethical issues caused by the contemporary emergence of these new weapons and technologies. This is because the antecedent rules, principles and conventions were suited for the previous context that was characterized by the traditional or conventional means of warfare. The emerging issues are not captured well in the prevailing international humanitarian legal regime on regulation of warfare. Besides, while article 36 of the Additional Protocol 1 speaks to the employment of new weapons, means and methods of warfare, it does not comprehensively address the emerging challenges. This is because top military giant States Parties have sought to defy the obligation under the article which requires States Parties, when developing or acquiring new

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weapons, to assess whether such weapons comply with the laid rules and principles of IHL. Moreover, autonomous weapons might not have emotions like a human combatant, to enable them observe the customary international humanitarian law principles of distinction, unnecessary suffering, prohibition of indiscriminate attacks, humanity and others. They may fail with unimagined implications in the aftermath particularly where the autonomous weapons are very lethal by their design. It is against this background that this paper makes an assessment of the effectiveness and efficiency of existing IHL rules and conventions in addressing the issues precipitated by the contemporary technologies and weapons in the context of armed hostilities. The paper offers recommendations in its conclusion which, when adopted, would make the IHL rules not only relevant but also effective and adequate in addressing the existing challenges posed by new technologies and weapons.

1.0 Introduction

On the 22nd of September 2016, key government representatives of various States met in Seoul to discuss the challenges associated with the new technology and weapons concerning the International Humanitarian Law.[1] Approximately 60 persons, including agents of their respective governments, some members of academia in International Humanitarian Law, and ICRC's legal experts from across the Asia-Pacific region, attended a two-day conference organized by the ICRC. This was the fifth meeting on International Humanitarian Law held in the region and was designed to revamp comprehension of the challenges posed by the novel technologies adopted in armed combat in the interpretation and application of international humanitarian law. Technological advancements in this information age have resulted into the emergence of autonomous weapons, armed drones, unmanned military aircraft, weaponized androids, sentry weapons and surveillance controls, with the consequence of arousing novel and revolutionary fears on the adequacy of the existing IHL rules and principles in addressing the challenges precipitated by such new warfare

[1]The Conference offered a chance for discussions regarding the impact of new technology which the rules of IHL do not effectively regulate. See *https://www.icrc.org/en/document/asia-new-weapons-international-humanitarian-law* , for the details of the conference.

technologies.[2] However, with regard to article 36 of the Additional Protocol 1, States Parties are required to ensure that they satisfy the test of IHL when acquiring or developing new weapons.[3] Therefore, a State Party can only validate weapons which comply with IHL rules and principles. However, the very States mandated to observe and uphold the rules and principles of IHL have been at the core of building weapons which contravene the IHL rules. This has been done especially by military giants such as the US, Russia, South and North Korea and Japan.

Besides, there was a consensus among the participants in Seoul that the rapid advancements and developments in science and technology over the past few decades had culminated into development of new warfare means, tactics and strategies. Such strategies include cyber-attacks, armed drones and robots and these precipitated significant humanitarian and legal problems. The participants conceded that it is essential to conduct regular consultations on the obstacles caused by the novel warfare technology, particularly those that are heavily reliant on communication networks, artificial intelligence and nanotechnology.[4]

An Associate Professor at the University of Queensland Law School, Rain Liivoja stressed the importance of consistent interaction between legal experts, policy-makers, and the developers and users of the emerging warfare technologies. ICRC's legal adviser for the East Asia region, Richard Desgagne stated that the sovereign states ought to evaluate their compliance with the international humanitarian law.[5] He emphasized the need for states to take into consideration the established rules and satisfy themselves that they are unequivocal when considered against the background of the emerging warfare technologies and its potential implications. However, the

[2] International Committee of the Red Cross, 'Impact Of New Technologies And Weapons On International Humanitarian Law' (*International Committee of the Red Cross*, 2022) <*https://www.icrc.org/en/document/asia-new-weapons-international-humanitarian-law*> accessed 6 October 2022.
[3] Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol 1) (Adopted 08 June 1977, entered into force 07 December 1979).
[4] Ibid
[5] Ibid.

representative of ICRC in the Republic of Korean, Gianni Volpin, noted that greater emphasis should be placed on employing the warfare technologies in a manner that is consistent with International Humanitarian Law, rather than whether or not they are inherently good or bad.[6]

Therefore, going by comments of the participants of the Seoul conference, new technologies and weapons pose an enormous novel threat to the underlying principles of IHL, a threat which the existing conventional rules of IHL cannot remedy. This paper will therefore assess the effectiveness of IHL rules with regard to contemporary technologies and weapons. Besides, it offers recommendations through its conclusion for ensuring competence of the existing rules as against these new weapons.

2.0 Conceptualizing Contemporary Weapons And Technology

There is no universally accepted definition of "contemporary weapons and technology". Macksey defines contemporary weapons and technology as the concepts, methods, and military technology that have come into use during and after the first and second World Wars.[7] However, this definition is too general making its adoption and application problematic.[8] Arkin describes modern weapons as those that have arisen from modern technology. Modern technology can be assimilated to the 21st systems of technology which have improved the 20th century methods and means of warfare.[9] These weapons have more devastative and far reaching effects. Besides, they are more effective and efficient in terms of operations. Their effectiveness has seen States adopt them to avoid being left behind and also avoid surprises during hostilities. The rationale underlying the concepts and methods of 19th and 20th century's complex warfare which is highly influenced by rapid advancements in information technology is that there is a need for combatants to harness the emerging technologies to ensure that their war

[6] Ibid.
[7] Kenneth Macksey, 'Technology in War: The Impact of Science on Weapon Development and Modern Battle' (May 31,1986) Prentice Hall Press.
[8] Ronald Arkin, 'Lethal Autonomous Systems and the Plight of the Non-combatant: The Political Economy of Robots' (2018)Palgrave Macmillan 317-326.
[9] Ibid

tactics and methods are effective for combat.[10] This has therefore been the key reason for the advancements of new technologies in military warfare thus the emergence of complex weapons capable of displacing human personnel on the ground.

3.0 Contemporary Weapons in Warfare

3.1 Sentry Weapons

Sentry weapons use sensors to detect harm, then automatically aim and fire at targets. Once an object that is unwarranted appears, the weapon automatically starts firing by use of the implanted sensors. Other sentry weapons are triggered by touch and once an object tampers with the physical position of the weapon, it starts firing at random. Some of the sentry weapons in the world today include the Samsung SGR-A1. This weapon is designed to replace human counterparts in the demilitarized or neutral zone at the South and North Korean border. It is a stationary system developed by the Samsung defense subsidiary - Samsung Techwin.[11]

Sentry weapons are mostly triggered by the very powerful sensors capable of detecting any foreign object within their environment. These weapons however pose a novel danger to IHL especially on the principles of humanity, distinction, unnecessary suffering and cannot distinguish between clear targets and civilians. Besides, combatants who have been rendered hors de combat cannot be spared by such machines since they do not possess full human intelligence.

3.2 Armed Drones

Armed drones are also known as unmanned **combat aerial vehicles** (**UCAV**), combat **drones,** or simply **drones.** These are unmanned aerial vehicles (UAV) that are used to launch drone strikes and primarily ferry aircraft military ordinances including missiles, sensors and target

[10] Supra note 9

[11] Alexander Valez-Green, 2015. *The Foreign Policy Essay: The South Korean Sentry—A "Killer Robot" to Prevent War*. [online] Lawfare. Available at: *<https://www.lawfareblog.com/foreign-policy-essay-south-korean-sentry%E2%80%94-killer-robot-prevent-war>* [Accessed 1 October 2022].

designators. Normally, the aircrafts do not have human pilots on-board. The drones are guided autonomously by a remote control with varying degrees of autonomy.[12] They are used in drone strikes.[13] The operators of the unmanned aircrafts use remote terminals to control the drones and therefore equipment such as cockpit, armor, ejection seat, flight controls, and environmental controls for pressure and oxygen which are meant for use by human pilots are needless hence absent. Effectively, the armed drones are relatively lighter and smaller than aircrafts manned by human pilots.

As of December 2015, only the United States, Israel, China, Iran, Italy, India, Pakistan, Russia and Turkey have manufactured operational UCAV.[14] However, these are the few known ones. There are several other countries who possess and manufacture unmanned UAV. Without human intervention, the UAV can autonomously initiate an attack. While the UAV can possibly react more quickly and without bias, they lack human sensibility.[15] As observed by Heather Roff, the Lethal Autonomous Robots (LARs) may be inappropriate for complex conflicts and there is a possibility of an angry backlash from the targeted populations.[16] Mark Gubrud posits the arguments that since drones are autonomous and not subject to human control, they are susceptible to hacking. He states that because drones are semi-autonomous,

[12] Luan Yichun, Xue Hongjun, and Song Bifeng, 'The Simulation of the Human-Machine Partnership in UCAV Operation' College of Aeronautics, Northwestern Polytechnic University, Xi'an 710072, China. Accessed October 1, 2022.
[13] *Caroline Kennedy and James Rogers,*'Virtuous drones?'(2015) 19(2) *The* International Journal of Human Rights,211–227.
[14] *Baykar Technologies (17 December 2015). "17 Aralık 2015 – Tarihi Atış Testinden Kesitler" – via YouTube.*
[15] Joshua Foust, *Why America Wants Drones That Kill Without Humans* (October 8, 2013).
<https://www.defenseone.com/technology/2013/10/ready-lethal-autonomous-robot-drones/71492/#:~:text=The%20U.S.%20wants%20smarter%2C%20more,By%20Joshua%20Foust&text=Scientists%2C%20engineers%20and%20policymakers%20are,range%20and%20better%20staying%20power> accessed October 1, 2022.
[16] Ibid

in the event that they are hacked, human controllers would intervene and take control.[17]

Other commentators have argued that the moral responsibilities that human beings have at every stage of warfare should not be obscured by autonomous weapons' technological capabilities.[18] Currently, a discourse is underway regarding the appropriateness of the existing International Humanitarian legal regime in apportioning responsibility in the context of the use of autonomous weapons. It is feared that the existing four principles namely, military necessity, distinction between military and civilian objects, prohibition of unnecessary suffering and proportionality are inadequate to regulate the ethics of warfare where the modern warfare technologies are in use.[19]

In 2009, the *Guardian Newsletter* reported that six Israeli unmanned aerial vehicles or drones caused at least 48 fatalities in Gaza involving all of them being civilians.[20] These reports were investigated by the Human Rights Watch which established that the Israeli forces failed to take all reasonable precautions to verify that the targets were combatants or that they failed to make the distinction between civilians and combatants.[21]

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[17] Joshua Foust, *The Science Fiction of Dronephobia*, (2022) Joshua Foust. *<https://joshuafoust.com/writing/essays/the-science-fiction-of-dronephobia/>* [Accessed 29 September 2022].

[18] Susanne Burri, 'What Is the Moral Problem with Killer Robots?' In Bradley Jay Strawser, Ryan Jenkins, and Michael Robillard (eds) *Who Should Die? The Ethics of Killing in War (Oxford Academic* (Online edn. 2017) *<https://doi.org/10.1093/oso/9780190495657.003.0009>* accessed 5 Oct. 2022.

[19] Ibid.

[20] Clansy Chassay, 'Cut to Pieces: The Palestinian Family Drinking Tea In Their Gaza City Courtyard' (*the Guardian*, 2009) *<https://www.theguardian.com/world/2009/mar/23/gaza-war-crimes-drones>* accessed 23 September 2022.

[21] Human Rights Watch, 'Precisely Wrong: Gaza Civilians Killed by Israeli Drone-Launched Missiles'(June 2001) *<http://www.hrw.org/>* Accessed 828 September2022.

The US drone program in Afghanistan is also alleged to have violated the warfare ethics particularly failing to comply with the principle of distinction. For instance, in a 2010 US military operation in Uruzgan Province in Afghanistan, at least 10 civilian passengers were attacked by a military drone that was remotely controlled by the US military. These were innocent civilians going about their normal business and they included women, children, infants and adolescents.[22]

In 2009, The Bureau for Investigative Journalism claimed that nearly 146 non-combatants, 9 of whom were children had lost their lives to drone strikes in 2011. Similar allegations of killing of civilians by drone strikes were reported by the Colombia Law School's Human Rights Clinic and the Pakistani Organization Pakistan Body Count. All these civilian casualties have been documented at the New America Foundation. In the Obama administration alone, there were between 150 to 500 drone casualties.[23]

4.0 The Legal Framework for New Technology and Weapons

4.1 The Additional Protocol 1

Lack of regulation of the new weapons and warfare technologies necessitated the creation of the Ad Hoc Committee of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law applicable in Armed Conflicts (CDDH). The committee was designed to explore adequacy of the existing legal framework on the use of new weapons. The Committee's performance in this role was boosted by two conferences organized by the ICRC at Lugano in 1974 and Lucerne in 1976.[24]. The proposal by the committee birthed Article 36 which provides that in light of its obligations under the International Humanitarian Law, a state should put in place a mechanism to keep watch on the development of

[22] David Cloud, 'Anatomy of An Afghan War Tragedy' (*Los Angeles Times*, 2011) <*https://www.latimes.com/archives/la-xpm-2011-apr-10-la-fg-afghanistan-drone-20110410-story.html*> accessed 28 August 2022.
[23] Daniel Byman, 'Why Drones Work: The Case for Washington's Weapon Of Choice' (*Brookings*, 2013) <*https://www.brookings.edu/articles/why-drones-work-the-case-for-washingtons-weapon-of-choice/*> accessed 30 September 2022.
[24] Justin McLeod, The review of weapons in accordance with Article 36 of Additional Protocol I

armaments. States would monitor the development of weapons by reference to its obligations under international humanitarian law.

However, it was feared that the article was inadequate which led to the creation of the 1980 United Nations 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 (CCW). This convention brought about two important features. The first was the mechanism for surveilling the fatality of weapons and the second was a framework convention. The latter has provisions that specifically address issues pertaining the use of weapons of particular concern to the international community. However, compliance with the IHL rules and principles by States is still problematic.[25] States such as the US, Russia, Japan and North Korea have since remained adamant to stand by the provisions of these laws.[26]

4.2 Additional Protocol II

Some form of incentive was essential to ensure compliance with the CCW and the CDDH. The landmine issues which were extensively explored in the First Review Conference provided such an incentive with regards to the CCW. This conference led to the development and adoption of the Additional Protocol II.[27] The Additional Protocol proscribes the deployment of booby traps, mines and related devices in cases of armed conflict. However, this is inadequate to control the use of contemporary autonomous weapons.

4.3 Ottawa Convention

The Additional Protocol II was then followed relatively quickly thereafter by the Ottawa Convention.[28] This convention regulates the use, stockpiling,

[25] Ibid
[26] Ibid
[27] Ibid.
[28] The 1997 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction is the international agreement that bans antipersonnel landmines (Adopted 3 December 1997, entered into force on 1 March 1999).

production and transfer of anti-personnel mines destructive to humans. Current developments within the CCW have seen the continuation of discussions on mines, as well as the emergence of the issue of explosive remnants of war. Just like the Additional Protocol 1, the Ottawa convention however does not fully regulate new weapons and technologies. The International Humanitarian Law on regulation of the means of warfare, also known as ICRC's SIrUS Project was essential in rejuvenating the assessment of weapons.

4.4 The ICRC's SIrUS Project

The SIrUS Project, an ICRC conference on "The Medical Profession and the Effects of Weapons" held in Montreux in March 1996, established the essence of objectively defining which particular weapons were inherently repugnant and which ones occasioned superfluous injury and unnecessary suffering. The conference served as an impetus for the development of the SIrUS Project.[29] The project's name SIrUS derives from the proscription on employing "weapons, projectiles and material and methods of warfare of a nature to cause **S**uperfluous **I**njury **or U**nnecessary **S**uffering".[30]

Fundamentally, the SIrUS Project's approach to the weapons issues is premised on the understanding that since weapons' lethality depends on their respective designs, their impact is reasonably foreseeable. The project gives paramount consideration to the effects of weapons over and above nature, and the weapons typology or technology. A thorough examination of the data gathered from hospitals by the ICRC led to formulation of criteria for determining whether or not the design-dependent effects of weapons fall into the category of superfluous injury or unnecessary suffering. That is whether the impact of the weapons led to:

[29] Robin M Coupland, *The Sirus Project : Towards A Determination Of Which Weapons Cause "Superfluous Injury Or Unnecessary Suffering"* (International Committee of the Red Cross 1997).

[30] Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol 1) (Adopted 08 June 1977, entered into force 7 December 1979), art. 35(2).

a. a specific disease, specific abnormal physiological state, specific abnormal psychological state, specific and permanent disability or specific disfigurement; or

b. field mortality of more than 25% or a hospital mortality of more than 5%; or

c. Grade 3 wounds as measured by the Red Cross wound classification scale; or

d. effects for which there is no well-recognized and proved treatment

However, this test had a lot of flaws and did not in any way relate to the regulation of contemporary technology sufficiently. At a meeting of government experts in Jongny-sur-Vevey, Switzerland, criticisms emerged in relation to the test of a medical and legal nature.[31] The legal concerns and criticism caused the greatest unease. The proposal in the SIrUS Project ignored the requirement to balance such medical factors as those contained in the criteria above against the military necessity to use a particular weapon. Without determining what is militarily necessary, it will not be possible to establish whether injuries are superfluous or whether the suffering is unnecessary. Therefore, it solved only half the equation. Therefore, the IHL rules remain, by far, insufficient to handle the current crisis associated with contemporary technology and weaponry.

[31] Isabelle Daoust, 'ICRC Expert Meeting On Legal Reviews Of Weapons And The Slrus Project' (2001) 83 International Review of the Red Cross *<https://international-review.icrc.org/sites/default/files/S156077550010584Xa.pdf>* accessed 28 September 2022.

5.0 The Key Principles of IHL With Regard to Contemporary Weapons and Technology

5.1 The Principle of Distinction

The premier rule of customary international law is that the parties engaged in armed conflict must at all times make a distinction between civilians and combatants and that the attacks in the context of armed conflict must be directed only to combatants not to civilians. This rule has been entrenched by state practices as a rule of customary international humanitarian law with wide application in cases of both international and transnational armed conflict.[32]

This rule may be broken down into three distinct but interrelated constituent components. The state practice relating to each component either reinforces or diminishes the validity of the others. In this context, the phrase combatant is given its general meaning – a person not enjoying the protection given to civilians. However, it does not include or imply the right to combatant status or prisoner-of-war status. The rule must also be read and understood in light of the proscription on attacks against persons recognized as *hors de combat*[33] and the rule protecting civilians from attack unless the civilians are directly and actively participating in combat.[34]

The principle of distinction between combatants and civilians is now entrenched in Protocol I and no reservations have been made to it.[35] The Protocol defines "attacks' as "acts of violence against the adversary, whether in offense or in defense."[36] However, this principle has been defined by new weapons and technologies. *The Guardian* in March 2009, alleged that 48 civilians of Palestinian descent had suffered death due to strikes by

[32] International Committee of the Red Cross, Customary International Humanitarian Law (CIHL), Rule 1.
[33] Ibid, Rule 47.
[34] Ibid, Rule 6.
[35] Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol 1) (Adopted 08 June 1977, entered into force 7 December 1979), art. 35(2), articles 48, 51(2) and 52(2).
[36] Ibid, art. 49.

Israeli UAVs armed with missiles. Among the casualties, according to the reports, were two small children in the field and a group of young women and girls walking along an empty street.[37]

5.2 The Principle of Unnecessary Suffering

The principle of superfluous injury and unnecessary suffering is entrenched in the customary International Humanitarian Law under Rule 70. This principle is closely related to the principle of necessity and allows parties to inflict only the harm that is necessitated by war in an attempt to debilitate the enemy. Effectively, the principle prohibits the use of means and methods of warfare that are likely to cause superfluous injury or unnecessary suffering.[38]. This is also codified in article 35 of the Additional Protocol 1.[39] Unnecessary suffering might include shooting at combatants already rendered *Hors de combat.* Indiscriminate attacks might include misdirection as to the clear target or over-attacking thereby causing harm to civilians and other protected persons under IHL.

The principle of superfluous injury and unnecessary suffering is also encoded in various treaties including the prohibition of the use of means and methods of warfare which are of a nature to cause superfluous injury or unnecessary suffering is set forth in a large number of treaties, including early instruments such as the Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight. (St. Petersburg Declaration) and the Convention (II) with Respect to the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land (the Hague Declaration). The ban on the employment of chemical and biological weapons in the is premised prohibition on the use of chemical and biological weapons in the Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gasses, and of Bacteriological Methods of Warfare is premised on this principle. In addition to Protocols I and II and the Additional Protocol II, the principle of superfluous injury and unnecessary suffering is also reaffirmed in the 1997

[37] Supra note 20.
[38] Rule 70 of the CIHL
[39] Article 35 of the Additional Protocol 1

Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction (The Ottawa Convention), and the Rome Statute of the International Criminal Court. This reaffirmation particularly in the recent treaties demonstrates the principle's continued relevance to date.

The principle is also incorporated in several military manuals. For example, Sweden's IHL Manual (1991) expressly prohibits warfare methods and tactics that are likely to cause superfluous injury and unnecessary suffering. Several states, through their domestic legislation, have also criminalized any violation of this principle.[40] This is demonstrated in various domestic case-laws.[41] The principle has also been reaffirmed in some of the UN General Assembly resolutions[42] and various international forums.[43]

Several states including Egypt, Ecuador, France, Indonesia, Islamic Republic of Iran, Mexico, Samoa, Sweden, United Kingdom, United States, New Zealand, Lesotho, Japan, Italy, Marshall Islands and Netherlands, affirmed the principle in their oral pleadings and written submissions in the *Nuclear weapons case*.[44] In this advisory opinion, the ICJ affirmed as a cardinal principle of international humanitarian law, the rule prohibiting the use of means and methods of warfare that cause superfluous injury and unnecessary suffering.[45]

[40] See the relevant domestic legislations of Azerbaijan, Belarus, Canada , Colombia , Congo , Georgia , Ireland , Italy , Mali , New Zealand , Nicaragua , Norway , Spain , United Kingdom , United States , Venezuela and Yugoslavia ; and the draft legislation of Argentina , Burundi and Trinidad and Tobago.
[41] See for example Shimoda et al. v. the State (District Court, Tokyo Japan, Japan).
[42] See the UN General Assembly Resolutions 3076 (XXVIII), 3102 (XXVIII), 3255 (XXIX), 31/64, 32/152, 33/70.
[43] See the 22nd International Conference of the Red Cross, Res. XIV; 26th International Conference of the Red Cross and Red Crescent, Res. II; Second Review Conference of States Parties to the Convention on Certain Conventional Weapons, Final Declaration; African Parliamentary Conference on International Humanitarian Law for the Protection of Civilians during Armed Conflict, Final Declaration.
[44] Legality of the Threat or Use of Nuclear Weapons [1996] ICJ.
[45] Ibid.

However, if the incident involving the use of drones in Gaza is anything to go by, the merging autonomous weapons pose a grave danger to the relevance of IHL in armed conflict. This is because the artificial intelligence used in such warfare technologies does not have the rationality to apply the distinction principle. They do not have the capacity to make the distinction between *Hors de combat* and fighting combatants.

5.3 The Principle of Proportionality

The principle of proportionality constitutes Rule 14 of Customary International Humanitarian Law. The thrust of this principle is that it restricts attacks which by their nature would reasonably be expected to cause incidental loss of life of a civilian (s), inflict injury on civilians, damage to civilian objects or a combination thereof that would be disproportionate. Parties are allowed to use only as much force in attack as is necessary to give them concrete and direct military advantage.[46] The principle appreciated the inevitability of causing incidental harm to civilian objects in the context of armed hostilities. However, it imposes a limit on the extent of the harm on civilian objects. It involves the principle of necessity and humanity to prohibit parties from the use of excessive and needless force. Besides being a rule of customary international humanitarian law, the principle of proportionality is encoded in articles 51(5) (b) and 57 of the Additional Protocol I.

There were diverse views among the negotiating parties regarding the utility and appropriateness of article 51 of the Additional Protocol I. France felt that article 51 was very complex and would potentially hamper the conduct of defensive military operations against an invader and prejudice the inherent right of legitimate defense. Consequently, it voted against the article at the Diplomatic Conference where the Additional Protocols were adopted. [47]

[46] International Expert Meeting 22–23 June 2016, 'The Principle of Proportionality in The Rules Governing the Conduct of Hostilities Under International Humanitarian Law' (International Committee on Red Cross 2022) *<http://file:///C:/Users/pc/Downloads/4358_002_expert_meeting_report_web_1.pdf>* accessed 6 October 2022.

[47] Jean-Marie Henckaerts and Louise Doswald-Beck, 'Proportionality in Attack (Rule 14)', *In Customary International Humanitarian Law (pp. 46-50)* (1st edn,

However, upon ratification of the protocol, France subsequently accepted the provision without any reservations. On the other hand, at the same Diplomatic Conference, Mexico emphasized the significance of the article 51 and therefore, it would be wrong for any party to subject it to any reservations.[48] Mexico argued that doing so would contravene the protocol's principle and underlying basis, aim and purpose.[49] The United Kingdom held the view that the principle was gaining wide acceptance among states going by their state practice and therefore its codification in the protocol was essential and constituted a confirmation of its customary status in International Humanitarian Law. Several other states including Hungary, Poland, Romania, and Syrian Arab Republic expressed their fears that the principle encapsulated in article 51 would raise significant challenges in protecting the civilian population in the context of armed hostilities. However, the states did not suggest alternative solutions to address the issue of the potential incidental damage of the attacks on lawful targets on civilian objects.[50] While the principle is a genuine attempt to protect civilian life and civilian objects from incidental damage in armed conflict, its application may be limited and problematic where contemporary computerized technology is used. This is particularly so in the case of hacking or malfunctioning.

5.4 The Principle of Humanity

According to the Kantian perspective on the rational basis of humanity, owing to their rational nature, human beings have an inherent worth and dignity. Effectively, they ought to be treated as ends rather than means to an end. By doing so, Kant argues that you recognize their rationality, a factor that distinguishes human beings from animals. The Kantian perspective thus informs the substantive content of the principle of humanity. The principle is premised on the reasoning that due to their rational nature, human beings have the capacity and ability to show respect to all fellow human beings, including their enemies at war. Effectively, the principle prohibits parties

Cambridge University Press 2013) <*http://doi:10.1017/CBO9780511804700.008*> accessed 6 October 2022.

[48] Ibid.

[49] Ibid.

[50] Ibid.

from inflicting suffering, injury or destruction that is unnecessary for achieving the legitimate purpose of a conflict.[51]

The principle is entrenched under the famous *Martens Clause.*[52] It provides that:

> *"Until a more complete code of the laws of war is issued, the High Contracting Parties think it right to declare that in cases not included in the Regulations adopted by them, populations and belligerents remain under the protection and empire of the principles of international law, as they result from the usages established between civilized nations, from the laws of humanity and the requirements of the public conscience".*

Therefore, according to this principle, human beings form the basic subject of protection in the event of hostilities. All this to say that rules of IHL must be complied with by State Parties. New weapons and technologies however, are not keen at complying with such ideologies since they are machines controlled by human beings. They may not give desired results in the event of failure and breakdown and are therefore unreliable in upholding the rules of IHL.

6.0 Conclusion

This paper set out to examine the adequacy of the prevailing international humanitarian rules and principles in addressing the legal, ethical and normal challenges precipitated by the emerging means and methods of warfare technology. The contemporary dynamics of war have been significantly impacted by the developments in technology. Particularly, artificial intelligence technologies have led to development of autonomous and semi-autonomous weapons for use in armed hostilities. These contemporary

[51] Dean Richard, The Value of Humanity in Kant's Moral Theory, Oxford Scholarship Online, 2006

[52] Rupert Ticehurst, 'The Martens Clause and The Laws Of Armed Conflict' (*ICRC*, 2022) *<https://www.icrc.org/en/doc/resources/documents/article/other/57jnhy.htm>* accessed 6 October 2022.

weapons and technologies include sentry weapons, and armed drones. The prevailing regulatory regime in IHL include the Geneva Conventions of 1949 and their additional Protocols, the Ottawa Convention, and the ICRC's SIrUS project. Since the prevailing regime was developed in the context of the traditional or conventional means and methods of warfare there are concerns in the existing scholarly commentary regarding the adequacy of IHL's rules and principles to ensure the ethics of warfare are upheld. The problem arises specifically because the various rules and principles such as the principles of necessity, proportionality, distinction, and humanity, of IHL require a human sensitivity to ensure that they are applied in a satisfactory manner. The paper found that due to their autonomous and semi-autonomous nature, the contemporary weapons are unable to appreciate and comply with the IHL principles of distinction, the principle of necessity, the principle of proportionality, and the principle of humanity. This was demonstrated by the civilian casualties caused by drones in Israel and the United States. This paper recommends reforms to the existing IHL framework to create obligations for the human combatants who employ the use of weapons. This will address the liability gap in the use of contemporary weapons and warfare technologies. For example, the IHL regime can invoke other areas of law such as torts and the law of state responsibility to apportion liability hence address the liability gap. The tort principle of strict liability would be a valuable avenue for establishing liability. The human combatants who employ autonomous and semi-autonomous weapons resulting in abnormally ultra-hazardous harm should be strictly liable for the conduct.

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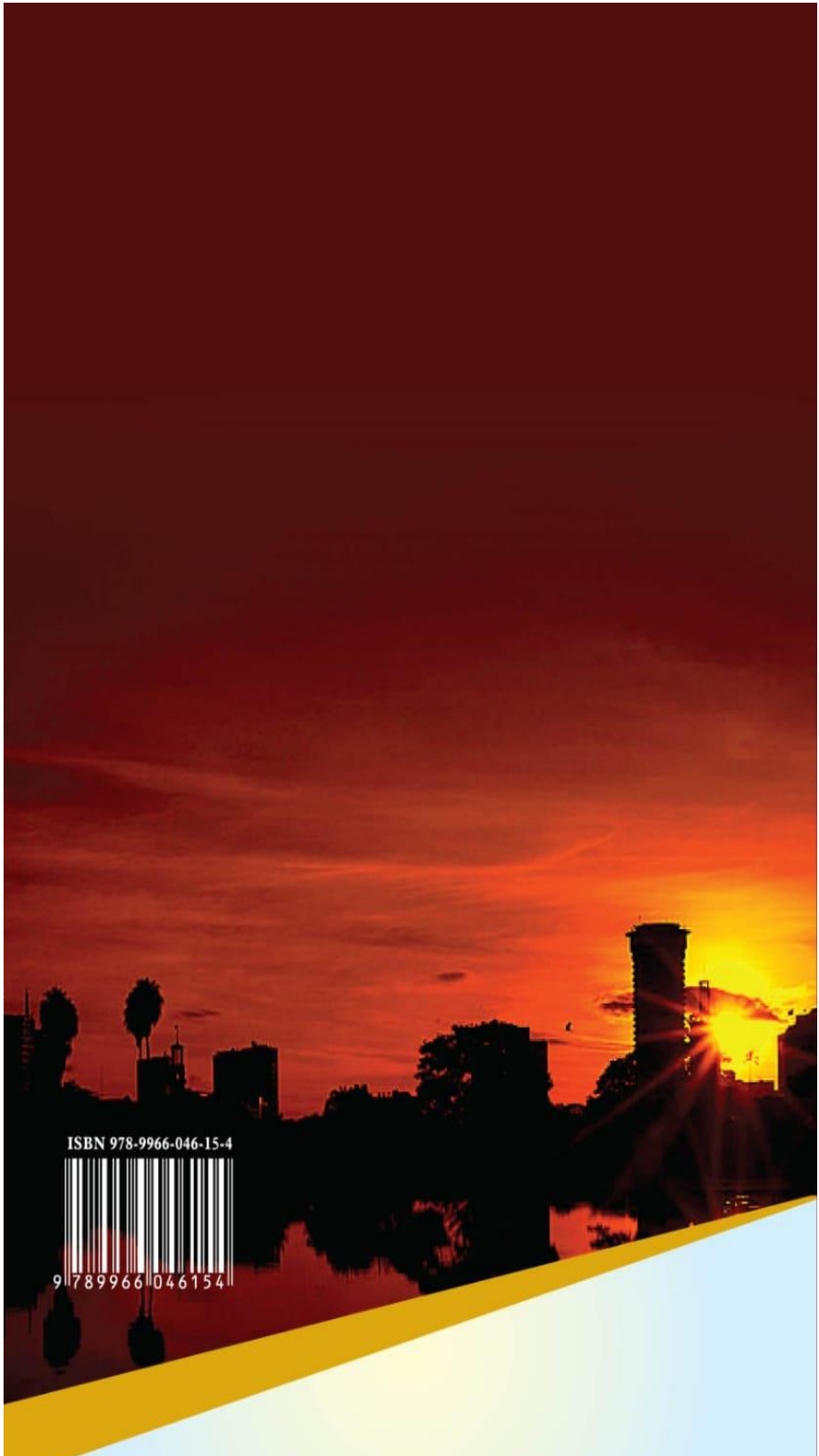
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