Technological Advances in Warfare: Legal Challenges Imposed by Remote Attacks, Advance Weaponry Systems and International Humanitarian Law

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Abstract-*It is difficult to outline means and ways covered by the term 'new technologies', which is notwithstanding the subject of fervid debates among philosophers, legal scholars, and the military. Developers need to be acknowledging of international humanitarian law principles that apply to the employment of weapons. Lawyers need to be aware of how a weapon will be operationally employed and use this knowledge to help formulate meaningful operational guidelines in light of any technological issues identified in relation to international humanitarian law. One of the discussed topics, the remote attack is nothing new, but with the advent of bound new technologies; attacks can be undertaken within which the assailant remains terribly remote from the scene where force can be utilized. This article too analyses the legal issues raised by attacks employing, respectively, remotely piloted vehicles, autonomous attack technologies, and cyber capabilities. The legal principles IHL such as distinction between civilians and combatants, prohibition of attacks against those hors de combat, prohibitions on the infliction of unnecessary suffering, principle of proportionality, notion of necessity, principle of humanity, observes that they all apply to remote attack and weaponry systems and proceeds to explore the challenges that arise from implementing the legal requirements. For the achievement of the objectives of the articles analyse on the secondary data such as Optional Protocol I to Geneva Convention 1949 The legal frame work with regarding the weaponry systems and legality of remote attacking should be revised in order to be complying with the international humanitarian law in a precise manner to save more civilian lives since the existing legal framework under the Optional Protocol I to the Geneva Convention 1949 seems insufficient to cover the legal issues that arise with advance technology.*

***Keywords*: IHL principles, autonomous weapon systems, remote weaponry system**

I. INTRODUCTION: REQUIREMENT OF A REVISED LEGAL FRAME WORK FOR REMOTE ATTACKS AND WEAPONRY SYSTEMS

Worldwide there had been several issues which had caused death for civilians due to the military operations from distance. In addition, consideration should conjointly be given to the sort of weapon to use, associated particularly relevant to this article is that there are ways that of using an otherwise lawful weapon which may end in an illegal result. For example indiscriminately firing a rifle. The key legal factors when conducting the review of new weapons as well as means that and strategies of combat are whether or not the weapon itself is illegal or restricted by international law and whether the effects of the weapon are illegal or restricted by international law. When considering on the weapon systems automated and autonomous weapon systems require being distinguished from remotely operated weapon systems. Attacks are remote in the sense that the operator of the remotely piloted vehicle or the initiator of the autonomous mission or of the cyber-attack is liable to be located at a substantial distance from the scene of the injury or destruction by such remote conduct techniques during armed conflicts raises legal concerns.

The Geneva Convention of 1949 and its Additional Protocols of 1977 are the central documents with regard to IHL and includes the fundamental principles of IHL. These documents do not make any particular reference to specific weapons as to permit or to forbid their use but by prescribing the principles of distinction, proportionality, and precaution they establish lawfully employed means and methods of warfare in armed conflict. For states party to the Protocol Additional to the Geneva Conventions of 12 August 1949 and relating to the Protection of Victims of International Armed Conflicts (API), are subject to the rules in Articles 48 to 67

of that accord1. For states that are not party to API, the standard principles and rules – most eminently the standard guideline of qualification and the customary rules of segregation, of proportionality, and of safeguards in assault – will apply.

Essentially, it appears to be that the same body of law regulates assaults utilizing unmanned platforms, that's aircraft, ground vehicles, ships or other marine craft that don't carry crew personnel which are either controlled by an administrator who is found remotely from the significant stage or that employ autonomous guidance and attack innovation. The stagnating legal principles cannot comply with the [2]advancing technology therefore new legal concepts should be adopted to be on par with the international humanitarian law and also the legal documents and the statutes dealing with should be revised and repealed with new provisions in order to comply with the advance technology and new treaties should be initiated for the betterment of the world during armed conflicts.

II. Remotely piloted vehicles and law.

Armed drones pose a vital threat to the general prohibition on the inter-state use of force and to respect for human rights. During an armed conflict the usage of armed drones might satisfy rules of fundamental humanitarian law such as distinction and proportionality, though attributing international criminal responsibility for their unlawful use may prove a significant challenge. Away from armed conflict the use of drone strikes will often amount to a violation fundamental human rights therefore there is greater necessity of clarity on the applicable legal regime along with limitations to avert further proliferation of drone technology are urgently needed.

In here the remoteness of the controller from the attack doesn't, per se exclude the application of targeting law to such activities. The international humanitarian law principle of distinction the prohibition of the indiscriminate attacks the precautions rules, and the more detailed arrangements requiring the assurance of specific people and objects will all apply to such operations. The controller of a Predator or Reaper Unmanned Airborne Vehicle (UAV), in spite of the fact that found a few thousands of miles from the scene of the assault, bases his assault choices on the data inferred from sensors and other sources and is as obliged by the targeting rules, including the rules as to precautions in assault, as any other military administrator within the battle space, including a pilot of a manned aircraft. According to the prevailing legal principles the operator should take the constant care to spare the civilians and civilian objects.

During last ten years, the use of drones-unmanned aerial vehicles (UAVs) for military and counter terrorism purposes has seen a rapid growth and at the same time with the development of the technology which are leading to larger and faster drones, miniaturization has been paving the path for UAVs the size of insects-Nano drones which also could be used for target killings, possibly using poison. Use of drones in the war field is comparatively uncontroversial under *jus in bello*, without prejudice to *jus ad bellum* due to the fact that there might be scant practical difference between the use of cruise missile or an aerial bombardment and the use of a drone equipped with explosive weapons. Whether or not the use of armed drones constitute hostility or legitimate self-defence, should take place within a condition of armed conflict and fulfil the pertinent nexus criteria, they will also be judged under applicable jus in bello, particularly IHL. They will have to comply with, at a least, the IHL rules applicable to the conduct of hostilities, in specific those rules relating to precautions in attacks, distinction, and proportionality, and they must not employ weapons the use of which is unlawful under IHL.

In the controversial issue with regard to the international legal responsibility for unlawful drone strikes, both at the level of the state and the individual. Here the question is as to, who is to be held criminally responsible when civilians are killed either in violation of IHL rules of distinction or proportionality or in violation of fundamental human rights. Is it the operator of the drone? Those who designate the target as a military objective or the informant? The lawyer who authorizes the strike or all of the above? If the strike is unlawful, could it be an example of a joint criminal enterprise under international criminal law, or have one or more of the above aided international crime or of even greater concern is the prospect of fully autonomous drones making targeting decisions based on a series of programmed vectors, potentially without any human control. Who is then to be held responsible? The manufacturer of the drone? The software programmer? For the moment, there are far more questions than answers. These questions should be answered with new legal concepts or with revised legal documents and provisions with regard due to the insufficiency of prevailing laws to suffice these regards specifically referring to Nano technological drones.

III. III. Autonomous attack and the law.

In order to address the legality question of autonomous and remote weapons systems fully, it is essential to consider how they are currently used. The autonomous and remote weapons systems may not be inherently unlawful but the ways and means may be. If such weapons systems are persistently implicated in legally controversial practices, it may justify a reconsideration of the legality question. In recent armed conflicts have witnessed increased use of highly automated technologies, the most noticeable being the use of armed and remotely piloted drones. These combat aircraft are capable of numerous sophisticated automated flight processes, including fully automated take-off and landing, GPS waypoint finding, and maintaining an orbit around a GPS location at a designated altitude. While these systems are highly automated, they are not considered to be autonomous due to fact that they are still operated under human supervision and direct control.

At the outset there is formerly neither explicit prohibition of neither autonomous nor remote weapons systems nor any international regulation for their deployment in circumstances of armed conflict per se. There was the potential for unmanned combat aerial vehicles (UCAVs) to breach specific Treaty-based restrictions because they share some characteristics both with cruise missiles and with bombers. UCAVs could be excluded as a bomber under the Strategic Arms Reduction Treaty (START) because of differences in both range and payload. Means or method of warfare is likely to prove legally unacceptable if it precludes the taking of these legally required evaluative precautions. Autonomous attack methods will not, necessarily preclude the taking of these precautions stated in article 57 (2) (a) (i) of AP I. A technology is not currently available to support the autonomous distinguishing of military personnel from civilians. Only when autonomous attack technology can make those distinctions to an acceptable degree of reliability, and only when, having so distinguished, till then it should be excluded under the ground that rules as to precautions in attack cannot be complied with.

The precise determination of legality regarding discrimination will base on the characteristics of system itself, but it should be noted that potential for increased sensory ability may be irrelevant if the computational system evaluating the data input is incapable of making an appropriate analysis, it is arguable of that autonomous and remote weapons systems may be capable of better adherence to IHL with compared to human combatants. For example, such weapons systems may be able to combine the input from an array of sensory data to assess the threat and confirm the target, and it may be possible to programme the weapons system to refrain from attack despite risk to itself until a higher degree of certainty is ascertained to meet the principle of discrimination.

After introduction of autonomous weapon systems, it created unique challenges to IHL. The dimensions for autonomous decision-making may elevate advanced weapons systems from the category of passive military materiel towards that of the active combatant. It should be accentuated at this point that it is not the independent capacity to kill or damage that is the objection being raised here, rather than that the weapons system itself is able to decide, or significantly influence the decision, whether or not to inflict violence. This decision-making capacity is, accompanied by neither the prospect of responsibility nor accountability, thereby eroding the incentives to comply with the rules on the conduct of hostilities. This questions the adequacy of IHL in its current state because its categories have not yet been adapted to accommodate non-human decision-making entities capable of inflicting violence. These advanced weapons system developments has raise challenges under international criminal law insofar as the allocation and attribution of responsibility for unlawful harm is concerned.

Therefore new legal perceptions, revised legal provisions, treaties and statutes should be initiated regarding the loophole created with the emerging technology in the autonomous weaponry system which seems in its infancy stage and could be predictable to be threat in the humanitarian perspectives in near future.

IV. Remoteness and its challenges.

The distance in time and space does not of itself render the attack illegal. At the root of issue is the effect that this remoteness has on the capacity of organizers and decision-makers to undertake required precautions and to get data to back a sensible assessment of the legality of the planned attack. In the case of an attack using a remotely piloted vehicle, the decision by the platform controller to undertake that attack will have been informed by the data fed to him when he was considering and making that decision. And also it is expected to verify the status of the target as a military objective, whether the attack could be expected to be proportionate and whether it was being undertaken so as to minimize civilian injury and damage. There is no war crime of failing to take precautions in attack. Relevant war crimes under the Rome Statute, for example directing

attacks at civilians, directing attacks at civilian objects and prosecuting disproportionate attacks. This doesn't mean mere exclusion from failure in taking necessary precaution.

In a situation where personal responsibility for erroneous autonomous attack is concerned it would seem sensible to determine that individuals will generally be responsible for their own actions in relation to the autonomous platform, its navigation, and its offensive operation. Consequence of an individual were deliberately to construct the autonomous target acquisition software with the intention that the platform would target civilians and/or civilian objects, it follows that that would amount to a war crime in just the same way as using conventional capabilities with a similar intent would be. If a failure to take required precautions, causes an erroneous autonomous attack a war crime is unlikely to be established; compensation may be granted if the requirements for establishing liability under Article 91 can be established; and individuals responsible for the failure to take precautions may be disciplined, for example on the basis of negligent performance of duties.

The liability to compensate in Article 3 of Hague Convention IV,1907 is repeated in Article 91 of API. Applying Article 91, it would therefore might seem as a result of the failure to take all feasible precautions in relation to a remote attack operation, the attack causes excessive death or injury to civilians or excessive damage or destruction to civilian objects in relation to the concrete and direct military advantage anticipated there is likely to be a legal liability to compensate the affected civilians or civilian institutions if the case so demands, a simple violation of the law of armed conflict is not sufficient, that there must have been loss or damage and that compensation will only be appropriate if restitution in kind or the restoration of the pre-existing position is not possible. Claimant in here have to prove that legal requirement of precaution had not taken and has suffered loss due to failure but this has failed to characterize negligent manufacture of weaponry under article 91 and it governs by the product liability of each country.

Concerning the legal responsibility making the judgements after the incident must be based on the information from all related sources that is available in decision-making. In an attack using a remotely piloted vehicle, the decision by the platform controller to undertake that attack will have been informed by the data fed to him when he was making that decision. The vital issue will be whether controller's decision to attack was reasonable in the circumstances, relevant equipment was performing properly, whether there were any alternative precautions that were not taken and if taken, would have verified the status of the target as a military objective, whether the attack could be expected to be proportionate so as to minimize civilian injury and damage if not the operator finds to be liable.

Raising question as to, whether autonomous systems satisfy the principles of IHL, specifically proportionality and distinction and also hardship arise as to how it can be tested and verified whether it meet the requirement imposed IHL as per article 36 of AP I. Separate concerns are prevailing as to such systems may not have an identifiable operator in the sense that no human individual could be held responsible for the actions of the autonomous weapon system in a given situation, or the behaviour of the system could be so unpredictable that it would be prejudicial to hold the operator responsible for what the system does. Such systems might thus eliminate the possibility of instituting any individual criminal responsibility that requires moral agency and a determination of *mens rea*. In the event of an atrocity caused by an autonomous weapon system under the command of a human operator they may also undermine command responsibility and the duty to supervise subordinates, shielding their human commanders from what might have otherwise been considered a war crime and in here states hold to be accountable for the design and use of such systems, and to regulate them at an international level.

With developing technology it is clearly visible that existing legal concepts and provisions are in a stage of failure to provide justice for the breach of IHL issues arising during armed conflict and battlefields therefore new and revised legal concepts should be adopted in order to be adhering with the IHL principles.

V. International humanitarian law perspectives. (IHL)

Prevailing IHL dealing with the matters of remote attacks and weapon systems in armed conflict seems to have loop holes in the perspective of international humanitarian law aspect. Because most of the laws and the legal principles have been fail in the attempt of being complying with the humanitarian law principles such as distinction, principle of humanity, notion of necessity and principle of proportionality. Concepts such as military advantage, precautionary measures too require revised legal concerns.

The legality of the weaponry that autonomous and remote weapons systems deploy is independently reviewed, where the weapons system itself does not inflict superfluous injury or unnecessary

suffering, this is certainly correct. But there are exceptions such as an autonomous or remote weapons system is itself the weapon, it is indeed unlikely that remote and autonomous weapons systems will challenge this principle of prohibition.

The customary IHL basis for the principle of discrimination is encapsulated in Rules 11 and 12 and supported by Rule 71, which prohibits the use of weapons that are by nature indiscriminate. The poor record of autonomous and remote weapons systems in distinguishing threats poignantly illustrated by the shooting down of the civilian Iran Air Flight 655 by USS Vincennes in July 1988 resulting in the deaths of all 290 on board. The principle of discrimination is further supported by the distinct requirement embodied within Rule 17 that requires that parties to the hostilities take precautions in the choice of means and methods of warfare in order to avoid or minimize incidental injury to civilians and collateral damage to civilian objects. Precaution is likely to be the most relevant ground for considering the legality of autonomous weapons systems. This will require human involvement in the decision-making process either 'in the loop' or by constraining 'the timing, location, objective, and means' of an attack such that the weapons system would be capable of restricting attacks only to legitimate military targets.

It is also important to note that this legalistic consideration regarding legitimate military targets may overshadow the tendency towards civilians bearing the brunt of the adverse effects of contemporary armed conflict in reality. This may in turn create pressure to target civilians and civilian objects in lieu, especially taking into account the increased direct participation in hostilities of the former and the dual-use of the latter. Aside from purely IHL considerations, the infiltration of military force into the civilian sphere may engender the creep of militarization into law enforcement and policing.

The principle of proportionality state; it is prohibited to launch an attack that may be expected to cause incidental loss of civilian life, injury to civilians, or damage to civilian property that would be excessive in relation to the concrete and direct military advantage anticipated. Furthermore, this principle is reflected in customary international humanitarian law for both international and non-international armed conflict. Therefore, while targeting civilians is prohibited causing injury to civilians or damage to civilian objects is not necessarily unlawful.

The principle of precaution provides that persistent care must be taken to spare the civilian population and civilian objects. Accordingly, each party to the conflict must do everything feasible to verify that targets are military objectives, take all feasible precautions in the choice of means and methods of warfare, and cancel or suspend an attack if it becomes apparent that the target is not a military objective or that the attack would violate the principle of distinction or proportionality, or both. The parties must also give advance warning unless circumstances do not permit. In case of doubt about an individual's status as civilian or combatant, or about the nature, purpose, or use of an ordinarily civilian object, the presumption is in favour of that person or object being civilian as per article 50 and 52(2) of AP I applicability of this provision becomes ambiguous when applying this to computerized, machinery and technologically advanced equipment such as autonomous and remote weaponry systems.

When concerning the principle of proportionality in the context of weapons causing superfluous injury or unnecessary suffering criticisms arise since proportionality is a principle that arises with the consideration of incidental injury to civilians and collateral damage to civilian objects in relation to the military objective pursued. This also arise independent discrimination considerations. The term proportionality may not be specifically mentioned in Additional Protocol I, it does find expression in Article 51(5)(b) which prohibits expected incidental injury and collateral damage to civilians or civilian objects excessive in relation to the military objective anticipated. This obligation is reiterated in Article 57(2) (a)(iii) of Additional Protocol I and Article 8(2)(b)(iv) of the Rome Statute which establishes such 'clearly excessive' loss of life, injury, or damage as a war crime. These provisions too should be revised accordingly with the technological advancements and the new laws and legal concepts should be developed in order to adhere with the IHL principles to overcome the injustice caused by technological advances in warfare.

CONCLUSION.

The contemporary IHL is insufficient to regulate some technologically advanced weapons systems, and that the current legal categorization is challenged by the emergence of autonomous weapons systems that possess autonomous capabilities. Insofar as both autonomous and remote weapons systems do not adequately fit into current categories of IHL, it may be that these systems should constitute a novel common category and should be revised in complying with the international humanitarian law for the betterment of the civilian lives in an armed conflict that might deal with an advance technology.

References.

The handbook of humanitarian law in armed conflicts
Fleck, Dieter. and Bothe, Michael**.**
2008. Oxford: Oxford University Press.

Terry D. Gill and Dieter Fleck (eds), The Handbook of the International Law of Military Operations
A Kabore, 2012

Additional Protocol 1 to Geneva Convention 1949.

The Oxford Handbook of International Law in Armed Conflict. By ANDREW CLAPHAM and PAOLA GAETA (eds)
N Burke, 2014

The International Humanitarian Law Notion of Direct Participation in Hostilities – A Review of the ICRC Interpretive Guide and Subsequent Debate
S Bosc, 2014

International Humanitarian Law and New Weapon Technologies 34th Round Table on current issues of international humanitarian law, San Remo, 8–10 September 2011
2012