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A CRITICAL STUDY ON THE EVOLUTION OF MEANS AND METHODS OF WARFARE AND IHL

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ABSTRACT

War has been an inescapable part of human experience throughout history. The nature of warfare has undergone significant transformations, driven by advances in technology and tactics. A long-standing commitment to reducing the brutality of war has driven humanitarians across the globe to establish safeguards, resulting in the groundbreaking 1864 Geneva Convention and the emergence of modern International Humanitarian Law. IHL is a comprehensive set of norms that regulate the conduct of warfare and aims at protecting human rights during armed conflicts. The atrocities committed during World War II led to a renewed effort to establish clear rules for the conduct of war. The Geneva Conventions were revised and expanded in 1949. The four Geneva Conventions and their three Additional protocols form the core of modern IHL. IHL seeks to humanize the conduct of war, prioritizing the protection of human life and dignity, and alleviating the suffering caused by conflict. Modern warfare has become increasingly complex, with non-state actors, cyber warfare, and artificial intelligence changing the nature of warfare. The impact of modern warfare on IHL is significant. New technologies such as drones and automated weapons raise questions about accountability and the ability to distinguish between military targets and civilians. Modern warfare has also introduced new areas of concern such as Cyberwarfare, Urban warfare, Siege warfare, increasing role of Non-State Actors and Asymmetric warfare. It is crucial to foster a culture of respect for IHL among States and Non-State Actors through diplomatic efforts, capacity-building initiatives, and training programs

Key Words – Warfare, Armed conflict, Humanitarian, War

I. INTRODUCTION

Warfare can be attributed to the activities involved in war or conflict. Means and methods of warfare refer to the weapons used and the tactics employed in armed conflict. Means of warfare are the weapons or weapons system used. Methods of warfare are the tactics or strategy used in hostilities against an enemy in a situation of armed conflict. The only legitimate objective of war as defined by the law of armed conflict is to weaken and overwhelm the military forces of the opponent.⁶³⁹ From ancient times to

till date the means and methods of warfare are evolving. With the invention of gun powder, man shifted towards rifles, guns etc. Due to the advancement in technologies, there evolved a concept of AI-Centric Warfare.

As the nature of conflict changed the methods of warfare also changed. In the earlier times men used bow & arrow, weapons made using stones. As the technology progressed and with inventions such as gun powder and scientific developments, men started using guns, advance weapons and also chemical and biological warfare methods. Thus to regulate the use of such weapons many conventions and regulations were made, for instance the

⁶³⁹ Methods (and means) of warfare, available at: <https://guide-humanitarian-law.org/content/article/3/methods-and-means-of-warfare/> (last visited on March 31, 2025)

Geneva Protocol of 1925, Chemical Weapons Convention, Biological Weapons Convention, Weapons of Mass Destruction etc. In the second World War, Nuclear Weapons were used for the first time resulting in wide spread and intensified destruction (Bombings of Hiroshima and Nagasaki). Later many measures were taken to avert the proliferation and usage of nukes.

II. PRINCIPLES GOVERNING MEANS AND METHODS OF WARFARE

The law of warfare provides limits on the means and methods of warfare. Additional Protocol I under part III explicitly deals with the methods and means of warfare. There are certain principles such as principle of distinction, military necessity, proportionality, precaution which has to be considered while employing any means and methods of warfare. There are certain basic rules relating to the methods and means of warfare. In any armed conflict, the right of the parties to the conflict to choose methods or means of warfare is not unlimited. It is prohibited to employ weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering. It is also prohibited to employ methods or means of warfare which are intended or may be expected to cause widespread, long-term and severe damage to the natural environment.⁶⁴⁰ IHL prohibits the use of an indiscriminate weapon, whose effects cannot be limited.

III. MODERN WARFARE

The term warfare predominantly relates to *jus in bello* but it also has pertinence in *jus ad bellum*. It extends beyond *jus ad bellum*, *jus in bello* to R2P.

The concept of generations of warfare, particularly the idea of fourth-generation warfare, was introduced in 1989 by a team of American analysts, including William S. Lind, in an article titled "The Changing Face of War: Into

the Fourth Generation". The first generation warfare refers to the traditional and conventional form of warfare. The first generation of warfare, known as line warfare, is considered to be the predecessor of modern military conflict. This type of warfare could be characterized by linear battlefields in which armies faced each other in formation, massed manpower, and tactics such as that of phalanxes, lines, columns, squares, etc. The primary weapons used were muskets and cannons. The use of standardized uniforms and discipline was common, reflecting the centralized control of state-organized armies. Examples include the Macedonian phalanx, the Napoleonic wars, the Thirty years' War, etc. Examples include the Macedonian phalanx, the Napoleonic wars, the Thirty years' War, etc.

Second generation of the warfare is believed to have blossomed with the industrial revolution. Development of steam technologies, methods of mass production, rifled barrel, guns, indirect fire, etc. led to its existence. Attrition which is the process of reducing something's strength or effectiveness through sustained attack or pressure, is considered a basic tenet of the second generation of warfare. World War I can be quoted as an example for this warfare.⁶⁴¹

Third generation warfare emerged as a result of use of manoeuvre as element of tactics. Manoeuvre refers to the deliberate and coordinated movement of troops, carefully planned and executed to achieve a strategic advantage. The goal is to concentrate forces in the most favourable position, enabling them to deliver a decisive and crushing blow to the enemy. There are various types of manoeuvre such as tactical manoeuvre, operational manoeuvre, and strategic manoeuvre.⁶⁴² World War II is an example where the third generation warfare tactics has been used.

⁶⁴⁰ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 8 June 1977, art. 35

⁶⁴¹ The Development of Warfare Through Seven Generations: Cyber-Attacks and impacts on international relations, available at: <https://www.iaforum.org/Content/ViewInternalDocument.cfm?ContentID=9011> (last visited on April 1, 2025)

⁶⁴² Viktor Emmerich and Sharan Dev (eds.), *Modern Warfare and Military Strategy* (Dominant Publishers and Distributors, New Delhi, 1st edn., 2000)

Fourth generation warfare can be characterised by the involvement of non-state actors such as terrorist organisations, insurgent groups, etc. by using unconventional tactics to counter conventional military forces. It also encompasses decentralised and networked organisations which are difficult to target and disrupt. This warfare also engages psychological and informational warfare. Examples include Al-Qaeda and the war on terror, Syrian civil war, etc. this warfare is closely related to the concept of asymmetric warfare.⁶⁴³

Fifth generation warfare is a term used to describe the newest and most complex form of warfare, which is characterised by the use of advanced technologies such as Artificial intelligence, cyber warfare, information warfare, etc. The fifth generation warfare is seen as a mixture between the barbarism and the guerrilla warfare. Examples include cyber-attacks. Sixth generation warfare is characterized by the use of advanced technologies, autonomous systems, biological and cognitive warfare, etc. Example: Operation Desert Storm.

Seventh Generation warfare is considered to be a totally automated warfare. It employs cutting-edge electronic, cyber warfare tactics, and advanced weaponry to dismantle and disrupt vital systems of the opponent. Under eighth generation warfare it is believed that there won't be any human casualties on either side due to the tactics used.⁶⁴⁴

Aerial warfare and naval warfare play critical roles in modern military strategies allowing nations to project power and defend their interests across the globe.

Modern warfare can be characterised by advanced technologies, unconventional tactics, shifting global power dynamics, etc. It also encompasses a range of non-kinetic and non-

traditional activities. The development in technology has also impacted modern warfare. Drones, artificial intelligence, precision-guided munitions, etc. have enabled militaries to conduct operations with greater precision and accuracy. The nature of warfare inevitably continues to evolve. Drone warfare, cyber warfare, proxy warfare, siege warfare, etc., are some modern warfare tactics.

Armed Conflict in simple terms can be defined as those conflicts which are fought with arms or weapons. In the International Humanitarian Law two types of armed conflicts are primarily recognized⁶⁴⁵: International Armed Conflict and Non-International Armed Conflict

Common Article 2⁶⁴⁶ of the Geneva Conventions deals with the International Armed Conflict. In simple terms an International Armed Conflict is one in which two or more states engage themselves.

Common Article 3⁶⁴⁷ of the Geneva Conventions deals with the Non-International Armed Conflict. "In the proper sense of the term a civil war exists when two opposing parties within a state have recourse to arms for the purpose of obtaining power in the State or when a large portion of population of a State rises in arms against the legitimate Government. As war is an armed contention between States such a civil war need not be war from the beginning, nor become war at all in the technical sense of the term. But it may become war through the recognition of the contending parties or of the insurgents, as a belligerent power. Through such recognition a body of individuals receives an international position in so far it is for some purpose treated as though they were a subject of International Law"⁶⁴⁸.

⁶⁴³ The Development of Warfare Through Seven Generations: Cyber-Attacks and impacts on international relations, available at: <https://www.iaforum.org/Content/ViewInternalDocument.cfm?ContentID=9011> (last visited on April 2, 2025)

⁶⁴⁴ Looking toward 7th and 8th generation warfare, available at: <https://militaryembedded.com/unmanned/isr/looking-toward-7th-and-8th-generation-warfare> (last visited on April 2, 2025).

⁶⁴⁵ Malcom N. Shaw, International Law (Cambridge University Press, New Delhi, 9th edition, {First South Asia edition } 2022)

⁶⁴⁶ The Geneva Conventions, 1949 Common Article 2: In addition to the provisions which shall be implemented in peacetime, the present Convention shall apply to all cases of declared war or of any other armed conflict which may arise between two or more of the High Contracting Parties, even if the state of war is not recognized by one of them.

⁶⁴⁷ Geneva Conventions 1949, Common Article 3

⁶⁴⁸ Dr.S.K.Kapoor, International Law and Human Rights (Central Law Agency, Prayagraj, 22nd edition, 2021)

IV. EVOLUTION OF MEANS AND METHODS IN MODERN WARFARE

Since the existence of human beings there were conflicts in one form or the other. Since stone age the concept of warfare was existent. Then, tools like stone axe, wooden spears, etc., were used for fighting. The mentions about the concept of warfare is found in epics like Mahabharata, Ramayana, Iliad and Odyssey. Ancient civilizations as that of Egyptian Civilization, Mesopotamian Civilization also throws light upon the existence of the concept of warfare and related tools and techniques. In ancient warfare the common means included spears, swords, bows and arrows, chariots, and siege weapons and methods included phalanx formations, line tactics, and sieges, etc. For example, Battle of Cannae (216 BC).⁶⁴⁹ In medieval times prominent means were swords, lances, crossbows, siege engines, and early firearms and methods such as cavalry charges, siege warfare, and formations like the “hedghehog” were in practice.

The use of toxic chemicals as a means of warfare is a practice that stretches back centuries, with ancient civilizations employing poisonous substances to gain an advantage on the battlefield. For instance, Naagaasthra which is an arrow frequently mentioned in Indian epics is believed to be poisoned with deadly snake venom at its tip. In 429 BC the Spartans used sulphur fumes in the Peloponnesian war. In 960 AD China used arsenic smoke in battles. In 1456 the city of Belgrade created a toxic cloud by burning rags dipped in a poison and defeated the Turks. The usage of chemical weapons has been done in the first world war, in second world war, during Iran-Iraq war (1980-88) and even in the contemporary conflicts in Russia-Ukraine and Israel-Hamas. Chemical weapons can be classified as *Blood gases and Choking agents, Vesicants, Nerve agents, Sensory irritants,*

*Psychotomimetic, Chemical calmatives, and Defoliating agents.*⁶⁵⁰

Similarly, the use of biological weapons was also existent since ancient times. For instance, poisoning of wells were prevalent. In 6th century BC the Assyrians had poisoned the wells of the enemies with rye ergot. Historians believe that the Black Death, the devastating epidemic of bubonic plague to be a biological warfare. Similarly, in 1797, Napoleon had attempted to infect the inhabitants of the city of Mantua with swamp fever. Even in 20th century the biological weapons were stockpiled. In the 1940s the then Japan had something called the Japanese Biological Warfare Unit 731 which had developed and used bombs containing plague-infected fleas during the Sino-Japanese War. During the World War II many biological weapons were tested on the Prisoners of War. The Biological agents used as weapons can be classified as *Bacteria, Viruses, Fungi, Toxins, Rickettsia and Chlamydia.*⁶⁵¹

The invention of gunpowder led to a revolution in military strategies and tactics. China is given the credit for its invention. Initially it was invented to be used for fire crackers, but gradually it was used to develop weapons such as hand grenade and a variety of missiles. It was also deployed in naval warfare. Roger Bacon (1214-1294) of England is credited with developing the formula for gunpowder. It is the Europeans who had recognised the potential of gunpowder as a propellant. With developments made, black powder which is an explosive mixture of about 75 percent potassium nitrate, 15 percent charcoal and 10 percent sulphur, were used in ballistic firearms. German alchemist-monk Berthold Schwarz (ca 1313) is credited with the design of the first bronze cannon that used gunpowder to propel stones and metal balls. States and Rulers of that time started incorporating gun powder explosives, as

⁶⁴⁹ Battle of Cannae, Carthage-Rome, available at: <https://www.britannica.com/event/Battle-of-Cannae> (last visited on April 2, 2025).

⁶⁵⁰ M.N. Sastri, *Weapons of Mass Destruction* 89-91 (S.B. Nangia, A.P.H. Publishing Corporation, New Delhi, 2004)

⁶⁵¹ M.N. Sastri, *Weapons of Mass Destruction* 107-110 (S.B. Nangia, A.P.H. Publishing Corporation, New Delhi, 2004)

this technique proved drastically advantageous over traditional weapons.⁶⁵²

A nuclear weapon is an explosive device that derives its destructive force from nuclear reactions either fission or a combination of fission and fusion reactions producing a nuclear explosion. A fission reaction is splitting up of a large atom or a molecule into two or more smaller ones. A Fission bomb is one kind of nuclear weapon also known as atom bomb. Fusion is the process of combination of two or more lighter atoms or molecules into larger ones. A Hydrogen bomb is one class of fusion bomb. The scientific concepts of fission began to develop from the work of British physicist Ernest Rutherford and others. Later scientists began to develop the concept to harness its potential benefits. During the world war II developing an atom bomb became a necessity for the allied powers as they feared that one was already being developed by Nazi Germany. The Manhattan Project was launched by the United States to address this issue. A Secret town for the scientists were built in Los Alamos where they were testing their project related to the creation of atomic bombs. Once the atomic bombs were developed there were concerns over its use on humanitarian grounds. But President Harry Truman authorised the use of the two atomic bombs on Japan in order to make them surrender. The atomic bombs used in Hiroshima and Nagasaki were "Little Boy", a uranium-based gun-type bomb, and "Fat Man", a plutonium-based implosion-type bomb. The possession of such atomic weapons at the hands of the United States led to the then USSR to also develop atomic weapons. It then led to a nuclear arms race.⁶⁵³

Then with the advancement of technologies there came into existence the concept of autonomous weapons system. This is specifically dealt under Chapter III of this research.

The modern missile systems include air-to-air missile systems. The short-range air-air missiles are classified into five generations based on their technological advances. There also exists anti-satellite weapons system, cruise missiles, ballistic missiles, military rockets, etc.⁶⁵⁴

V. LEGAL FRAMEWORKS GOVERNING MEANS AND METHODS OF WARFARE

"Man became man because he learned how to kill, and unless he unlearns it soon, he will destroy the human race"- Robert Ardrey

In the previous paragraphs the various means and methods were discussed. It is to be noted that despite the military advantages all weapons and tactics pose serious threat to the very existence of humankind as well as to the environment. So it was necessary to regulate the means and methods of warfare.

For centuries, States have resorted to force in their international relations in order to achieve particular desired aims. The use of violence has proved to be an accepted, although tragic in its consequences, method of resolving disputes between States. There were certain regulations placed in the means and methods of warfare. For instance, code of Hammurabi (1754 BCE) had established rules for warfare. The Mahabharata clearly explains us the rules regarding how a war should be fought to ensure justice. According to Mahabharata it was customary to fight only during the day and cease fighting at sunset until daybreak.⁶⁵⁵ Then during the medieval period the concept of just war garnered prominence which deals with *jus ad bellum* and *jus in bello*. It was in the 19th century that the international community recognised the strong need for legal frame works regulating the means and methods of warfare. Emmerich de Vattel, a Swiss jurist and diplomat, is known for his 1758 work "The Law of Nations", which outlined principles of international law and diplomacy, including

⁶⁵² M.N. Sastri, *Weapons of Mass Destruction* 1-2 (S.B. Nangia, A.P.H. Publishing Corporation, New Delhi, 2004)

⁶⁵³ Sarah J. Diehl and James Clay Moltz, *A Handbook of Nuclear Weapons and Nonproliferation* (Pentagon Press, New Delhi, 2005)

⁶⁵⁴ Syed Ramsey, *Tools of War- History of weapons in modern times* (Alpha editions, Delhi, 2016)

⁶⁵⁵ Puneet Pathak, *International Humanitarian and Refugee Law* 99 (Eastern Book Company, Lucknow, 1st edn., 2021)

those related to just war theory and the conduct of war, building upon the work of Hugo Grotius. The just war theory had its own limitations as to describe the limits of military action which was taken for a presumably just cause. The religious wars of the medieval Europe exemplified the dangers of this theory. Vattel had laid emphasis on humanitarian grounds and had prescribed that the warring parties should ascribe themselves to strict rule of war irrespective of their convictions of justice.⁶⁵⁶ The important instruments are discussed below.

A. LIEBER CODE

The “Instructions for the Government of the Armies of the United States in the Field”, i.e., General Orders No.100: The Lieber Code consists of 157 Articles. It was drafted by Francis Lieber at the request of the then President Lincoln’s General-in-Chief, Henry Halleck. It was issued during the American Civil War. Its main aim was to regulate the Union troops and to establish doctrines on what was permissible in war. The code can be divided into 10 sections. Section I deals with martial law, military jurisdiction, military necessity and retaliation. Section II deals with the public and private property of the enemy, protection of persons and especially of women, of religion etc., Section III deals with the provisions as to deserters, POWs, Hostages, and Booty in the battle field, Section IV deals with Partisans, armed enemies not belonging to the hostile army and related activities, Section V focuses mainly on the safe conduct, Section VI deals with the provisions as to exchange of prisoners and truce, Section VII deals with provisions of parole, Section VIII deals with armistice and capitulation, Section IX deals with the provisions as to assassination and Section X with the provisions as to insurrection, civil war, and rebellion.⁶⁵⁷ The code provides that while executing martial law the principles of justice, honour, and humanity are to be strictly adhered

to.⁶⁵⁸ The principles of distinction, military necessity have also been laid emphasis in this code. This code also provides for the protection of civilians and the humane treatment of POWs. It also mentions the protection of certain places and objects as well as certain prohibitions.⁶⁵⁹ and It is considered to be the first modern codification on the laws of war. Later on this code was used as a template by the international powers for implementing in their own military regulations. This code forms the basis for the subsequent international codifications on laws and customs of war. This code got international recognition with the St. Petersburg Declaration of 1868.

B. GENEVA CONVENTION, 1864

This convention has around 10 Articles. It specifically focuses on the amelioration of the conditions of the wounded in armies in the field. It provides that hospitals though being a military hospital should be considered to be neutral and also lays emphasis on the provisions for the inhabitants who care for the wounded. Also, this convention provides protection for soldiers who are *hors de combat*.⁶⁶⁰

C. PETERSBURG DECLARATION, 1868

This was recognised an important international instrument when it comes to regulating the warfare because this declaration proposed for the prohibition of certain types of bullets such as the incendiary or exploding bullets weighing less than 400g to ensure that there is no unnecessary suffering as the military operations should always be meant to weaken the enemy alone and not to cause superfluous injury. Employing such weapons which aggravate the suffering are considered to be against the laws of humanity.⁶⁶¹

⁶⁵⁶ Alexander H. Mindrup, “The Lieber Code: A Historical Analysis of the Context and Drafting of General Orders No. 100” Vol. 1 Article 27, *The Cardinal Edge* 2 (2021).

⁶⁵⁷ Alexander H. Mindrup, “The Lieber Code: A Historical Analysis of the Context and Drafting of General Orders No. 100” Vol. 1 Article 27, *The Cardinal Edge* (2021).

⁶⁵⁸ Instructions for the Government of Armies of the United States in the Field (Lieber Code), 24 April 1869, art.4

⁶⁵⁹ Puneet Pathak, *International Humanitarian and Refugee Law* 101-102 (Eastern Book Company, Lucknow, 1st edn., 2021)

⁶⁶⁰ Convention for the Amelioration of the Condition of the Wounded in Armies in the Field. Geneva, 22 August 1864

⁶⁶¹ A look at the Declaration of St.Petersburg of 1868, available at: <https://ihl-databases.icrc.org/en/ihl-treaties/st-petersburg-decl-1868/declaration> (last visited on April 2, 2025)

D. BRUSSELS DECLARATION ON LAWS OF WAR, 1874

This declaration has about 56 Articles. This declaration specifically deals with the laws and customs of war. This declaration lays down that the belligerents do not possess unlimited power in causing injury to the enemies, i.e., they should strictly follow the laws and customs of war in adopting the means for causing injury to the enemies.⁶⁶² There are some prohibited activities mentioned in the declaration such as employing poisoned weapons, murder by treachery, murdering a soldier who is *hors de combat*, employing weapons prohibited under the St. Petersburg Declaration 1868, denying quarters, making improper use of flag of truce, insignias and badges, and taking any action not backed by military necessity.⁶⁶³ This declaration also laid down provisions regulating the sick and wounded, POWs and also has provisions as to which place can be sieged or bombarded.

E. HAGUE CONFERENCES, 1899 AND 1907

The first Hague conference was convened with the object of seeking the most effective means of ensuring to all peoples the benefits of a real and lasting peace, and, above all, of limiting the progressive development of existing armaments.⁶⁶⁴ The conference had agreed for the following : Convention for the peaceful adjustment of international differences, Convention regarding the laws and customs of war on land, Convention for the adaptation to maritime warfare of the principles of the Geneva Convention of 22 August 1864 and three Declarations. The first declaration is concerned with the prohibition of the launching of projectiles and explosives from balloons or by other similar new methods. The second declaration deals with prohibiting the use of projectiles, the only object of which is the diffusion of asphyxiating or deleterious gases. And the third declaration deals with prohibiting the use of bullets which expand

or flatten easily in the human body, such as bullets with a hard envelope, of which the envelope does not entirely cover the core or is pierced with incisions.⁶⁶⁵

The second Hague Conference convened in 1907 had led to the following conventions: Convention for the pacific settlement of international disputes, Convention respecting the limitation of the employment of force for the recovery of contract debts, Convention relative to the opening of hostilities, Convention respecting the laws and customs of war on land, Convention respecting the rights and duties of neutral powers and persons in case of war on land, Convention relative to the status of enemy merchant ships at the outbreak of hostilities, Convention relative to the conversion of merchant ships into warships, Convention relative to the laying of automatic submarine contact mines, Convention respecting bombardment by naval forces in time of war, Convention for the adaptation to naval war of the principles of the Geneva Convention, Convention relative to certain restrictions with regard to the exercise of the right of capture in naval war, Convention relative to the creation of an International Prize Court, Convention concerning the rights and duties of neutral Powers in naval war, Declaration prohibiting the discharge of projectiles and explosives from balloons.⁶⁶⁶

F. GENEVA PROTOCOL, 1925

An International Conference for the supervision of the International Trade in arms and ammunitions was held in 1925 at Geneva. As a result of the negotiations a protocol was adopted. It is known as Geneva Protocol 1925 in short. The protocol provides for the prohibition of the use in war of asphyxiating, poisonous or other gases and of bacteriological methods of warfare. It was necessitated due to the devastating effects of poisonous gases used during World War I, which led to widespread

⁶⁶² Project of an International Declaration concerning the Laws and Customs of War. Brussels, 27 August 1874, art.12

⁶⁶³ *Id.*, art.13

⁶⁶⁴ Final Act of the International Peace Conference. The Hague, 29 July 1899, available at: <https://ihl-databases.icrc.org/en/ihl-treaties/hague-finact-1899> (last visited on April 3, 2025)

⁶⁶⁵ Final Act of the International Peace Conference. The Hague, 29 July 1899, available at: <https://ihl-databases.icrc.org/en/ihl-treaties/hague-finact-1899/final-act?activeTab> (last visited on April 3, 2025)

⁶⁶⁶ Final Act of the Second Peace Conference. The Hague, 18 October 1907, available at: <https://ihl-databases.icrc.org/en/ihl-treaties/hague-finact-1907/final-act?activeTab> (last visited on April 3, 2025).

public outcry and a desire to prevent such atrocities from recurring.⁶⁶⁷

G. GENEVA CONVENTIONS 1949 AND THEIR ADDITIONAL PROTOCOLS

The Geneva Conventions along with their additional protocol forms a basis for modern international humanitarian law. It deals with the principles of *jus in bello*. These conventions provide provisions as to how a war should be conducted. Geneva Convention I deals with the protection of wounded and sick in armed forces in field, Geneva Convention II deals with the provisions of wounded, sick and shipwrecked members of armed forces at sea, Geneva Convention III deals with the POWs and Geneva Convention IV deals with the protection of civilians. Additional Protocol I which deals exclusively with IACs under Part III explicitly provides for the provisions regulating the means and methods of warfare. It provides that the right to choose the means and methods of warfare is not unlimited and also prohibits the employment of means or methods which causes superfluous injury or unnecessary suffering, or which causes severe harm to the environment.⁶⁶⁸ The protocol had been made giving weightage to a futuristic view. It provides that any new weapons which is developed, acquired or adopted should be in accordance with the legitimate provisions respectively.⁶⁶⁹

H. NUCLEAR NON-PROLIFERATION TREATY, 1968

The NPT is a landmark international treaty, its main objective being to prevent the spread of nuclear weapons and weapons technology, to promote peaceful uses of nuclear energy and to further the goal of achieving nuclear disarmament and general and complete disarmament. The treaty represents the only binding commitment in a multilateral treaty to the goal of disarmament by the nuclear weapon states. It was opened for signature in

1968, the treaty entered into force in 1970. This treaty is regarded as the cornerstone of the global nuclear non-proliferation regime and an essential foundation for the pursuit of nuclear disarmament. To further its goal, it establishes safeguards system under the responsibility of the IAEA. The treaty has a total of XI Articles. Article I and II deals with the conditions as to not to transfer nuclear technology and recipient. Article VI specifically deals with nuclear disarmament of nuclear technology from nuclear to non-nuclear weapon state. But the treaty has its own limitations. It failed to prevent vertical nuclear advancement. Many countries possessing nuclear weapons are not parties to it, for instance, India, Israel and Pakistan. This treaty is of a bias nature as it permitted the P5 countries to possess nuclear weapons.⁶⁷⁰

I. BIOLOGICAL WEAPONS CONVENTION, 1972

It is an undisputable fact that despite knowing the repercussions States have used biological weapons in war. A biological weapon can cause greater perils than that of a hydrogen bomb, given its nature.⁶⁷¹ So to address these issues a Convention on the prohibition of the development, production and stockpiling of bacteriological and toxic weapons and their destruction was adopted at Stockholm, 1972. This convention categorically banned a class of weapons and intended to achieve complete disarmament of such weapons. It prohibits the development, stockpile, production, or transfer of chemical and bacteriological weapons.⁶⁷²

J. CONVENTION ON PROHIBITION OF MILITARY OR ANY OTHER HOSTILE USE OF ENVIRONMENTAL MODIFICATION TECHNIQUES, 1976

This convention provides that states should not engage in military or any other hostile use of environmental modification techniques which can cause widespread, long-lasting or severe effects as the means of destruction, damage or

⁶⁶⁷ Puneet Pathak, *International Humanitarian and Refugee Law* 108-109 (Eastern Book Company, Lucknow, 1st edn., 2021)

⁶⁶⁸ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 8 June 1977, art. 35

⁶⁶⁹ *Id.*, art.36

⁶⁷⁰ Sarah J. Diehl and James Clay Moltz, *A Handbook of Nuclear Weapons and Nonproliferation* (Pentagon Press, New Delhi, 2005)

⁶⁷¹ M.N. Sastri, *Weapons of Mass Destruction* 109 (S.B. Nangia, A.P.H. Publishing Corporation, New Delhi, 2004)

⁶⁷² Puneet Pathak, *International Humanitarian and Refugee Law* 100 (Eastern Book Company, Lucknow, 1st edn., 2021)

injury to any other State party.⁶⁷³ Environmental modification techniques are defined as “any technique for changing-through the deliberate manipulation of natural processes-the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere or of outer space”.⁶⁷⁴

K. CONVENTION ON CERTAIN CONVENTIONAL WEAPONS, 1980

The Convention on Prohibitions or restrictions on the use of certain conventional weapons which may be deemed to be excessively injurious or to have indiscriminate effects, 1980, has 11 Articles and 5 Protocols. The scope of this Convention applies to the cases of IAC and NIAC as enshrined under Common Article 2 and 3 to the Geneva Conventions. This convention seeks to prohibit those weapons which causes unnecessary suffering or superfluous injury as well as those that are indiscriminate in nature. The Convention in its preamble also mentions about the UN Charter wherein use or threat of any form of force is prohibited. This Convention also aims to protect the civilians and combatants from the effects of such weapons under international law, derived from established customs, principles of humanity and from the dictates of public conscience under the circumstances not covered explicitly by this convention. Protocol I prohibits the use of any weapon, the primary effect of which is to injure by fragments that are not detectable in the human body by X-rays. Protocol II deals with the mines, booby traps and other devices. Protocol III deals with incendiary weapons, Protocol IV with blinding laser weapons and Protocol V deals with explosive remnants of war.

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L. CHEMICAL WEAPONS CONVENTION, 1993

There is a popular notion that Chemical and Biological weapons are poor man’s atomic

bomb. It is because of their easiness to be made and the availability at cheaper costs. The availability of such weapons at the hands of rogue States and terrorist organisations posed an alarming threat to international community.⁶⁷⁶ To address these issues a convention namely “Convention on the prohibition of the development, production, stockpiling and use of chemical weapons and on their destruction was made at Paris in 1993. This Convention was made keeping in mind the provisions of Geneva Protocol 1925, and the Biological weapons convention 1972. The general obligations are mentioned under article I and the chemical weapons are defined under Article II.

M. OTTAWA TREATY, 1997

The employment of Anti-personnel mines had more devastating effects and were seen as a threat to humanity. The Ottawa treaty is part of the international response to such crisis. *Anti-personnel mines are generally small devices, containing between 10g and 250g of explosive substance, that will detonate under 0.5kg to 50kg of pressure. Anti-vehicle mines are larger than the anti-personnel mines, containing between 2kg and 9kg of explosive and are normally activated by 100-300kg if pressure.*⁶⁷⁷ Article 1 of the convention imposes certain obligations upon the State and Article 2 provides for the definitions.

VI. CONCLUSION

The means and methods of warfare are also regulated by the customary international law and international humanitarian law principles. The legal frameworks provide us with an idea of what are the prohibited means and methods of warfare. Some of the prohibited means of warfare are poisons or poisonous weapons, incendiary and explosive bullets, expanding bullets, poisonous gases, anti-personnel mines, booby traps, anti-vehicle landmines, torpedoes,

⁶⁷³ Convention on Prohibition of Military or any other hostile use of Environmental Modification techniques, 1976, art. 1

⁶⁷⁴ *Id.*, art. 2

⁶⁷⁵ 1980 Convention on Certain Conventional Weapons, available at: https://www.icrc.org/sites/default/files/document/file_list/dp_consult_8_1_980_convention_on_ccw.pdf (last visited on April 3, 2025)

⁶⁷⁶ M.N. Sastri, *Weapons of Mass Destruction* 90-91 (S.B. Nangia, A.P.H. Publishing Corporation, New Delhi, 2004)

⁶⁷⁷ Banning Anti-Personnel Mines- the Ottawa treaty explained, available at: https://www.icrc.org/sites/default/files/external/doc/en/assets/files/other/icrc_002_0702_ottawa_explained.pdf (last visited on April 3, 2025)

explosive remnants of war, blinding laser weapons, non-detectable fragments, environment altering weapons, incendiary weapons, cluster munitions, riot control agents, biological weapons, chemical weapons, nuclear weapons, etc. Some of the prohibited methods of warfare are order of no quarter, treachery and perfidy, improper use of enemy uniforms, ruses of war, pillage, starving of civilians, human shields, taking of hostages, reprisals, etc.⁶⁷⁸



⁶⁷⁸ Puneet Pathak, *International Humanitarian and Refugee Law* 115-122 (Eastern Book Company, Lucknow, 1st edn., 2021)