Introduction

Following the development and advancement of mankind, the landscape of war and the way of which it is conducted are gradually changing. Today, for the first time in human history, the world is presented with the prospect that autonomous robots will be able to join in the battle. There is a clear dichotomy, however, in viewpoints concerning the use of lethal autonomous weapons (LAWS) in military circumstances, which can drastically alter politics. The issue is also closely connected to international security and disarmament, once it is put to massive use. As its name suggests, LAWS works autonomously. This is where most of the conflicting ideas stem from: exactly how autonomous can a weapon be for it to be safely carried out and used in a war? Lethal Autonomous Weapons System (LAWS), is a weapon system that is able to operate as soon as it is activated, without the intervention of humans. LAWS makes a state more capable of defending itself during circumstances such as war, through both force multiplication and projection; nevertheless, it poses ethical concerns and could violate basic human rights. For one, LAWS and other artificial intelligence systems are unable to distinguish clearly between combatants and non-combatants. In addition, LAWS may violate social principles since it allows machines to select aims, then execute. This is because if machines are allowed to execute autonomously without human intervention, these robots without any sentiments will have the power to decide the life and death over humans, which would violate the International Humanitarian Law (IHL). Furthermore, if the task for autonomous robots is an ambiguous one, such as eliminating those that have exhibited behaviors that are threatening, giving full control to machines can be dangerous and unethical to carry out as it has impact on the peace and security of the world (autonomous weapons are not developed to the stage that it can distinguish between combatants and non-combatants.). Several conferences were held and solutions proposed by United Nations (UN) Bodies, including the United Nations Institute for Disarmament Research (UNIDIR), center around the issue of LAWS and questions whether more regulations and policies should be made to ensure the safety of utilizing these autonomous weapons as the question of LAWS remains to be a controversial one.
Definition of Key Terms

Lethal Autonomous Weapon Systems
A weapon system that can select and attack targets without any human intervention once activated. This system(s) can operate on land, on water, under water, in the air, or even in space.

Force Multiplier
In military science, the force multiplier refers to a combination of factors, or sometimes a single factor that can significantly increase the effectiveness of a group during battle.

Autonomous
Autonomous means that an object is able to independently respond to a situation without human intervention.

Artificial Intelligence
Artificial intelligence is the development of computer systems that are able to perform tasks normally done by humans, such as visual perception and decision making processes. It is a branch of computer science that deals with the simulation of intelligent behaviors in robots or computers alike.

International Ethics
Ethics include all the moral principles that govern the behavior and conduct of people while international ethics is the extent and scope of ethical obligations between countries in the era of globalization.

Background Information
Artificial intelligence (AI) has been transforming the world and affecting multiple aspects of society, including education, medicine, as well as politics. In most cases, the advancement of the technology is beneficial, as it improves productivity while allowing arduous tasks to be done in a way that does not require too much of manual labor at the same time.

LAWS has been the center of global debate since from May 2014, when the first meeting on LAWS took place in Geneva. These weapons have the potential to radically change the nature of wars, thus raising worldwide concerns. While questions on whether
having the "non-algorithmic, intuitive" capacity to make moral and justified decisions only pertains to human or possibly to the most sophisticated computer as well, also have been raised. Notwithstanding, LAWS has benefits in that they can track and target autonomously and are capable of operating all the time without stopping while maintaining the accuracy.

**Lethal Autonomous Weapons System (LAWS) shortcomings**

As introduced in the above, LAWS have shortcomings regarding its violation of international acts, ethics, and basic human rights. There is also debate on how responsibility will be shared with the use of autonomous weapons, as lack of understanding on how “autonomous” a weapon is can result in ambiguous liability in legal systems. If, for example, the autonomy is distributed between a machine and a human, the human can carry responsibility. However, current circumstances point to the fact that humans have yet decided how to distribute this responsibility, leading to uncertain legal responsibility (UPenn, 2018) As a result of these shortcomings, countries like Canada and the United States have special policies towards the use of LAWS, while there are also campaigns internationally held that aim to ban the use of such weapons in war situations.

**Violation of international ethics**

The main issue concerning LAWS is that it is hard to make a clear distinction between non-combatants and combatants, therefore making it inhumane and to an extent, unethical. There is further concern as to whether LAWS would challenge and violate International Humanitarian Laws (IHL), a branch of international law that seeks to protect the persons who are not participating in armed conflicts in order to mitigate its aftermath, and especially the “principle of distinction”, which requires the ability to distinguish non-combatants from combatants. The principle of proportionality, which is used as a criterion for justice, requires damages made to civilians to be proportional to the aim of the military task. This can be difficult to achieve if the line between combatants and civilians is blurred for autonomous drones and robots. Furthermore, according to a Yale University report, LAWS will be considered only as “soulless” machines without a moral basis in the short term. Therefore, it is highly possible that LAWS will blur the boundaries of who is responsible for a killing and present an unprecedented challenge to the way in which legal responsibility in combat should be assessed. If a given LAW is simply carrying out the tasks according to the preprogrammed instructions given by programmers, then the ones taking full responsibility should be either the operators or designers of the system, presumably. However, if the LAW in question is a moral discerner
(meaning that these robots understand and follow the morals autonomously), it appears that the responsibility shifts automatically to the automated system and who then, should bear the legal responsibility for the decisions that LAW makes, which can be destructive (UPenn, 2018)? This was one of the questions and controversies resulting from the discussion on legal liability that was exchanged at a meeting on LAWS in Geneva, Switzerland by the United Nations.

Policies on LAWS in the United States and Canada
On the question of LAWS, the current US policy elucidates that lethal autonomous weapons systems should be designed to allow its operators and commanders to exercise “appropriate levels of human judgment over the use of force”, which means that US only accepts LAWS that are not completely autonomous and need to be controlled by people. Yet In the future humans may be able to cede the little responsibility they have now to robots for specific actions where robots have demonstrated certain moral agency. Those who oppose the introduction of LAWS warn that such introduction would make it easier for a country to enter war, as less resources are required and less soldiers need to be recruited with the presence of autonomous robots. This could potentially allow for war to become a natural alternative to the usual diplomacy. Moreover, opponents point to the fact that LAWS, unlike drones, will not be able to act under the direct control and orders of a human, therefore making wars less humane. On the other hand, Canada is neither designing nor creating any LAWS; however, it has a strong and active research program that informs the government on the threats and opportunities the technology could bring forth. The Canadian government holds a firm objection towards the development of LAWS and calls for a ban on the weapon system as a whole. Officials have pointed out that allowing a robot to have the power over the life and death of a human crosses a basic moral line, and that it is unjust to let machines execute human (Kathleen, 2015). If machines are allowed to execute tasks without any kinds of human control, it seems that robots that are deprived of emotions and feelings have power over humans, which could reduce the status of humans.

Lethal Autonomous Weapons (LAWS) Benefits
Despite its shortcomings, LAWS still has some benefits in war. For one, autonomous weapons systems act like a force multiplier, which means that fewer soldiers need to be recruited for a specific mission and the efficiency of each soldier can be greater. Second, such weapons systems have the ability to expand the scale of the battlefield, meaning that combat is allowed to reach into areas or regions that have not been previously accessible.
Furthermore, these systems can reduce the number of casualties after each battle has taken place by eliminating the use of soldiers in extremely dangerous missions, such as those that could possibly expose humans to radiological materials. Lastly, there are ways in which robots can be more accurate than human beings, as they will not be affected by emotions in ways humans do. There are countless instances where a soldier reacts irrationally (driven by irritation or anger) to a critical situation and consequently resulting in the death of civilians; robots, on the other hand, will not experience so much emotions like humans, which can have positive implications.

**Major Countries and Organizations Involved**

**United Nations Institute for Disarmament Research (UNIDIR)**

The UNIDIR is an institute within the United Nations itself, and this institute generates new ideas and promotes effective actions regarding security and disarmament. UNIDIR is positioned to support the international community in seeking for new ways of thinking and approaching an issue with solutions that will counter the challenges present. Since 2013, the Secretary General’s Advisory Board on issues related to disarmament recommended the Secretary General to consider commissioning a thorough study and analysis on the use and development of the lethal weapons system technology that is becoming increasingly autonomous over the years, while UNIDIR was the choice in carrying out such comprehensive analysis works.

**International Community on the Red Cross (ICRC)**

The International Community on the Red Cross (ICRC), is an independent organization that devotes itself to the protection of victims in any situation of armed conflict and violence. In any cases of emergencies, it takes immediate actions in response to such cases, at the same time promoting the respect of international humanitarian laws, as well as its effective implementation in nations. As aforementioned, the LAWS has been criticized for its violation of the international humanitarian law; as such, the organization itself has published documents that allow countries to consider the positive and negative implications of autonomous weapons, including “Ethics and Autonomous Weapons Systems: An Ethical Basis for Human Control?” as well as “Autonomous Weapon Systems: Implications of Increasing Autonomy in the Critical Function of Weapons”. Both of these documents are effective in relaying to the world as to what extent should we allow these weapons to be autonomous and what are the implications of those decisions.
## Timeline of Events

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<th>Date</th>
<th>Description of Events</th>
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<tr>
<td>May, 1972</td>
<td>A radar-guided gun that is being used to protect ships have been in use since 1970, and is an example of modern autonomous active protection system. Such systems are able to autonomously attack oncoming rockets, missiles, and aircraft according to the requirements of a human operator. Air forces also deployed autonomous unmanned surveillance aircraft in May, 1972 that are capable of combat.</td>
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<td>March 27th, 2011</td>
<td>The Iron Dome is designed and put to use in 2011. This is a missile defense system that has autonomous targeting capabilities.</td>
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<td>2012</td>
<td>Major concern rose as to whether LAWS would pose as a violation of the International Humanitarian LAW, as it is unable to distinguish combatants from non-combatants in a war situation. Nevertheless, there are promises made in the year that designers will make it easier to record who gave the robot the command in the first place so that legal responsibility can be shared.</td>
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<td>2013</td>
<td>The CCW, which stands for the convention for Certain Conventional Weapons, is an international humanitarian law framework and treaty that has served to regulate and monitor the development of potentially injurious weapons, including lethal autonomous weapons systems (LAWS). Despite the multiple meetings conducted on the topic of LAWS and their resulting expert reports, such as the conclusions derived from the Informal Meeting of Experts from the years 2013 to 2016, there is still no consensus reached on this topic globally. This is due to the fact that all decisions need to be taken by consensus, meaning that all the states should readily agree to it for the decision to pass; as for now, there is no such consensus where LAWS is concerned and the CCW has been assessing questions that are related to the growing technologies in the LAWS area.</td>
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<tr>
<td>July, 2015</td>
<td>Over 1000 experts in the field of artificial intelligence calls for a ban of autonomous weapons, and presented a petition in Buenos Aires.</td>
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Aires in the form of a letter, warning governments of the legal implication of LAWS at the 24th International Joint Conference on Artificial Intelligence (IJCAI-15). News about its ethical implications are also presented through media as it touched on the IHL.

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<td>2017</td>
<td>The UNIDIR publishes a paper named “The Weaponization of Increasingly Autonomous Technologies: Concerns, Characteristics, and Definitional Approaches” in the year 2017. This paper addresses the concerns that experts have (ethics, legality, operational concerns, as well as safety issues and risk), characteristics of LAWS, and definitional approaches that allow people to realize the solutions to the controversy of autonomous systems.</td>
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**Relevant UN Treaties and Events**

- Lethal autonomous weapons systems, 13-14 November 2014 (CCW/MSP/2014/3)
- The Weaponization of increasingly Autonomous Technologies: Concerns, Characteristics and Definitional Approaches, 2017 (UNIDIR)
- The Weaponization of Increasingly Autonomous Technologies: Considering Ethics and Social Values, 2015 (UNIDIR)

**Previous Attempts to Solve the Issue**

There had been previous attempts at proposing solutions to alleviate the problem concerning autonomous weapons. Several countries have managed to provide LAWS with a definition that allows the system to be ethically-acceptable, and efficient in war situations. There are special policies made to LAWS in the United States as explained in the sections above, as well as in countries like the Netherlands, France, and the United Kingdom. For France, the government proposes that LAWS should be fully autonomous systems and is understood to be implying a complete absence of any form of human control or supervision. This means that there is no direct or indirect means of control or communication within the military chain of command. The Netherlands, on the other hand, has ensured some autonomy so that there can be no human intervention after the launch of weapons; nevertheless, the requirements and orders are predesigned by humans. Therefore, countries around the world have not yet reached a consensus on the question of LAWS, as different
policies are practiced by different governments. Meanwhile, the UN Institute for Disarmament Research (UNIDIR) has published papers and documents explaining the concerns and implications of weapons that are becoming more and more autonomous following technological development, from 2014 to 2018.

**Possible Solutions**

There are several solutions that can be considered on the question of lethal autonomous weapon systems (LAWS), and mainly from two aspects: one is the technology-centric approach, while the other is the human-centric approach. From the technology-centric point of view, it is essential that people realize that increasing levels of autonomy could indeed be applied to nearly all of the weapon systems, just like how increasing automation levels have been applied in previous generations of weapon systems. The autonomy is a characteristic in itself, and can be applied to various parts of any system; for example, it can be designed to be able to determine its attack path autonomously. However, once they have secured a target, humans should be involved in the decision process so that it is not completely up to a robot to decide the life and death of a person. Having a clear definition of LAWS as in to what extent will it become autonomous and make judgments on its own so that they will not violate the International Humanitarian Law (IHL). With the speed of technological innovation and development today, it is pivotal that a definition on LAWS and its applications in real-life circumstances are to be reviewed and monitored constantly so that no worrisome applications will exist. Secondly, this definition on LAWS should draw a line between what needs to be regulated and what needs not. A technology-centric definition will furthermore need to take into consideration of the fact that military units are interested in autonomous weapon systems, therefore protective measures need to be equipped for these weapons in case an adversary attempts to capture supplies or other objects. It would be only logical to equip these autonomous systems with also a self-defense system so that it can perform its duty.

From a human-centered approach, the question of LAWS and the resulting controversy lies in that people have not decided how much control that they should exert on the weapon systems. If too much control is exercised, the weapon systems will not be able to increase force multiplier and the efficiency of war; nevertheless, if too little control is exercised to the extent at which robots can carry out killings, ethical issues aforementioned rise. In order to alleviate the problem concerning LAWS, delegates can consider solutions including providing a common ground for discussion that is accessible to a range of governments and publics, focusing on the shared goal of maintaining some levels of control across all autonomous weapon systems, making sure that the definition and regulations are
consistent with those of the IHL on the use of autonomous weapons in armed conflicts. This way, a level of human judgment is being entailed while at the same time legal responsibility for the decisions made are assigned to individuals.

One example or case study in which a definition for LAWS is clearly presented is in the Netherlands. The government of the Netherlands defines the autonomous weapon systems as a weapon that can select and engage targets that match a predefined criteria set, following a decision made by humans to deploy the weapons. This decision is based on the understanding that once the weapon has set off for an attack, it cannot be stopped. In the Dutch definition, the scope is narrowed so that even though it requires weapons systems to function without human intervention and that it cannot be stopped after the immediate launch, the justification for such requirements is abundantly clear—the government trusts that there is meaningful human control that governs the targeting process. The Dutch government also believes that weapon systems that can select targets and attack without human intervention, but could be intervened would not qualify as autonomous weapons. Therefore, the definition still made sure that some autonomy is left. So long as people are predefining the standards on which autonomous weapons make decisions and are considering aspects such as weapon selection, implementation planning (including the time and space of the attack), target selection, and an assessment of the potential destruction and damage level, this system will be qualified for attack. The present Dutch definition emphasizes the need for human accountability and engagement and focuses on several time frames, including the design of the weapon phase, the testing phase, and post-attack assessment phase. The Dutch example uses the human-centric approach as explained previously for it notes the responsibility for humans at each phase and affirms the IHL requirements.

Bibliography


