

Analysis of the Positions Held by Countries on Legal Issues of Lethal Autonomous Weapons Systems and Proper Domestic Policy Direction of South Korea*

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Lethal Autonomous Weapons Systems (LAWS) are being developed by major countries as a core value of future war. The international community is actively discussing the legal issues and regulatory methods of LAWS at the Group of Government Experts (GGE) meetings hosted by the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons (CCW). The main purpose of the first part of this paper is to compare and analyze countries' positions on each issue at the above GGE. At the GGE, there are contrasting stances between those supporting and opposing strict regulations on LAWS. A consensus was not reached on the definition of LAWS and the necessity to create a new treaty that regulates LAWS. However, most countries and NGOs are trying to find a methodology for autonomous weapons to comply with international humanitarian law through "human elements." It is difficult to expect the creation of a new treaty, so the recent GGE has emphasized the solution through Article 36 of Additional Protocol I. Based on the discussions at the GGE, the second part of this paper will examine the proper policy direction that South Korea can set for LAWS. The issues and trends discussed in the GGE need to be fully understood by government policy makers and defense industry experts. In addition, in order to clarify the implementation of Article 36, it is possible to use a method to prepare regulations in domestic laws or codes of conduct to test compliance with international laws on new weapons including LAWS. As to whether or not to create the new treaty, diplomatic channels can carefully consider options for participating in European-led political declarations. Finally, an accurate understanding of the U.S. position on LAWS regulations is needed, and government-led research and development can play an important role in promoting international solidarity among allies.

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Introduction

On January 3, 2020, the United States eliminated Iranian military leader Gen. Ghassem Soleimani, the commander of the Revolutionary Guards Quds Force in a drone attack through the MQ-9 Ripper, and the world was amazed. Unmanned aerial vehicles, such as the MQ-9 Ripper, are semi-autonomous weapons systems operated by human remote control and are not included in the scope of autonomous weapons systems (AWS). This is because AWS must include a higher degree of autonomy that can select and engage targets without human intervention. However, as unmanned weapons systems began to function as a game changer that would change the patterns of battle, the international community began to actively discuss the legality of AWS. From the standpoint of the military, AWS can reduce casualties by removing human warfighters from dangerous missions.¹ In practice, South Korea is focusing its military capabilities on the development of swarms by operating a drone-led combat unit since 2018.² However, the international community has raised strong concerns that an attack by a machine could pose a serious threat to human dignity and violate international law.

Since 2014, the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons (CCW) has been hosting the Informal Meeting of Experts on Lethal Autonomous Weapons Systems (LAWS). Since 2017, the meeting has been transformed into a meeting of the Group of Government Experts (GGE) on LAWS. The position of countries dealing with the LAWS issue at the GGE enables us to predict how LAWS will be operated and regulated in the future. We have not yet reached full consensus on LAWS regulations, but we can see the progressed results of the discussions on LAWS among countries, international organizations and non-governmental organizations through the three-year GGE meetings. This paper mainly aims to compare and analyze the positions of countries based on the discussions at the GGE. In addition, in response to the analysis of the flow of international discussions at the GGE, it examines what policy direction South Korea can set in operating and regulating LAWS.

First, this paper will examine in detail the differences in national approaches to the definition of LAWS and the common understanding of countries on the issue of legal responsibility for the use of LAWS. It also analyzes efforts by countries, international organizations, and non-governmental organizations to operationalize the human element for LAWS. It will look at the state's position on the legal review process for LAWS at the national level and the recent GGE agreement, focusing on

Additional Protocol I (AP I)³ Article 36, which has been claimed by some countries as an alternative or complement to the new legal binding instrument. In addition, this paper will look at the differences in countries' positions on whether a legal binding instrument should be created for International Humanitarian Law (IHL) compliance. Based on a comparative analysis of each government's position, we will be able to identify the current state of LAWS and predict the future. Finally, this paper will analyze policy measures to ensure that the government of South Korea complies with international commitments to regulate LAWS to comply with IHL, while maintaining practical military or diplomatic interests.

Review and Analysis of the Positions Held by Countries on Each Issue of Lethal Autonomous Weapons Systems

Importance of GGE Discussions

The GGE meeting is a forum where government diplomats, military, and technical experts present their governments' views at the national level in order to reach a consensus within the international community. It is very important that these views are shared throughout government and diplomatic channels as well as among top military commanders, and be recognized as serious issues, rather than just being considered an academic conference. It is because the "subject" which establishes and implements the policy in accordance with an international agreement is ultimately each country's government and military that deal with weapons systems.

The research and effort of academia and experts are important, however, the effort made at the national level is essential in order to resolve the issues surrounding LAWS. This is because the results internationally agreed upon through the GGE meetings attended by government delegations on behalf of their own countries can significantly influence the direction of national policy.

From November 13–17, 2017 the first GGE on LAWS was held for a week at the UN headquarters in Geneva. The meeting was attended by delegations from 123 high contracting parties to CCW and five signatory states to the convention, delegations from observer states, representatives of relevant international organizations and NGOs. This meeting had been in the form of an informal meeting of experts but at the 2016 Fifth CCW Review Conference the high contracting parties decided to elevate the meeting to a GGE.

In 2018 and 2019, GGE meetings were held twice a year, and the results of each GGE were published in report form every year.⁴ The GGE's final report describes the agreements of all countries, and for those that are not agreed upon, it is possible to check and analyze the statements of the government delegations in each subsection.

The main purpose of this paper is to identify all the statements of each country and to

analyze the issues with diverse positions. Through the process of the GGE, it is also necessary to analyze the part where the position of the state has changed or the part where the position is gradually specified. Many international organizations and NGOs also actively participate in the GGE as working groups. They focus more on LAWS regulations, but it is also important to understand their position together.

Tug of War among Countries Surrounding the Definition of LAWS

LAWS and AWS

The GGE uses the term LAWS to describe lethal autonomous weapons systems. It adds the word “lethal” to the front of AWS. This can be interpreted as having two meanings. Basically, LAWS, which are the object of discussion at the GGE, are those AWS that are a threat to human beings and states argue need to be regulated. By adding the word “lethal,” the GGE is primarily concerned with those systems that threaten human life and raise concerns about their use in armed conflict. In the GGE First Final Report, which states that civilian use should be guaranteed, it is clear that the GGE’s intent is not to interfere with the good efforts of the development of AI in the private sector.⁵ Many theoretical studies outside the GGE tend to use the term AWS in general. However, since this paper is analyzing and resolving conflicting positions on lethal autonomous weapons by states based on the GGE, I will use the term LAWS in this paper.

Definition of LAWS—Still Hard to Find Consensus

Meaning of Argument on the Scope of LAWS

The debate surrounding the scope of LAWS is still ongoing. This is because certain weapons systems may be subject to regulation if they are subsumed within the scope of LAWS covered by the GGE. In the GGE, those countries that oppose any potential regulation have tried to narrow the scope of LAWS, and those countries that want to restrict the use of LAWS have made efforts to broaden the scope of LAWS.

Method of Classification of LAWS

The most commonly used method of classification of LAWS is to link the operation of the weapons system to the processes of human decision-making, such as observation, orientation, decision and action (often referred to as the “OODA loop”).⁶ The key to the concept of the “OODA loop” is completing the cycle faster than the enemy such that the enemy is always in a reactive mode and cannot seize the initiative.⁷

Looking at the relationship between the human and the machine, there are three potential levels of control in autonomous systems. The first type of system, known as “semi-autonomous” or a “human in the loop” system is when the machine will perform some functions on its own, but at a certain point will stop and seek human input before continuing. The second type of system is “human-supervised autonomous” or a

“human on the loop” system. Here the system performs functions on its own, but there is a human serving as a monitor who can override or intervene if the system fails to perform as expected. Finally, the last type of system is an “autonomous” system or a “human out of the loop.” This system will perform functions on its own and the human operator does not have the ability to intervene. In each of these scenarios, autonomy is focused on the relationship between the human and the machine versus the intelligence of the machine.⁸ Similar to other weapons systems, LAWS will have a human first “press” the start button.⁹ Once activated, the distinction is how free the system is from human intervention.

Discussion at GGE—States Views on the Scope of LAWS

States’ Views on What Constitutes LAWS

One of the major debates within the CCW is what is meant when a State uses the term LAWS. The most common argument with respect to LAWS is whether the discussion should include only fully autonomous systems or whether it should also include discussions as unmanned aerial systems (“drones”). As the International Committee to the Red Cross (ICRC) noted back in 2015, there is no internationally agreed upon definition of AWS, but common to various proposed definitions is the notion LAWS are “weapons system that can independently select and attack targets.”¹⁰

Since the concept above refers to weapons systems that can select and engage targets without further human intervention, certain states want to define LAWS as only fully autonomous lethal weapons systems (human out of the loop). These states argue that defining and regulating LAWS more broadly could lead to excessive regulation, which disables the benefits of autonomous systems.

For example, France and Germany have suggested that a working definition of LAWS should include only “fully autonomous lethal weapons systems.”¹¹ France, in particular, acknowledges that no states have developed a fully autonomous system, in which communication with the military command is completely blocked and there is no overall human supervision.¹² Japan¹³ and Spain¹⁴ also declared that they would define LAWS as fully AWS and mentioned that they do not possess LAWS nor have any intention of developing them. The Netherlands defines LAWS as a system that, once launched, cannot be stopped by humans. After the weapons systems are activated, the weapons systems that select and engage targets matching certain predefined criteria without human intervention are considered LAWS.¹⁵ China also recognizes LAWS as fully autonomous lethal weapons systems.¹⁶ During the March 2019 GGE, Russia asserted that LAWS could be used to destroy military installations, protect critical facilities such as nuclear power plants, eliminate terrorists and protect civilians.¹⁷ They argued that the LAWS discussion should be limited to fully AWS that performs their mission without any human intervention.¹⁸ It also suggested that existing unmanned aerial vehicles are highly automated systems, not LAWS, and therefore should not be discussed at the GGE.¹⁹

States' Views that the LAWS Discussion Does Not Require "Full Autonomy"

A question can be raised as such: "Do fully autonomous LAWS exist currently or is it possible that they will exist in the future?" Some countries that are confident that LAWS will exist in the future try to proceed with the discussions while seeking a preemptive ban on their development. In addition, certain states want to broaden the definition of LAWS to include weapons systems that are semi-autonomous or human supervised AWS. It is because there is certain consensus that the development of autonomous weapons "that would eventually lead to fully autonomous weapons" should be prevented at an earlier stage.

Generally, unaligned groups and some countries, such as Brazil and Argentina, tend to broadly define LAWS. They take a strict stance saying that apart from the weapons systems that utilize the autonomous technology, automated weapons systems and existing weapons systems should be discussion topics of the GGE. In particular, Brazil actively opposes limiting the discussion only to fully autonomous systems arguing that LAWS should be defined by indicating the precise point or range in the scale from zero to full autonomy.²⁰ Switzerland cited the issue of key functions, machine-human relationships and responsibilities in the targeting process as positive elements (via positiva) related to the concept of LAWS.²¹ For the negative elements (via negativa), they suggested that the lethality of the weapons system is not a prerequisite, and although autonomy is a related term, the degree of autonomy or the mobility of the weapon itself does not characterize LAWS.²²

The Flow of GGE Focusing on Characteristics of LAWS Rather than the Definition

The U.S. Department of Defense Directive 3000.09, *Autonomy in Weapons Systems*, (DoDD 3000.09) defines an autonomous weapons system as follows:

"A weapons system that, once activated, can select and engage targets without further intervention by a human operator. This includes human-supervised autonomous weapons systems that are designed to allow human operators to override operation of the weapons system but can select and engage targets without further human input after activation."²³

The DoD definition of AWS includes human-supervised AWS, i.e., those weapons systems with a "human is on the loop." On the other hand, it excludes semi-autonomous weapons systems ("human is in the loop"). At the same time, DoDD 3000.09 also includes regulations that systematically limit the development and fielding of certain AWS without prior approval of senior defense officials.²⁴ However, if approval by the listed authorized approvers is obtained before formal development and before fielding, there is an open way for AWS to escape from the restrictions.²⁵ Through the above provision, we can infer that the U.S. policy warns of the indiscriminate development and fielding of LAWS, including fully AWS, but nevertheless does not block the possibility that LAWS can be developed, fielded, and

then used on the battlefield.

Even though the United States defines AWS within its regulations, it has refused to define LAWS within the GGE. Instead, the United States suggested focusing on the characteristics of LAWS because trying to reach an acceptable definition of LAWS would waste time and effort unnecessarily.²⁶

Greece presents four characteristics²⁷ of LAWS, stressing that weapons systems specially designed to defend platforms, forces and populations against highly dynamic threats such as hostile missiles and munitions should not be included in the definition of LAWS because it does not meet the above characteristics.²⁸ Finally, the European Union (EU) argued that automated, remotely operated, and teleoperated systems are not included in LAWS and should be excluded from the discussion agenda.²⁹

Is a Definition of LAWS Essential?

If there is a binding agreement, basically, terms must be defined. However, the creation of a treaty that only deals with LAWS is very difficult to expect from the current flow of the GGE discussion (covered in “***Should a Legally Binding Instrument Be Created to Ban or Regulate LAWS?***”). In this situation, discussing the definition and scope of LAWS is premature and wastes valuable time studying LAWS that threatens IHL. Rather, it is important to identify the characteristics of LAWS to be regulated, and to create various scenarios to test the possibility of each IHL violation in detail. This could develop into a discussion of more effective LAWS regulations, and would be a more economical way to form a common consensus on LAWS regulations and use. Rather than using deductive reasoning to define LAWS, it is desirable to use inductive reasoning to find a system that is difficult to comply with IHL through various hypotheses. Arguments on the agreed definition should not be a means of lagging further discussions.

Principle of State Responsibility

One of the conclusions the first GGE Report highlighted is the fact that all responsibilities of using LAWS remain on states.³⁰ There was consensus among states that IHL imposes obligations on states, parties to armed conflict and individuals, not machines, during the 2019 GGE.³¹

There are several reasons why states are concerned about who is responsible for the use of LAWS in the event something goes wrong. First, it might be because the meeting was the GGE. States recognizing their responsibilities during a gathering of government delegations can highlight that the meeting is a field of discussion at the international level. Second, it reflects the complex problems surrounding the issue of responsibility, there are concerns regarding individuals who can be held responsible, such as developers and commanders. Nevertheless, at least by highlighting the existence of the state responsibility, the importance of the GGE discussion could grow

and the national effort could be emphasized. As for the methodologies of putting responsibilities on states, there might be theoretically a method of handling a breach of International Law through UN actions and of resolving the matter in accordance with the Articles on the Responsibility of States for Internationally Wrongful Acts. There are also many International Court of Justice (ICJ) cases that acknowledge state responsibility through customary international law.

One additional issue involves the responsibility of non-state actors' use of the relevant weapons after securing them. Certain states, such as Pakistan³² and Sri Lanka³³, argued that if LAWS are not prohibited, there is a risk of proliferation by non-state actors. Some scholars have argued that the spread of LAWS should focus on preventing internal innovation and external acquisition by non-state actors.³⁴

Whether the nonproliferation system is well established may vary from country to country. However, we can expect in advance that in the event LAWS are illegally used in a non-state armed conflict, the discussions will develop so as to impose responsibilities on the state that has sold and provided LAWS to non-state armed groups such as terrorist groups or created incentives to use LAWS.

Further Consideration of the Human Element in LAWS

Origin of the Term “Meaningful Human Control”

The next important thing in adopting the resulting document was to define the level of human intervention. What terminology to use was an important issue in reflecting the meaning of human control on the agreed upon document. The majority of states agreed that “meaningful human control” has to be maintained with LAWS.³⁵ However, Russia countered that polishing the semantic element of “meaningfulness” derived from the above term would be a daunting task.³⁶ The United States objected to “meaningful human control,” mentioning the necessity of maintaining an “appropriate level of human judgment” instead.³⁷ Some argue that there really is no difference between the two, but it is important to look at the nuanced difference between those two terms. The concept of “meaningful human control” is understood to be a comparative emphasis on the need for human judgment at the attack/engagement phase. On the other hand, the United States seems to have put in place the need for balanced human judgment at all stages of LAWS, including the development/design phase.

The first GGE Report in 2017 resolved such issues by using a very comprehensive term. It concluded that a “human element should be considered in using killing power.”³⁸ We can understand the difference of opinion between each state through the issues contained in the “human element.” And the phrase, “human element is necessary” in the Report implies that an international agreement was made on the estimation that without human intervention, the uncertainty of LAWS would not be cleared out to a certain degree.

Human Responsibility and Human–Machine Interaction

The first reason why human responsibility should be maintained is the accountability gap. The 2018 GGE Guiding Principle emphasized that since accountability cannot be transferred to a machine, the human responsibility for decisions on the use of LAWS is maintained and this should be considered in the entire life cycle of the weapons system.³⁹

The second reason why human responsibility is emphasized in the GGE is based on the understanding that it is impossible for machines to make their own judgments of the IHL test. Germany has made it clear that the unique qualities of human judgment cannot be replaced by the capacities of machines. In other words, they suggested that the machine could analyze large amounts of mathematical data on its own, but could not make the kind of value-based decision required of military practitioners.⁴⁰ Based on the various findings above, in the 2019 GGE, the consensus report stated that human judgment is essential for LAWS to comply with IHL.⁴¹ In addition, it was included in the consensus document that states must ensure that states have individual responsibility for the use of LAWS.⁴²

Various Attempts by NGOs to Ensure IHL Compliance through “Human Element”

There is a wide range of opinion exchanges around NGOs on the need for human control to ensure IHL compliance and human responsibility. The ICRC argues that there must be a human operator’s constant supervision through a physical or communication link against LAWS in order to intervene and deactivate the system at any time.⁴³ They also look for ways to utilize operational constraints when using weapons to ensure the predictability and reliability of LAWS.⁴⁴ With the use of diverse case studies, the ICRC is seeking the possibility of IHL compliance through limitations on the tasks, targets, environment, time frame of autonomous operation and scope of movement over an area.⁴⁵ While reaching an agreement on operational constraints may be a way for IHL compliance, the ICRC concludes that it will be insufficient to ensure IHL compliance. This is because “operational constraints” will only help to avoid the risk of IHL violations in the narrowest situations, given the high level of unpredictability on the real battlefield.⁴⁶

The GGE also officially states that understanding the role of operational constraints is an important challenge, but there is no consensus yet on how to make regulations so as to comply with IHL by reducing civilian casualties or damage to civilian objects.⁴⁷ The National Panel on the Regulation of Autonomous Weapons (iPRAW) is wary of the interpretation that machines have higher accuracy than humans. They argue that the cooperation of human and machine, which can overcome various variables on the battlefield, can bring higher precision of weapons systems.⁴⁸ Human supervision, in particular, is emphasized in that malfunctions or the hacking of LAWS must be discovered before devastating consequences result.⁴⁹

Methodology on IHL Application

Main IHL Principles Applied to LAWS

IHL is reflected in a variety of treaties, most notably the four Geneva Conventions developed after World War II and the subsequent protocols to those Conventions, as well as in customary international law.⁵⁰ The main principles of IHL that LAWS must comply with, which have been highlighted by the international community, are the principles of distinction, proportionality, and precaution. These three principles are ultimately aimed at the protection of civilians. The 1977 Protocol I to the 1949 Geneva Conventions (Protocol I)⁵¹ provides these three rules.⁵²

The first major principle in IHL is the principle of distinction. According to this rule, the civilian population and combatants; and the civilian objects and military objectives shall be each distinguished, and only the combatants and military objectives shall be a target.⁵³ In operational terms, the principle of distinction focuses on how commanders and their subordinates should draw the line between what is and is not a lawful target. There are several specific issues hidden in this principle. For example, the presumption that military personnel are subject to attack does not apply where an enemy soldier, disabled by capture, wounds, or illness, is no longer engaged in hostilities, because attacking such a soldier (*hors de combat*) is no longer justified by military necessity.⁵⁴ On the other hand, a civilian who directly participates in hostilities loses the protection.⁵⁵ In order to comply with the principle of distinction, protecting the civilian population and civilian objects should be the primary consideration, and an in-depth assessment on the circumstances of the battlefield should be made in order to figure out the above hard issues.

Once a target is assessed as lawful pursuant to the principle of distinction, proportionality imposes an additional obligation to forgo attack when it is anticipated that the attack will cause loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.⁵⁶ Related to both the principles of distinction and proportionality is the principle of precaution, which imposes a duty on attacking forces to take constant care to spare the civilian population, civilians and civilian objects.⁵⁷ Attacking forces are obligated to take all “feasible precautions” to ensure that the objectives they are attacking are not civilian objects, that the means and methods of attack will minimize incidental loss of civilian life and damage to civilian property, and will not result in disproportionate harm to civilians.⁵⁸ In addition, civilians should be given advance warning of attacks that may affect the civilian population, unless circumstances do not so permit.⁵⁹

LAWS Steps and IHL Compliance

Necessity of IHL Compliance in LAWS Development

Existing IHL, including the requirements of distinction, proportionality, and precaution, provides a comprehensive framework to govern the use of autonomy in weapons systems.⁶⁰ The proposition of the first GGE Report (2017) emphasized that IHL must be applied for the development and use of LAWS.⁶¹ This led to the guiding principle of the 2018 GGE Report.⁶² Why was this divided into these two categories: development and use? This resulted from the reality that LAWS are standing on an uncertain point. No one knows how far LAWS will evolve and how far AI will advance. That is why the two reports emphasized that IHL should be abided by from the development stage in addition to the use of LAWS, thus opening the door for the idea of preventive regulations on LAWS. States addressing the merits of LAWS argue that they are applicable in a dangerous environment as well and corresponds to the principles of IHL, such as distinction and proportionality. However, nobody knows whether AI weapons would observe all the above principles of IHL more reasonably than humans, and also, when the judgment made by machines is considered more important than the human judgment, it would be inevitable to face an ethical issue related to the respect of human rights. The above caution is the matter of International Human Right Law as well as IHL. The merits of the application of IHL in the use of LAWS should be discussed after LAWS is properly developed through a complete course of verification. In a word, it is natural that from the point of weapons development, IHL must be emphasized, and this must be addressed as an important issue separately.

Movement in Some Countries to Focus More on the IHL Test in the Attack Phase

While efforts to comply with IHL are necessary at the development stage, it has recently been emphasized that this alone cannot guarantee IHL compliance in an attack. When conducting an attack with LAWS, the unpredictable nature of real-world operational environments can make human involvement meaningless in the development stage.⁶³ Further, the United States is concentrating the IHL test on the LAWS attack phase, claiming that the IHL requirements address the “attack phase” rather than the “firing or activation phase.”⁶⁴ Greece claims that weapons systems specially designed to defend its own platforms, forces and populations against highly dynamic threats such as hostile missiles and munitions should not be included in LAWS.⁶⁵ From this point of view, it emphasizes that if the purpose of the attack is defense, weapons with a high degree of autonomy are less likely to violate IHL.⁶⁶

Sub-conclusion

As discussed earlier, the GGE is trying to address whether IHL should be followed through human-machine interactions throughout the development and use phases, or throughout the life cycle of LAWS. However, due to the lack of consensus among states on the degree of LAWS regulations, it has been difficult to establish a common standard.

Is Article 36 of AP I a Panacea?

Role of Article 36

Article 36 of AP I of the Geneva Conventions is as follows:

“In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.”⁶⁷

Article 36 requires that any new means or methods of warfare, to include new weapons, must be evaluated for compliance with IHL. Many western states argue that Article 36 could be the solution for ensuring compliance with IHL because LAWS, like other weapons systems, must undergo a legal weapons review prior to fielding to ensure that their use does not violate existing IHL.

There was a suggestion from France and Germany that non-signatory states of AP I should also abide by Article 36 through their suggested political declaration.⁶⁸ This means that the obligations of Article 36 would expand to all states in addition to the signatory states. However, since the non-signatory states would not be under any legal obligation to follow the convention unless it includes the rules which form part of the international customary law, its enforcement would not be easily carried out.

Would it be possible for the international community to completely control the process of LAWS development and deployment with this provision? There are diverse opinions on this.

Consensus on the Use of Article 36

The 2019 final report emphasized that the voluntary exchange of best practices involving international legal review of new weapons, taking into account national security considerations or commercial restrictions on proprietary information, may be the most beneficial for all. But at the same time, it was agreed that each country could, independently, decide freely on the means to conduct legal reviews.⁶⁹ This can be seen as emphasizing the importance of legal reviews at the national level, using the authority of the final report, which is a result of the final agreement between countries. In other words, it can be interpreted as a separate emphasis that the intent of Article 36 of AP I must be achieved by each state's interpretation of whether LAWS is in compliance with international law.

Limits of Article 36

It is of interest to many IHL organizations whether new weapons are actually subject to a review pursuant to Article 36 of AP I in each country. Out of the 174 state parties to AP I, only a limited number of states, fewer than 20, are known to have a weapon review mechanism in place.⁷⁰ But within the legal and military systems of

each country, it is not easy to know whether states actually conduct this legal review process. It is not easy to prove this, even if such legal review is practically carried out unless it is specified by domestic law. In addition, some countries may not go through these legal reviews in practice but may defensively claim that they go through legal reviews by using comprehensive review rules on weapons. The credibility of a claim can also depend on whether the review rules on weapons have legal binding force. If a state wishing to use LAWS can make its own legal review independently, without any verification by the international community, it may cause problems with credibility and transparency among different government departments, and towards external experts and the public.

Sub-conclusion

To date, no universal international procedure for legally reviewing weapons has been established. All states currently attending the GGE welcome all efforts to strengthen article 36, and as noted above, this is fully reflected in the GGE Reports. However, given the fact that Article 36 requires domestic implementation by states, there is widespread opinion that this alone is not easy to regulate because of the lack of legal clarity, common criteria and transparency.⁷¹

Should a Legally Binding Instrument Be Created to Ban or Regulate LAWS?

Position that Legally Binding Instruments Are Needed

Many of the nonaligned groups,⁷² and Austria⁷³ and certain other European countries, and NGOs like Human Rights Watch⁷⁴ and Women's International League for Peace and Freedom⁷⁵ are explicitly insisting on the necessity of establishing legally binding instruments. Recently, the Campaign to Ban Killer Robots released a list of twenty-nine countries that call for a prohibition of fully autonomous weapons.⁷⁶ They emphasize the need to prohibit LAWS due to the risk of proliferation and arms race; transition to terrorist groups; increased potential of the use of military force; and the unavailability or breach of IHL. In order to prohibit LAWS, they are stressing the establishment of binding instruments.

After all, this is linked to the matter of “to what extent the existing IHL principles apply to the development and operation of LAWS” and “how much they would be able to work as a forced measure.” These states take the position that existing IHL principles and Article 36 of AP I alone are insufficient to regulate LAWS. It is true that efforts to establish a new legally binding instrument have become more insistent during the GGE meetings. In the 2018 and 2019 GGE, NGOs, such as the Campaign to Stop Killer Robots, insisted that a legal instrument on the prohibition of LAWS must be implemented as a separate protocol under CCW, that is, the sixth protocol, and at the same time they insisted that each state legislate a LAWS prohibition bill.⁷⁷ If the international community moves in the direction of creating a new legally binding instrument, it will fully reflect the specificity of LAWS. For example, even

though a machine is the subject of an act, in order to clearly define the boundary of responsibility, imposing the responsibility on humans can be the subject of the new legal regulations.

Position that Legally Binding Instruments Are Not Needed

On the other hand, those states considering that it is important to consider the advantages and merits of LAWS seem to feel quite burdened by these aggressive moves on the establishment of a new instrument. These states, such as the UK,⁷⁸ the Netherlands,⁷⁹ Poland,⁸⁰ Israel,⁸¹ the United States,⁸² South Korea,⁸³ and Russia⁸⁴ insist that it is premature to stipulate new binding regulations that prohibit LAWS and discussions must continue focusing on promoting a common understanding of states on the weapons system using autonomous technology at present.

Positions that Political Binding Instruments Are Needed

France and German have advocated for the adoption of political declaration and the codes of conduct,⁸⁵ but they are in a negative position on adopting new legal instruments. They suggest a political declaration is an intermediate form between a legally binding instrument and no regulations at all and should include key issues, such as human responsibility, human accountability and a clear reference to responsible chains of human command and human control.⁸⁶

Sub-conclusion

Nobody can precisely predict whether or how soon LAWS may be developed, however, the possibility of uncontrollable proliferation is recognized and if combined with weapons, the ensuing catastrophic effect is unimaginable.

The states that started development earlier can face an inducement to continuous development and uses for the ease of national security. Some states like the United States⁸⁷ and Russia⁸⁸ highlighted the positive aspect of autonomous technologies in military terms, mentioning the possible enhancement of IHL compliance, such as the principle of distinction between combatants and non-combatants and proportionality by improving shooting accuracy through the utilization of autonomous technologies.

Meanwhile, Pakistan asserted the necessity of a moratorium on the development of LAWS until the arrangement of laws and regulations is concluded.⁸⁹ As the development of LAW progresses, the gaps between the opinions of each party can increase. For this reason, it is important to discuss the restrictions in the earlier stage.

France and Germany advocated for the adoption of a political declaration, which states humans should be able to control lethal weapons with autonomous technology and as a next step they suggested codes of conduct, which has a politically binding effect. A majority of European countries expressed support for this. Meanwhile, unaligned groups expressed their opinions that the political declaration should not be a substitute for legally binding regulations.

GGE Discussions and the Proper Domestic Policy Direction

Significance of Discussion

In the second chapter, based on the discussions at the GGE on LAWS, we analyzed concretely each of the various positions of the states on varying issues that have been raised over the past several years in the CCW. Some issues have reached international consensus while other issues remain contentious. Accordingly, it is important for states to develop a national policy to implement the agreed upon content of the GGE. In particular, it is highly likely that there will be various international supervision on whether the agreement reached in the GGE is being faithfully implemented in countries.⁹⁰

Identifying what has been agreed upon in the GGE and setting the proper domestic policy direction to implement it is essential to IHL compliance and maintaining its status as a country that keeps international commitments. In addition, each country should be able to prove to the international community that it is making national efforts to comply with the IHL in the field of LAWS by providing appropriate countermeasures at the national level to the sharply conflicting issues in the GGE.

Enhancing Publicity on Issues Covered by GGE

Promoting the Importance of Using Terms

It should not be overlooked that foreign experts are keenly aware of South Korea's Artificial Intelligence (AI) and defense industry capabilities, and recognize things like the DMZ unmanned boundary system as the predecessor level of a fully autonomous weapon.⁹¹ The government and the defense industry must be careful in the use of the words "artificial intelligence" or "autonomous weapon" in defense research and development. Even if it is not a true autonomous weapon, it should not cause unnecessary misunderstanding within the international community by using public expressions such as the "fusion of artificial intelligence and weapons" without serious consideration of their impact.

Active Dissemination of the Contents Discussed at GGE

The South Korean government needs to continue to closely observe the international community's discussion of LAWS. In particular, the government needs to steadily strive to disseminate the contents discussed in the GGE periodically to domestic scientists and the defense industry while paying close attention to international trends on LAWS. If experts and the general public who want to potentially exploit LAWS are clearly aware that the concern over the development of LAWS potentially threatening the IHL is already publicized in the international community, they may take a more cautious approach to LAWS development and research.

Through these efforts, the government will be able to form a national consensus on the autonomy of the weapons system. Diplomats, officials and scholars who are well-versed with the LAWS issue will be able to respond appropriately to the pace of the international debate.

Securing the Basis for IHL Compliance through the Creation of Domestic Regulations

Usefulness of Domestic Regulations and Code of Conduct

As seen in the previous chapter, the international community has set IHL compliance by LAWS as the most important operational principle and emphasizes that there must be a human element for IHL compliance. The GGE clearly declared the principle of state responsibility would apply to the use of LAWS. In order to avoid state responsibility for IHL violations, it is important for the state to have a well-formed bridge that can regulate commanders, developers, and related officials.

Under such circumstances, the international community is emphasizing that the IHL compliance test for LAWS should be mandatorily carried out at a national level from the development stage, focusing on Article 36. Centering around the U.S. proposal, the international community emphasized that the three IHL principles, that is, the principle of distinction, proportionality, and precaution, should be followed in developing and operating LAWS.

Establishing regulations mandating IHL-tests for LAWS in domestic acts and subordinate statutes, administrative rules, and ROCs (Required Operational Capability) may prove national efforts to comply with IHL. Since the IHL-test specific criteria for LAWS have not yet been agreed upon, it will be a policy choice whether to comprehensively regulate the content and procedures of the IHL-test or to be as detailed as possible.

In addition, it is necessary to examine the creation of a code of conduct by dividing the subjects. Creating a code of conduct for IHL compliance for weapons developers, scholars, soldiers, commanders, and public officials dealing with LAWS can be a very flexible and powerful domestic prescription.

Importance of Sharing Review Standards of Domestic IHL-Assessment

Regardless of whether a new legally binding instrument is established, it is worthwhile to note the approach of France and Germany that state practice can be enhanced by sharing review procedures prescribed in Article 36, AP I, and utilizing a Committee of Technical Experts. Especially, the directivity of technological development of LAWS should be closely checked and shared at a government level by monitors such as each state's officer or members of parliament.

Also, there needs to be a perception that an Article 36 review is not the only measure a State relies on with respect to the development of LAWS. Article 36 is

only a stipulation that grants responsibility to review whether the development or employment of new weapons violates International Law or not when they are used, and in fact, it is highly possible that the review remains only within the domestic viewpoint. Austria also expressed its concern, saying Article 36 contains obligation to review the new weapons but does not have specific provisions to carry it out.⁹² In the end, each country should try to actively share information and unify their review standards to increase the effectiveness of the above articles but there should be coping plans in case such procedures do not properly work.

Diplomatic Response to the Debate on Whether to Create a New Treaty

Whether to create a new legally binding instrument is the most critical issue in the GGE, but with such divergent views it will be difficult to reach a resolution in the future. At the GGE in 2017, Germany and France argued that the GGE should instead focus on a political declaration, including the code of conduct governing LAWS, and most members of the UK, France and the EU are now in favor. Participation in a political declaration by South Korea can be a way to demonstrate its commitment to IHL compliance. However, there may be objections from NGOs or non-aligned countries that the political declaration is a means of avoiding the creation of a new treaty, so South Korea may need to be cautious in its approach.

In addition, there are cases where individual agreements have been established when negotiations within the CCW have failed, such as the Convention on Cluster Munition or the Mine Ban Treaty, so strategies for anticipating and responding to similar movements could be also necessary.

Establishing Various Cooperation Systems with Other Governments

Strengthening Solidarity through Careful Understanding of the U.S. Position

The South Korean government needs to refrain from attempting to take its own line and strengthen its solidarity with other countries. The political situation on the Korean Peninsula, divided into North and South, can lead to a misunderstanding that South Korea is focusing on the development of LAWS as an armament competition with North Korea. Fortunately, South Korea has established a partnership with the United States, its ally, at the GGE meetings. It is necessary to closely observe the positions of geographically adjacent countries, such as China, Russia, and North Korea, while maintaining close ties with the United States.

However, it is dangerous to approach solidarity with the prejudice that the United States is simply close to opposing LAWS regulations. Currently, the United States has established rules for controlling LAWS to a reasonable extent, based on preemptive research on LAWS at the academic and governmental levels. For example, in addition to the standard weapons review process, Department of Defense Directive (DODD)

3000.09, which establishes U.S. policy on autonomy in weapons systems, requires a secondary senior-level review. This review⁹³ requires the Under Secretary of Defense for Policy, the Chairman of the Joint Chiefs of Staff, and either the Under Secretary of Defense for Acquisition and Sustainment or the Under Secretary of Defense for Research and Engineering to approve the system “before formal development and again before fielding in accordance with the guidelines.”⁹⁴ Moreover, the U.S. Department of Defense officially adopted a series of ethical principles for the use of AI in February of this year. The department’s AI ethical principles encompass five major areas: responsible, equitable, traceable, reliable, and governable. All the above principles contain content that can be applied to LAWS.⁹⁵ For example, in the “governable” area, the ability to disengage or deactivate deployed systems that demonstrate unintended behavior is included as the core content.⁹⁶

If this principle is thoroughly applied to the development of LAWS, the risk of LAWS will be reduced because it is possible to prepare for an unexpected battlefield situation that is not guaranteed to fulfill the mission or threaten IHL compliance.

As such, the United States is constantly updating countermeasures on the possible legal and ethical challenges that may arise from LAWS. Therefore, it is desirable for the South Korean government to clearly recognize the above efforts of the United States in dealing with LAWS and pursue solidarity with the U.S. government with a balanced view.

Promoting Government-Led Research

EU member states have been jointly financing and executing military-oriented research and technology initiatives under the coordination of the European Defence Agency (EDA) since 2005.⁹⁷ This has been taken to the next level under the Permanent Structured Cooperation (PESCO).⁹⁸ Their project includes LAWS and is funded by EU member states.

Reinforcing research through inter-governmental cooperation, referring to the case of the EU, can be an effective policy tool to ensure compliance with IHL. Promoting research on LAWS through inter-governmental cooperation can further facilitate research capabilities through economic support, and at the same time increase transparency to facilitate IHL assessment in the detailed process of the project.

Conclusion

This paper has analyzed the positions of countries, international organizations and NGOs on the issues addressed at the GGE. The controversy over the definition of LAWS represents the states’ positions on the degree of LAWS regulations, which makes it easy to grasp their attitudes toward LAWS. However, in a situation where consensus on the definition of LAWS was virtually difficult, there was a flow of the

GGE that went toward the study of LAWS characteristics rather than continuing the debate on the definition of LAWS.

This paper also outlined the importance of the principle of state responsibility to comply with IHL and to maintain human responsibility in each country. We reviewed the consensus made at the GGE that human responsibility and IHL compliance must be maintained at all times in the operation of LAWS and for this, human element is essential. We also analyzed the efforts made by countries and NGOs on how to consider human elements. Regarding IHL compliance, we identified the movements of countries that are focusing on the attack phases of LAWS and examined the differences in positions among countries that respectively suggested Article 36, legal-binding instruments, and political binding instruments as alternatives.

The debate in the GGE above helps to set the direction for policies dealing with LAWS domestically. First of all, from the basic stage of the definition of LAWS, in light of the reality confronting countries, it is important to pay attention to term selection when linking autonomy and weapons domestically. It is advisable not to use terminology that would be indiscriminately related to LAWS unless it is a weapon capable of targeting or attacking without human involvement. The use of wrong terminology for publicity is easily misleading to the international community, which can also damage the formation of a national image that complies with IHL. As part of the legislative effort at the national level, creating a LAWS-review rule for IHL compliance and sharing it with other countries can start a virtuous cycle for many countries while still complying with existing IHL. These regulations can be used as a barometer to ensure that countries comply with the GGE's core goal of compliance with IHL. Also, we need to be cautious about claims to create a new treaty. The establishment of new international norms has already sparked considerable diplomatic warfare, and the unambiguous presentation of this position can lead to the loss of balance in the South Korean stance in the GGE so far. As an alternative, we can think of joining the political declaration being promoted by the EU. Finally, in order to dispel the misunderstanding of NGOs that South Korea opposes LAWS regulation, the South Korean government needs to benchmark the internal regulations of the U.S. government and develop a new legal review process and ethical regulations on LAWS. In order to update and improve legal and ethical standards through in-depth preemptive research, we need to strengthen our solidarity with governments in other friendly countries, including the United States. It is necessary to take the lead in a global effort to comply with IHL through active government-level participation and support for research and development on LAWS.

We are now facing a new weapon with a whole new paradigm which is able to attack without any human intervention, not just a new weapon with advanced attacking abilities. States should not approach this matter from the simple perspective of their own national interest. We need to approach this matter at a global and international level and make a cooperative effort in sharing information to prevent terrible

outcomes. There needs to be a perspective that it is important to focus on “the need to develop only the LAWS by sticking to IHL principles under human control” rather than discussing “how the LAWS which, in the future, is outside of human control, can stick to IHL principles.”

Notes

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2. Lee Min-hyung, “Army Launches ‘Dronebot’ Combat Unit,” *The Korea Times*, September 28, 2018.
3. Protocol (I) Additional to the Geneva Conventions of August 12, 1949, and Relating to the Protection of Victims of International Armed Conflicts, June 8, 1977, 1125 U.N.T.S. 3.
4. At the United Nations Office at Geneva (UNOG) site, final reports of each Meeting of Experts on Lethal Autonomous Weapons Systems (LAWS) (2014–2016) and the Group of Governmental Experts on LAWS (2017–2019) hosted by the Convention on Certain Conventional Weapons (CCW) are disclosed. Working papers at each meeting, national representatives and international organizations’ statements are all disclosed in detail.
5. The 2018 GGE report also specified the principle that discussions in the CCW should not interfere with the progress in or access to peaceful uses of intelligent autonomous technologies. See “Report of the 2018 Session of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems,” October 23, 2018, CCW/GGE.1/2018/3, para. 21(i), <https://undocs.org/en/CCW/GGE.1/2018/3> (accessed August 10, 2020).
6. The “OODA loop” refers to the “Observe, Orient, Decide, Act” cycle. This is a war strategy of John Boyd, a U.S. Air Force pilot who also participated in the Korean War and an operation stage of weapons which is mainly used for air battles. Although this classification system is for better fighting wars, its uses have no limit.
7. “[By] 2047 technology will be able to reduce the time to complete the OODA loop to micro or nanoseconds.” See U.S. Air Force, “Unmanned Aircraft Systems Flight Plan 2009–2047,” May 18, 2009, 41, <http://www.govexec.com/pdfs/072309kp1.pdf> (accessed August 10, 2020).
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and robotics researchers questioned the research on AI weapons promoted by state-run science research university Korea Advanced Institute of Science and Technology (KAIST) and Hanwha Systems. They declared, “We will boycott all joint research with KAIST until the KAIST president promises not to develop a weapon that will autonomously decide without meaningful human control.” In response, KAIST tried to alleviate the suspicion of scholars around the world by arguing that it would not do “a study that violates human ethics” and “a study that violates human dignity, such as an autonomous weapon that lacks human control.” Hanwha Systems also explained that the joint research with KAIST was only to develop “AI robots to be used in unmanned technology to prepare for troop reduction” and not to develop killer robots. Actually, KAIST and Hanwha Systems opened the Defense AI Convergence Research Center. It was later revealed that the English newspaper, *the Korean Times*, distorted and reported that it was developing AI weapons. Regardless of the background, this incident has made the Korean government and the defense industry aware that a careful policy review is needed to use AI for military purposes.

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