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LETHAL AUTONOMOUS WEAPON SYSTEMS (LAWS) – TOWARDS GLOBAL REGULATION OR INDISCRIMINATE EMPLOYMENT?

Abstract

Modern battlefields around the globe demonstrated the employment of the next generation of weapons which are colloquially designated as “killer robots”, or Lethal Autonomous Weapon Systems (LAWS). Although LAWS, for now, are always under the supervision of the human operator, the technological advancements in Artificial Intelligence allow for such weapon systems to achieve a significant degree of autonomy, including the autonomy over the decision-making process of utilizing the lethal force against the human targets. Due to the lack of global regulation for the research, production, and deployment of LAWS, they are seeing more and more employment in contemporary battlefields, from Libya, Syria, Yemen, and Nagorno-Karabakh to Ukraine. The goals of this article are to understand the limitations of the AI that can be employed in LAWS; to present an overview of the current LAWS via the available public data; to assess the state of the regulations of the LAWS, by employing comparative analysis of strategies and positions towards LAWS from the side of the EU, the USA, China, Russia, and India. The results of this research demonstrate that barring the EU which is in the process of adopting a regulation that will enforce a total ban on the LAWS, the other major powers

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express a balanced approach towards this issue by reserving rights to develop and employ LAWS for the goals of their national security, per the Article 36 of the 1977 Additional Protocol I to the 1949 Geneva Conventions.

Keywords: Killer Robots, LAWS, UCAV, loitering munition, Geneva Convention, EU, USA, China, India, Russia

In the last two decades, modern battlefields demonstrated the revolutionary usage of new technologies, such as Unmanned Aerial Vehicles (UAV), Unmanned Combat Aerial Vehicles (UCAV), loitering munition, drone swarms, tracked autonomous weapon platforms, etc., which until recently, were all considered something to be purely fictional concepts. Most of the defensive and offensive systems that are employed by the militaries around the world today are to some degree operated by Artificial Intelligence (AI), with various levels of its autonomy. This naturally drew significant concern from the side of the global academic and activist community, which is concerned with the lack of restraint and regulations for the development and employment of the so-called “killer robots” – Lethal Autonomous Weapon Systems (LAWS), capable of deciding by themselves for use the lethal force against humans, without the supervision of the human operator. Since the United States first tried to set a regulation towards the development and employment of such systems in 2012, governments around the world also started to consider how to approach this matter from the legal side. At the same time, countries that are heavily investing in AI Research and Development are concerned that they may fall behind in the “LAWS arms race”, and thus lose the strategic advantage over their adversaries.

This article will provide a brief overview of the current LAWS that are employed on the contemporary battlefields, as well as a present comparative analysis of the LAWS strategy and regulations from the side of the United States, the EU, the UN, Russia, China, and India. Additionally, the nature and limitations of AI will be discussed. This will be achieved by employing methodological tools, such as content analysis, which will be used in the research of documents such as resolutions, regulations and laws, as well as comparative analysis, which will be used during the research on the positions of the EU, the USA, China, Russia and India towards the LAWS.

DEFINING THE ARTIFICIAL INTELLIGENCE

In 1955, a group of American computer scientists started research on the “artificial intelligence problem”, which they defined as “that of making a machine behave in ways that would be called intelligent if a human were so behaving” (McCarthy 1955, 11). John McCarthy, one of the most prominent American computer and cognitive scientists, defined AI as “the science and engineering of making intelligent machines, especially intelligent computer programs” (McCarthy 2007, 2). Some define it also as a “system’s ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation” (Kaplan and Haenlein 2019, 3).

Stuart Russell and Peter Norvig believe that one of the most important parameters for any AI is that it is capable of “acting humanly”, and therefore, “to be capable of passing the Turing Test”. The Turing Test was designed by an English computer scientist and engineer Alan Turing in the 1950s, to test the self-aware capabilities of the machine. For a computer to pass it (thus proving its capability to act as a human), it needs to fulfill the one main requirement – that “a human interrogator, after posing some written questions to it, cannot tell whether the written responses come from a person or a computer”. To successfully pass such a test, scientists and engineers believe that a computer has “to possess natural language processing to enable it to communicate successfully in one of the world languages, knowledge representation, to store what it knows or hears, and automated reasoning, to use the stored information to answer questions and to draw new conclusions, and machine learning to adapt to new circumstances and to detect and extrapolate patterns”. Some would argue that additional two requirements are needed for a computer “to fully demonstrate “human” capabilities, such as computer vision, to perceive objects, and robotics, to manipulate objects and move about” (Russel and Norvig 2010).

In order to further explain the nature of AI, the scientists created a classification based on the three stages of intelligence that it can achieve – “Artificial Narrow Intelligence, Artificial General Intelligence, and Artificial Super Intelligence” (Kaplan and Haenlein 2019, 3).

Artificial Narrow Intelligence (ANI) can be defined as “a weak, below Human-Level AI, which is applied only to specific areas, and thus unable to autonomously solve problems in other areas – although it outperforms or equals humans in a specific area. For example, an

application for a smartphone can recognize the owner's voice, but cannot perform other tasks, such as driving a car" (Kaplan and Haenlein 2019, 3).

Artificial General Intelligence (AGI) is considered already "strong, Human-Level AI", capable of applying its capacities to several different kinds of problems while also "being able to autonomously solve problems in other areas", outperforming or equalling human efforts. An example would be an evolved "humanoid robot with a wide spectrum of capabilities, including voice recognition, food or beverage preparation, and writing skills" (Kaplan and Haenlein 2019, 3).

The final stage, Artificial Super Intelligence (ASI) is considered the pinnacle of AI evolution, being a conscious/self-aware Above-Human Level AI. It can be applied "to any area while being able to solve problems in other areas instantaneously", and at the same time outperforming humans in all fields. For example, a computer or a humanoid robot would be able to solve "complex mathematical problems instantaneously, while simultaneously writing a best-seller novel" (Kaplan and Haenlein 2019, 3).

The AI functions thanks to the specific sets of algorithms, that are enabling it to learn and use the gained knowledge to successfully resolve the given tasks. This is called "machine learning", and it refers to the "automated detection of meaningful patterns in data", while the machine learning tools provide programs (in this case, AI) the ability to "learn and adapt" (Shalev-Shwartz and Ben-David, 2022). It is important to note that currently, even the most advanced AI is neither self-aware nor able to "understand" by itself why or how it can successfully mimic humans, especially concerning emotions, instincts, or anything else that is connected with our nature. In the best case, its algorithms are capable of learning from previous mistakes, but only so because they are pre-programmed to do this, not because the machine or programs are sentient. Some scientists argue that true artificial intelligence will never be achieved, but on the other hand, true artificial sentience, capable of the "cogito ergo sum" process, is perhaps the ultimate goal of future AI research and development (McCarthy 2007, 4–5).

For now, it can be safely assumed that we are still far away from a real sentient "killer robot" scenario, as current technological levels of AI development are far behind in creating a self-aware AI with human-level consciousness and equal or superior intelligence. Nevertheless, the technology progressed enough that AI can be employed in weapon systems, with varying degrees of autonomy and supervision from the side of the human operator.

LETHAL AUTONOMOUS WEAPON SYSTEMS

LAWS, or the “Killer Robots” as they are popularly called, can be understood as “data infrastructure, paired with a weapons platform and payload, in which AI is employed within the sense-decide-act cycle”. The idea behind LAWS that are designed today revolves around systems that can increase the lethality of an armament via “acceleration of information transmission in the kill chain”, or in other words – the faster the computer manages to identify targets for the human operator and provide with successful use of lethal force to destroy the targets in question, the deadlier weapon system becomes (Schwarz 2021, 57–58).

However, it is important to point out that the human element in LAWS is always present, with the autonomy of the weapon being reflected in the technological ability of the machine “to execute a task, or tasks, without human input, using interactions of computer programming with the environment”, with the autonomous system working based on probabilistic reason as it makes “guesses about best possible courses of action given sensor data input” (Schwarz 2021, 59). Fully autonomous, self-aware lethal weapon systems are for now purely hypothetical concepts. Nevertheless, there is always a possibility that the advancement of technology will strive to put more and more autonomy on the AI that operates the LAWS, which could in turn decrease human supervision further.

Due to the nature of such emerging technologies, as well as the understandable secrecy surrounding them, it is difficult to find a list that complies in detail with AI-operated LAWS, with the characteristics of the software that is operating them. Nevertheless, based on the public data which is publicly available, we can mention several LAWS that are either in active service in the militaries or were even employed in combat operations.

The most common LAWS which are in active use are unmanned combat aerial vehicles (UCAV), or “drones”, as they are popularly called (Lele 2019, 55). Due to technological breakthroughs in recent years, the costs of producing or obtaining the simplest of UCAVs and UAVs have considerably fallen, and as a consequence, militaries around the globe have implemented “drones” into their doctrines and formations in one way or another. UCAVs and UAVs vary in size (from less than 250g to more than 150kg), configuration (single-rotor, multi-rotor, fixed-wing, hybrid, flapping wings), and autonomy levels (Elmokadem and Savkin 2021, 2–3).

Regarding the autonomy levels of UCAVs, they depend on the role that specific UCAV is conducting in the field. The autonomy levels range from remotely controlled, where “a remote pilot is needed to manually control the UCAV without sensors feedback which can be used in Line-of-Sight (LOS) applications”; teleoperated, where “remote operator relies on feedback from onboard sensors to move the vehicle either by directly sending control commands or intermediate goals with no obstacle avoidance capabilities. This mode can be used in Beyond-Line-of-Sight (BLOS) applications”; semi-autonomous, where a “human operator is needed for high-level mission planning and for interaction during the movement when some decisions are needed that the UCAV is not capable of making. The vehicle can maintain autonomous operation in between these interactions”; to fully autonomous, where “UAV (and UCAV) can carry out a delegated task/mission without human interaction where all decisions are made onboard based on sensors observations adapting to operational and environmental changes” (Elmokadem and Savkin 2021, 3–4).

Besides UCAVs, another form of autonomous LAWS is designated as “loitering munition”. The term “loitering munition” especially gained prominence in recent years with its employment on the battlefields around the world. Loitering munitions can be defined as “low-cost guided precision munitions that can be maintained in a holding pattern in the air for a certain time and rapidly attack land or sea non-line-of-sight targets”, which is “under the control of an operator who sees a real-time image of the target and its surrounding area, giving the capacity to control the exact time, attitude, and direction of the attack of a static, relocatable, or moving target, including providing a contribution to the formal target identification and confirmation process” (Elmokadem and Savkin 2021, 325).

We can designate some of the examples of autonomous UAVs and loitering munition as follows: US-made MQ-9 and Reaper UCAVs, with autonomous navigation and identification systems; Turkish-made Bayraktar TB2 UCAV with autonomous navigation, and Kargy loitering munition, with autonomous navigation, targeting and firing systems; Russian-made KUB-BLA loitering munition, with autonomous navigation, targeting and swarm system; Israeli-made Mini Harpy loitering munition with navigation, targeting and firing systems; and Australian-made Drone 40 loitering munition with autonomous navigation and targeting systems, among others (Longpre, Storm, and Shah 2022, 48).

It is interesting to note the term “swarm” or “swarming”, which is used in connection with drone technology. Drone swarms can operate on land, at sea, in the air, and in space, and they are networked drones that maintain stable communication links between them to insure that the information is processed efficiently and without interruptions, or in other words, “swarms are multiple unmanned systems capable of coordinating their actions to accomplish shared objectives”. Considering the military application of the “swarms”, the loitering munition can be used as a sort of aerial minefield which is capable to attack targets in the air, on land, and at sea (Kallenborn 2022, 87–88).

One more example of AI-operated LAWS is the Samsung/Hanwha Techwin SGR-A1 robots, which are deployed along the Korean Demilitarized Zone. They are equipped with advanced sensors and built-in machine guns, and they are capable of fully autonomous actions, including the use of lethal force against perceived enemy targets - although during peacetime they are supervised and controlled by the remote operator (Wakefield, 2018).

LAWS were already used on the battlefields of Libya (Jones 2022), Syria (Sharkey 2020), Yemen, and Nagorno-Karabakh (Elmokadem and Savkin 2021, 325), as well as Ukraine (Connolly 2022), and with the next generation of such weapons probably in development, we can expect that they will be an integral part of any future warfare. The benefits are clear: LAWS such as loitering munition and UCAVs are relatively cheap to produce in large quantities, they can cause harm or destruction of targets of much higher monetary value, and if the human pilot is needed, he can issue real-time commands while being potentially hundreds of kilometers away from the frontlines. Thus, such weapons are capable of causing significant physical and moral damage to the enemy forces, while not putting the lives of friendly soldiers in harm’s way.

LEGAL REGULATION OF THE LAWS

It should be immediately stated that for now, there are no universal regulations on the development and the use of LAWS, but rather, such regulations are being informally discussed under the framework of the 1980 United Nations Convention on Certain Conventional Weapons (CCCW). Although there is no consensus for now on the position towards the LAWS, the majority of nations, in general, agree that “the use of autonomous weapon systems that cannot comply with international law

should be prevented, with the reference point being Article 36 of the 1977 Additional Protocol I to the 1949 Geneva Conventions” (Boulainin 2015, 1–2).

Article 36 states that “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” (Article 36 – New weapons 1987). Since the LAWS are considered to be a new weapon that significantly changes the nature of warfare, it is understandable why Article 36 is serving as a temporary reference point, before more concrete international regulations on LAWS are to be introduced.

Some concrete steps were already taken in this direction. As of 2014, State Parties to the CCCW started “to discuss the topic of LAWS during the High Contracting Parties in Geneva, while in 2016, the Group of Governmental Experts (GGE) was established with a mandate to discuss multilateral regulation of LAWS”/ And in 2019 “GGE published a non-binding document, in which “Guiding Principles” on the respect of international law in the development and use of LAWS were presented” (Branca 2021).

The Guiding Principles include positions such as: “International humanitarian law continues to apply fully to all weapons systems, including the potential development and use of lethal autonomous weapons systems”; “Human responsibility for decisions on the use of weapons systems must be retained since accountability cannot be transferred to machines”; “Accountability for developing, deploying and using any emerging weapons system in the framework of the CCW must be ensured in accordance with applicable international law”; “In accordance with States’ obligations under international law, in the study, development, acquisition, or adoption of a new weapon, means or method of warfare, determination must be made whether its employment would, in some or all circumstances, be prohibited by international law”, among others (CCW/GGE Report 2019). However, major powers have each their own understanding of the necessity of developing and using LAWS for the purpose of national security and defense, as will be seen from the examples of the EU, the USA, China, Russia, and India.

The European Union is adamant in its position to introduce the ban on the LAWS, as can be seen from the following initiatives and

regulations. In the 2018 resolution of the European Parliament, LAWS are defined as “weapon systems without meaningful human control over the critical functions of selecting and attacking individual targets”, and the resolution calls for the adoption of the unified European position on the international prohibition on the development, production, and use of LAWS (Resolution 2018/2752[RSP]). This was also confirmed once again in 2021 with the “Artificial intelligence: questions of interpretation and application of international law” resolution of the European Parliament (Resolution 2021/C 456/04). The European Union delegation is also active in the GGE meetings, where it is stressing “the need to define the required level of human/machine interaction in order to assure the compliance of LAWS with general international law, international humanitarian law (IHL), and human rights law (HRL)”, and therefore taking into the account all ethical considerations that can with such technology (Branca 2021).

The United States was among the first which tried to regulate the development and use of the LAWS. In 2012, Department of Defense Directive Number 3000.09 (DODD 3000.09) established the Department of Defense policy toward the LAWS (DODD 3000.09 2012/2017). The DODD 3000.09 provides definitions for different categories of autonomous weapon systems for the purposes of the U.S. military, with these definitions being “principally grounded in the role of the human operator with regard to target selection and engagement decisions, rather than in the technological sophistication of the weapon system” (Sayler 2022). Additionally, LAWS are defined as “weapon system[s] that, once activated, can select and engage targets without further intervention by a human operator”, while this directive also “requires that all systems, including LAWS, be designed to allow commanders and operators to exercise appropriate levels of human judgment over the use of force”. It is important to note that the United States as of 2022 does not support a ban on LAWS, while the ethical concerns about such systems are addressed in the white paper “Humanitarian Benefits of Emerging Technologies in the Area of Lethal Autonomous Weapons” (Sayler 2022).

In 2022, the Department of Defense published its “Artificial Intelligence Strategy”, which stated that AI should act “as ‘smart software’ within autonomous physical systems and take over tasks that normally require human intelligence”. At the same time, it can be concluded that “the US research policy targets spending on autonomy in weapon systems, which is regarded as the most promising area for advancements in attack

and defense capabilities, enabling new trajectories in operational areas and tactical options” (Bächle and Bareis 2022).

China also expressed the need for regulation of AI and its military applications. In 2017, the State Council of the People’s Republic of China published a development plan, in which it stated that AI will be tasked with the responsibility to “elevate national defense strength and assure and protect national security” Additionally, in this plan, it is stated that it is necessary to “strengthen a new generation of AI technology as a strong support to command and decision-making, military deduction, defense equipment, and other applications” and to “promote all kinds of AI technology to become quickly embedded in the field of national defense innovation”. The plan also calls for the development of “laws, regulations, and ethical norms that promote the development of AI”, while stating that “China will actively participate in the global governance of AI, strengthen the study of major international common problems such as robot alienation and safety supervision, deepen international cooperation on AI laws and regulations, international rules and so on, and jointly cope with global challenges” (New Generation Artificial Intelligence Development Plan 2017).

Some experts believe that with this, Beijing is in a position where “a blank check in high-tech weapon development cannot continue in the context of such technologies”. There are some suggestions that China is seeking to outlaw LAWS for offensive purposes while allowing for use of LAWS for defense purposes, as well as for their export. The “defense purposes” are debatable point among the experts, with some Chinese experts suggesting that “the use of LAWS as a defensive weapon is comparable to the 1996 International Court of Justice advisory opinion on the use of nuclear weapons, with the addition of the exceptions in China’s nuclear doctrine which allows for the use of nuclear weapons in response to an attack on strategic capabilities or civilian infrastructure and the right to self-defense under Article 51 of the UN Charter” (Warren and Hillas 2022, 38; 44).

However, there are experts who believe that China is on purpose being ambiguous on its position on the LAWS development and use. Their assessment is based on: China’s “Peaceful Rise” policies; China’s historical strategic understanding and positive response to technological innovation in the light of its ambitions to become “a Global AI Leader is part of its Chinese National Destiny”; China’s desire “to strengthen the military through science and technology; China’s strategic ambiguity

in issues related to AWS and in its involvement in international forums, which is described as a deliberate act that can strategically help China maximize its interests and face the challenges in innovation dynamics; as well as China's desire to "gain legitimacy for its autonomous weapon system development while creating a situation where it can put limits on the development of more advanced U.S. autonomous weapons" (Pramudia 2022, 26–27).

Considering the Russian Federation, Moscow is against the total ban of LAWS, as it believes that LAWS can demonstrate "greater efficiency than a human operator in solving tasks, can reduce the likelihood of errors and significantly diminish the negative consequences of using weapons in the context of IHL, which are related to the mental and physiological state of the operator, his moral, religious, ethical attitudes". Additionally, the use of "highly automated technologies" can lead to the improved accuracy of weapons that are employed against military targets, and it can also "help reduce the likelihood of unintentional attacks on the civilian population and civilian objects" (Иванов 2021, 11).

Russia however, does not approve of fully-autonomous LAWS, as it was constant in its commitment to the "need to maintain human control over the so-called LAWS, no matter how advanced these systems may be", while at the same time highlighting "the necessity of maintaining human control over the machine" (Nadibaidze 2022, 420). In 2022, the Russian Ministry of Defense publicized that Russian Federation has created a department for the development of AI, to enhance the development and use of such technologies in the military armaments and special equipment (TACC 2022).

India is also a country that is actively developing LAWS while at the same time providing qualified support for their international regulation. In 2019, the Ministry of Defence of India established a Task Force in accordance with the national strategy titled "Strategic implementation of Artificial Intelligence for National Security and Defence" (MoD 2019). The objectives of this task force are envisioned as "Establishment of a High-Level Defence AI Council ('DAIC'), Integration of AI into India's Defence Strategy... Establishment of a Defence AI Project Agency ('DAIPA')", with the AI being seen as "crucial for India to take the next step towards its goal of becoming a superpower" (MoD 2019). India is actively developing and integrating AI in its defense systems, including AI-enabled sensor systems and "AI-enabled, un-crewed all-terrain vehicles for surveillance and logistics operations" (Sharma 2022).

India keeps a balanced stance towards the regulation of the LAWS, which can be described as “preparing for the future and working to preserve the balance of conventional strength it presently has in the subcontinent until such weapons (LAWS) are produced”. At the same time, India’s position is that the United Nations Convention on Conventional Weapons on LAWS “should be enhanced in a manner that does not exacerbate the technical gap among nations”, while at the same time it is necessary “necessity to follow IHL while creating and deploying LAWS”. India’s main concerns about regulation of the LAWS, regardless of international discussions “about the moral and legal implications of LAWS” and the limitation of the rate at which different nations create and implement them, comes from the development of such weapons by China and Pakistan, which then creates the need for India to maintain “a significant lead in this race” (Zaid 2022).

As can be seen from these examples, although major powers, in general, adhere to the principles of the IHL and CCCW, at the same time, they are actively working on the development and deployment of the LAWS. The United States in its role as a global hegemon naturally strives to keep the edge on the use of “smart weapons” and AI technology, given that it may feel threatened by the rising ambitions of China and Russia in these fields.

China on the other hand understands that the United States is the largest competitor in almost every sense, including the military application of AI. By looking at the published strategies and guiding principles for future development, it is obvious that China will rely on heavily integrated AI within its defense structure, which also includes LAWS.

Russia has already been identified as a country besides the United States that started mass production of LAWS, including loitering munition, which is primarily used on the battlefields in Ukraine. However, it retains strong opposition to allowing the development of the fully-autonomous LAWS on the global level.

India also holds a balanced approach towards the question of the development and deployment of LAWS, as it feels the pressure from China’s military potential in this field, and potential cooperation between China and Pakistan in the development and deployment of LAWS, which can directly impact India’s national security.

The question remains will the European Union manage to impose a ban on the development of LAWS for its member states, given that there is still no binding legislature in place, and that the security architecture

in Europe is currently undergoing significant restructuring. Since European militaries are experiencing a lack of recruits due to the social and migrational changes (Manigart et al. 2018), some Member States may consider the employment of LAWS as a cost-effective alternative and “force multiplier” for their national armies, thus placing them into position to reconsider the total ban on LAWS on the EU level.

A conclusion can be drawn that due to the nature of the LAWS as an emerging new weapon, countries around the world will strive not to fall behind with the new “arms race”, while at the same time they will engage in discussions on regulation of such weapons. And even if some global regulations are agreed upon, the fact remains that such weapons are too attractive an opportunity (in the sense of cost and effectiveness) to be abandoned in the face of potential competition. Therefore, even if a country (especially a major power) publicly abides by the imposed regulations, it will most likely continue to monitor their competition and develop the next generations of LAWS in secret. This will certainly lead to their employment on the battlefields, but with a high degree of deniability or with the toning down of the real autonomy of the AI in LAWS.

One more thing that needs to be taken into the account is that even tough ethical questions may arise over the fact that the AI may decide by itself to use lethal force against the human target (based on its programmed rules of engagement and the sensory/information input it received), the LAWS are still not considered as a taboo for the use as nuclear weapons are. The main reason for that is seen in the fact that LAWS are being presented by some countries as a more humane alternative than “dumb” bombs, artillery shells, and weapons of mass destruction, as the AI will strive to minimize the collateral damage and target only combatants in its area of operations (Nasu and Korpela 2022).

However, the limitations of the current AI technology are such that it is still hard for it to effectively make distinctions between combatants and non-combatants, and between military targets and civilian objects (Arkin, Ulam, and Duncan 2009). And in lots of minds, both in the academy and military, this is a preferred alternative to the devastation of the whole human civilization that can be unleashed with the use of nuclear weapons. The debate between those who oppose the LAWS and those who support them will undoubtedly continue in the foreseeable future, with each side presenting strong arguments and ethical and moral points. However, governments around the world will certainly remain practical

on the questions of their national and security interests, and regardless of any future regulations, continue to develop and deploy the LAWS on the battlefield, if their countries find themselves in the armed conflict.

CONCLUSION

In the first part of this article, the scope and limitations of the current technological development of Artificial Intelligence were discussed. It can be safely assumed that AI will never be able to develop sentience, and with that, “self-awareness”. However, recent technological breakthroughs in the field of AI demonstrated that it will be more and more integrated into both civilian and military infrastructure.

In the second part of this article, the overview of the Lethal Autonomous Weapon Systems, or “Killer Robots” as they are popularly called, was presented. LAWS can vary in size, autonomy levels, and designated roles. One of the most common LAWS in the use today are unmanned combat aerial vehicles (UCAVs) and so-called “loitering munitions”. The benefits of employment of LAWS for the militaries around the world are seen in the low costs of producing such weapon systems, the potential damage it can make to the enemy forces in comparison with the costs of such weapon systems, as well as safeguarding the life of the friendly soldiers when conducting military operations, as the pilots or operators are located far behind the frontline.

In the third part of this article, the current strategies of development and legal regulations of LAWS in the EU, the United States, China, Russia, and India were presented. The most important observation made is that there is no universal regulation on the development and use of LAWS. However, informal discussions do exist under the framework of the 1980 United Nations Convention on Certain Conventional Weapons (CCCW). Due to the lack of consensus on the position towards LAWS, the majority of nations agree that their use should be prevented if they cannot comply with international law, per Article 36 of the 1977 Additional Protocol I to the 1949 Geneva Conventions. In this regard, the Group of Governmental Experts (GGE) was established with a mandate to discuss multilateral regulation of LAWS.

The European Union is the only one that is calling for a total ban on the development and use of LAWS. However, there is still a lack of binding regulations within the EU which can enforce this position among the Member States. The United States, China, Russia, and India all have

balanced approaches towards this issue – while on the one hand, they all participate in the GGE and the discussions about potential binding international regulations on LAWS, they each reserve the right to develop and use such weapons in defense purposes, as it is usually stated. This reflects the thinking that LAWS are the new weapon that can drastically change the balance of forces on the battlefield, as well as the nature of warfare itself, and none of the major powers wishes to “fall behind” in the new arms race that is developing.

It can be concluded that due to the military benefits of LAWS that outweigh moral and ethical concerns, and due to the lack of the unified position of the major powers towards the global legal regulations on the status of LAWS, the research, production, deployment and the use of LAWS will continue with unhindered pace in the coming years. And even if the global regulations are set in place, the development and use of LAWS will continue unhindered, albeit perhaps in more secret, as nations and militaries around the world are not likely to pass such potential “game changer” on the current and future battlefields, especially in the light of conscription issues that especially European nations are facing, due to the changing societal and demographic factors.

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СМРТНОСНИ АУТОНОМНИ СИСТЕМИ ОРУЖЈА (LAWS) – КА СТРОЖОЈ РЕГУЛАТИВИ ИЛИ НЕСЕЛЕКТИВНОЈ УПОТРЕБИ?

Резиме

Широм света, савремена ратишта демонстрирају употребу оружја нове генерације попут такозваних „робота убица”, то јест смртоносних аутономних система оружја (LAWS). Нове револуционарне технологије уз употребу вештачке интелигенције (AI) омогућиле су серијску производњу и коришћење у војне сврхе система попут беспилотних летелица (наоружаних и ненаоружаних – “UCAV/UAV”), вребајућег оружја (*loitering munitions*), ројева дронова (*drone swarms*), самоходних оружаних платформи, итд. Овакво оружје нове генерације, вођено вештачком интелигенцијом са различитим степенима аутономије, је већ било употребљено на ратиштима у Либији, Сирији, Јемену, Нагорно-Карабаху и Украјини. Светска академска јавност, као и различите активистичке групе, изразиле су забринутост због недостатка међународне законске регулације смртоносних аутономних система оружја, док су се истовремено водиле дебате и око етичности употребе оваквог оружја. Главни циљеви овог истраживачког рада су разумевање ограничења вештачке интелигенције која се употребљава у овим оружаним системима, преглед важећих регулација смртоносних аутономних система оружја на основу јавно доступних података, као и компаративна анализа стратегија и ставова према овим оружаним системима од стране ЕУ, САД, Кине, Русије и Индије. Резултати овог истраживања указују пре свега на то да вештачка интелигенција која

управља оваквим оружаним системима није способна да постигне ниво интелигенције и свести налик на људску. То не значи да вештачка интелигенција, са досадашњим технолошким развојем, није у стању да достигне одређене нивое аутономије које би омогућиле наоружаним беспилотним летелицама или самоходним оружаним платформама да примене смртоносну силу против људских бића који су означени као противничке снаге. Државе широм света виде предност у поседовању и употреби оваквог наоружања с обзиром на њихову релативно ниску цену производње као и релативно високу штету коју могу да начине противничким снагама у поређењу са трошковима производње таквог оружја. Такође, изузетно важан фактор који даје предност овом оружју огледа се у очувању живота сопствених војника током борбених операција, с обзиром да се оператери оваквих оружаних платформи налазе далеко иза подручја борбених дејстава. Даљи резултати овог истраживања указују на то да законска регулација истраживања, производње и употребе оваквог оружја не постоји на међународном нивоу, већ се искључиво води неформална дискусија под оквиром Конвенције о конвенционалном оружју из 1980. године. Због недостатка јединствене позиције око законске регулације смртоносних аутономних система оружја, већина држава је сагласна да се употреба оваквог оружја мора забранити уколико такви системи не испуњавају услове прописане чланом 36 Допунског протокола из 1977. године уз Женевске конвенције из 1949. године. Из тог разлога, успостављена је Група владиних стручњака (GGE) са циљем вођења расправе о мултилатералној законској регулативи ових оружаних система. Водеће светске силе, попут Сједињених Америчких Држава, Кине, Русије, Индије и Европске Уније такође имају различите ставове о овом питању. Ово истраживање показује да је једино Европска Унија у потпуности за међународну забрану истраживања, производње и употребе смртоносних аутономних система оружја. Са друге стране, Сједињене Америчке Државе, Кина, Русија и Индија имају донекле

балансиран став према овом питању. Иако ове државе активно учествују у Групи владиних стручњака и воде расправе о међународној законској регулативи ових оружаних система, свака од њих задржава право да врши истраживања, као и да производи и употребљава ово оружје у „одбрамбене сврхе”. Главни разлог за такав став проистиче из виђења да је овакво оружје нове генерације способно да поремети равнотежу снага на бојном пољу, и самим тим, постоји одређени страх међу великим силама од могућности „заостатка” у новој трци у наоружању. Може се закључити да због недостатка јединственог става у односу на међународну законску регулативу смртоносних аутономних система оружја, постоји оправдана могућност не само повећања производње оваквих оружаних система, већ и њихова даља неометана примена у наредним годинама. Такође, важно је напоменути да чак и у случају када би се успоставила међународна законска регулатива оваквих оружаних система, по свему судећи би се њихова производња и примена наставила, највероватније само у већој тајности. Са једне стране, такви оружани системи се сматрају као нешто што радикално мења однос снага на терену и природу савременог рата, док се са друге стране њиховом применом још увек не крши онај најстрожији табу, који на пример постоји око хипотетичке употребе (тактичког) нуклеарног оружја у савременом оружаном сукобу.

Кључне речи: роботи убице, смртоносни аутономни системи оружја (LAWS), беспилотне летелице (UCAVs), вребајуће оружје, Женевска конвенција, ЕУ, САД, Кина, Индија, Русија

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