

AUTONOMOUS WEAPON SYSTEMS: A THREAT TO INTERNATIONAL SECURITY

ARNAU GUIX I SANTANDREU

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SUMMARY: 1. “Killer robots” are on the move; 2. Risks linked to the deployment of Autonomous Weapon Systems (AWS); 2.1. A global arms race; 2.2. Higher vulnerability for democracies; 3. AWS and responsibility; 3.1. Ethics as implemented software; 3.2. Military humanoids? No, even worse: drone swarms; 3.3. Legal personhoods and evasions of legal responsibility; 4. The Martens Clause applied to AWS; 4.1. General characteristics of the Martens Clause; 4.2. The principles of discrimination and proportionality; 4.3. A multilateral treaty covering the AWS ban; 5. Conclusions.

ABSTRACT: Autonomous weapon systems (AWS), more known as “killer robots”, represent an important threat to international peace and security. Technological advancements had allowed the development of lethal processes that have the advantage of fewer risks for soldiers, shorter response times, less military personnel and increased precision to reduce collateral damage. However, it is necessary the adoption of a humanistic point of view, which promotes a strong global regulation of AWS, motivated by the interpretation of the centenary Martens Clause and the so-called *ius in bello*. This article will study the main reasons that justify the urgency of international treaties that ban AWS. At the moment, the desired satisfactory agreement has not been reached at the last meetings of the Convention on Conventional Weapons (CCW) in 2018.

KEY WORDS: Autonomous weapon systems (AWS); military robots; killer robots; Martens Clause.

RESUM: Els sistemes d'armament autònoms (AWS, segons les inicials en anglès), més coneguts com a “robots assassins”, representen una amenaça important a la pau i la seguretat internacionals. Els avenços tecnològics han permès el desenvolupament de processos letals que tenen l'avantatge de menors riscos per als soldats, temps de resposta més curts, una menor necessitat de personal militar i una major precisió per a reduir els danys col·laterals. Altrament, és necessària l'adopció d'un punt de vista humanista que promogui una regulació global forta dels AWS, motivada per la interpretació de la centenària Clàusula Martens i l'anomenat *ius in bello*. El present article estudiarà les raons principals que justifiquen la urgència de tractats internacionals que prohibeixin els AWS. Actualment, no s'ha arribat a l'acord satisfactori desitjable a les últimes reunions de la Convenció sobre Armes Convencionals (CCW, segons les inicials en anglès) de l'any 2018.

PARAULES CLAU: Sistemes d'armament autònoms; robots militars; robots assassins; Clàusula Martens.

RESUMEN: Los sistemas de armamento autónomos (AWS, por sus siglas en inglés), más conocidos como “robots asesinos”, representan una amenaza importante para la paz y la seguridad internacionales. Los avances tecnológicos han permitido el desarrollo de procesos letales que tienen la ventaja de menores riesgos para los soldados, tiempos de respuesta más cortos, una menor necesidad de personal militar y una mayor precisión para reducir los daños colaterales. Sin embargo, es necesaria la adopción de un punto de vista humanista que promueva una regulación global fuerte de los AWS, motivada por la interpretación de la centenaria Cláusula Martens y el llamado *ius in bello*. El presente artículo estudiará las razones principales que justifican la urgencia de tratados internacionales que prohíban los AWS. Actualmente, no se ha llegado al acuerdo satisfactorio deseable en las últimas reuniones de la Convención sobre Armas Convencionales (CCW, por sus siglas en inglés) del año 2018.

PALABRAS CLAVE: Sistemas de armamento autónomos; robots militares; robots asesinos; Cláusula Martens.

1. “KILLER ROBOTS” ARE ON THE MOVE

The so-called “killer robots” are beginning to exist, and suppose an important threat to global security and peace. In this study, they will be qualified as autonomous weapon systems (AWS), one of the terminologies preferred by academics. The exposed robots have capabilities to select their own targets and apply the use of force on them, without requiring meaningful human intervention.

For decades, AWS have existed as automatic infrastructure, designed to respond to missile attacks. Israel’s “Iron Dome” and the “Phalanx” system installed in United States’ military ships are well-known examples. But now, targets have moved from unmanned objects to human beings: the massive arrival of drones and their increase in computer capacity and autonomy¹ has introduced the concept of military personnel “out-of-the-loop”, where deathly decisions are enforced only by algorithms’ work. Also, sentry robots like the South Korean SGR-A1 are capable to kill humans that approach to them automatically, but these types of AWS are less diffused, compared to drones². In order to obtain a global regulation, the international campaign “Stop Killer Robots” started in October 2012 aiming a pre-emptive ban of AWS³.

2. RISKS LINKED TO THE DEPLOYMENT OF AUTONOMOUS WEAPON SYSTEMS (AWS)

2.1. A global arms race

New technologies are determining less risk for soldiers (obviously, considering the ones of the side that has the technical advantage), while supposing a lower psychological perception of the effects of military actions against other human beings. Emotions and empathy of soldiers, linked to pro-social behaviours and sensitivity, are obstacles to the efficiency of military operations⁴. It is well known the case of drone pilots, operating combat aircraft

¹ Between 2011 and 2015, the Northrop Grumman X-47B airplane was the first autonomous aircraft to be launched and landed over an aircraft carrier, and the first one to be refuelled on the air.

² BOULANIN, V.; VERBRUGGEN, M., *Mapping the development of autonomy in weapon systems*, Solna, Stockholm International Peace Research Institute (SIPRI), 2017.

³ STOP KILLER ROBOTS, official website, recovered at 21/04/2019 from: <https://www.stopkillerrobots.org/action-and-achievements/>

⁴ KORAC, S., “Depersonalisation of killing. Towards a 21st Century use of force «Beyond Good And Evil?»”, *Philosophy and Society*, Vol. 29, n. 1, pp. 49-64.

remotely like videogames, thousands of kilometres away of their targets, which asks the question: “if one side has no people in harm’s way, is it truly a war?”⁵.

Public opinion is very sensitive to “traditional” war circumstances, especially considering the losses of national citizens, and veterans permanently injured. This fact has encouraged states to contract the services of private military and security companies, thus mitigating the resulting social impact. The automation of the battlefield, cheaper than outsourcing military force to human mercenaries, would be the extreme case, deriving in entire countries which completely ignore reality.

If battles are deployed only using machines, the threshold of war will be lowered, making it easy for authorities to enter in an armed conflict, and simultaneously this fact will promote a worldwide arms race. As machines interact rapidly, beyond human control, they can foster accidental escalations of violence very difficult to stop⁶.

2.2. Higher vulnerability for democracies

If AWS are deployed in the following years, countries without technological capabilities will be very vulnerable to silent attacks coming from industrialised nations, which could behave in an imperialistic manner⁷. Military robots could accelerate the structural violence that developing countries are suffering, also coming from paramilitary and terrorist groups. This would make it easy for such organizations to acquire AWS at the black markets⁸ and could even strike in populated areas of the developed world, thus creating an “everywhere war”⁹. AWS suppose an important threat to the international order, structured after the Second World War and represented by the United Nations.

The so-called “killer robots”, by their own nature, do not offer information of their operability to independent agents; instead, they produce a sharp centralisation of power and exclude parliaments to control the government’s actions appropriately, eroding the general quality of

⁵ KERR, I.; SZILAGYI, K., “Asleep at the switch? How killer robots become a force multiplier of military necessity”, in CALO, R.; FROMKIN, M.; KERR, I. (Eds.), *Robot Law*, Cheltenham and Northampton, Edward Elgar Publishing, 2016, pp. 367-386.

⁶ KAYSER, D.; DENK, S., *Keeping Control: European positions on lethal autonomous weapon systems*, Utrecht, Pax, 2017.

⁷ SHAW, I., “Robot Wars: US Empire and geopolitics in the robotic age”, *Security Dialogue*, Vol. 48, n. 5, 2017, pp. 451-470.

⁸ SHARKEY, N., “Killer robots”, *New Internationalist*, November 2017, pp. 16-18.

⁹ GREGORY, D., “The everywhere war”, *The Geographical Journal*, Vol. 177, n. 3, 2011, pp. 238-250.

democracy¹⁰. Also, we should consider that disabled people are more vulnerable to AWS since their body movements or use of certain objects, like a wheelchair or a walking stick, can be perceived by machines as threatening behaviours for the use of force to be applied¹¹.

3. AWS AND RESPONSIBILITY

3.1. Ethics as implemented software

Several authors consider the possibility to create “ethic AWS”¹², that is, military artefacts capable to kill humans considering ethical principles and respecting humanitarian and war laws, thanks to advanced algorithms. Many academics consider the necessity to encourage research in the field while avoiding legal constraints to AWS so as to reach more rapidly the hypothetical “moral” goal¹³. This vision is very influenced by literature and science-fiction films, where robots are characterised by anthropomorphism and have traits of consciousness.

From this point of view, futuristic AWS would be like mythological heroes: never exhausted, with a strong sense of justice and with an exquisite respect to civilians. The mentioned authors also indicate that “unnecessary violence”, including revenge acts, sexual abuses and rapes, could be avoided by deploying the exposed androids, morally programmed¹⁴. As perfect soldiers, their actions are entirely correct or justified, and never would assume responsibilities.

I do not endorse this point of view, as it will be discussed *infra*: if we allow AWS to develop, then it will be too late to programme them “ethical” considerations, which are only a remote technological hypothesis. We do not know yet if this software can be produced, but we have the certainty that AWS can be used to perpetrate crimes for the years to come. An exercise of imagination regarding “ethic AWS” shall not be an evasion of responsibility for current and future autonomous military artefacts.

¹⁰ EKELHOF, M.; STRUYK, M., *Deadly Decisions. Eight objections to killer robots*, Utrecht, Pax, 2014.

¹¹ STOP KILLER ROBOTS, *Pourquoi la France doit s'opposer au développement des robots tueurs*. Human Rights Watch, Sciences Citoyennes, Observatoire des armements, 2018.

¹² TAYLOR SMITH, P., “Just research into killer robots”, *Ethics and Information Technology*, 2018, Doi: 10.1007/s10676-018-9472-6.

¹³ BALISTRERI, M., “Robot Killer. La rivoluzione robotica nella guerra e le questioni morali”, *Etica & Politica*, Vol. 19, n. 2, 2017, pp. 405-430.

¹⁴ UMBRELO, S.; TORRES, P.; DE BELLIS, A., “The future of war: could lethal autonomous weapons make conflict more ethical?”, *AI & Society*, 2018, Doi: 10.13140/RG.2.2.26337.76642.

3.2. Military humanoids? No, even worse: drone swarms

In the near future, in contrast to the exposed vision of “ethic AWS”, autonomous military robots would very rarely be humanoids. The movement of a biped structure is technically more complex, much slower in response and requires more maintenance than flying drones. China, the United States, Russia and Israel, among other countries, are investing in the development of such technologies in order to reach high military efficiency at the minimum size. For them, “small is beautiful”.

AWS are going to be large swarms of insect-like drones¹⁵, coordinated thanks to artificial intelligence, which will make rapidly obsolete traditional war methods and will suppose a revolution comparable to gun-powder and nuclear weapons¹⁶. Mini-drones can penetrate everywhere at the lowest cost, and will not discriminate between soldiers, insurgents and civilians, nor act using a proportionate use of force. Evidently, such technology can be used in a deliberate manner by soldiers to commit war crimes, such as rounding up women to rape them, for example¹⁷.

3.3. Legal personhoods and evasions of responsibility

The “android” conception is related to an academic trend favourable to provide robots with legal personhoods, in order to cope with responsibilities that may arise. Moreover, in civil matters some authors propose the creation of a compensation budget attached to every android or autonomous vehicle, in order to have enough funding available for the victims, if needed.

In the case of AWS, applying the exposed proposals would be an important error, as military personnel and states would use them as a legal cover to evade responsibilities for the crimes and damages committed. And of course, dismantling a machine (a sort of death penalty for the robot) cannot be comparable or be thought to compensate, in any case, the loss of a human life.

Needless to say, if in present wars it is very difficult to determine individual responsibilities for the crimes committed, how can we identify a “killer robot” in the middle of a swarm of a

¹⁵ Curiously, the Bible illustrates several examples of plagues. Is the ancient text a source of inspiration for contemporary warfare?

¹⁶ SHAW, I., “Robot Wars: US Empire and geopolitics in the robotic age”, *Security Dialogue*, Vol. 48, n. 5, 2017, pp. 451-470.

¹⁷ SHARKEY, N., “Killer robots”, *New Internationalist*, November 2017, pp. 16-18.

thousand drones? Certainly impossible, like looking for a needle in a haystack, thus favouring a generalised impunity of violations of humanitarian and *ius in bello* laws.

The option of holding the commander of the armed forces at the site liable for the robot attack could easily be diffused to the hierarchical structure, even arriving to the ground personnel in charge of the maintenance of the AWS or to the programmers of combat algorithms¹⁸. Moreover, by the armed forces it could be argued that the robot has acted because of an internal failure of the software, due to physical damages caused by the victims themselves (trying to escape from the drone or shooting it down), a quite normal possibility in a war context. An inquiry, which would last for years, could rarely extract conclusions about liability.

4. THE MARTENS CLAUSE APPLIED TO AWS

4.1. General characteristics of the Martens Clause

The fact that battle robots can decide fully autonomously to apply the use of force without meaningful human intervention is abhorrent and violates the interpretation of the centenary Martens Clause¹⁹, which is contained at the Geneva Conventions of 1949, the Additional Protocol I of 1977 and the Preamble of the Convention on Conventional Weapons (CCW) of 1980. This clause indicates that in cases not covered by specific international agreements, the “principles of humanity” and the “dictates of the public conscience” guarantee the protection of the human person²⁰. In this sense, moral implications have to be considered when evaluating new military technologies²¹.

The exposed norm articulates a moral code, complementing the existent legal framework²², establishing thus a necessary human involvement in every decision affecting the use of force. The Martens Clause is part of the customary international law and has a normative character, aiming for the protection of the human personality. It is a norm of *ius cogens* or “compelling

¹⁸ As the task of programming is distributed among many professionals, it would be very difficult to determine who the author of the specific fatal code is.

¹⁹ The Russian delegate and lawyer Fyodor F. de Martens played a key role in the elaboration of the clause, which first appeared at the Hague Convention on the Laws and Customs of War on Land in 1899.

²⁰ In its most recent formulation, the Martens Clause states: “Recalling that, in cases not covered by the law in force, the human person remains under the protection of the principles of humanity and the dictates of the public conscience”.

²¹ DOCHERTY, B., “Banning ‘Killer Robots’: The Legal Obligations of the Martens Clause”, *Arms Control Today*, October 2018, p. 40.

²² EKELHOF, M.; STRUYK, M., *Deadly Decisions. Eight objections to killer robots*, Utrecht, Pax, 2014.

law”, which means that when there lacks a specific norm to address a concrete situation, we must then use the Martens Clause in international humanitarian law to determine the appropriate resolution²³.

Positivism applied to Law has forged opinions in an opposite sense, qualifying the text as indeterminate, and thus not covering the issue of AWS²⁴, but such criteria are equivalent as indicating that “something is legal simply because there is nothing in a given treaty or convention that prohibits it”²⁵.

The principles of humanitarian law really “exist” and are legally binding: consider that the Martens Clause appears at article 1 of Protocol I of the Geneva Conventions²⁶, and not merely at the Preamble. The fact that technology has changed rapidly over the years has made the famous Clause an invoked rule to regulate military conflicts²⁷, and this situation will surely continue for a long time²⁸.

4.2. The principles of discrimination and proportionality

AWS are not capable to operate with respect for the principles of discrimination and proportionality, which are fundamental in *ius in bello* matters. About the first one, a weapon that cannot distinguish between combatants and non-combatants is indiscriminate and illegal, thus violating the 51th article of the Protocol I of the Geneva Conventions, regarding the Protection of Victims of International Armed Conflicts.

The option based on limiting the targets towards weapons, instead of people, could face also notable difficulties, for example, distinguish a combatant that has a gun for offensive means, than a civilian that has a gun only for self-defence uses.

²³ PUSTOGAROV, V., “The Martens Clause in International Law”, *Journal of the History of International Law*, n. 1, 1999, pp. 125-135.

²⁴ EVANS, T., “At war with the robots: autonomous weapon systems and the Martens Clause”, *Hofstra Law Review*, Vol. 41, pp. 697-733. Quite shockingly, the author offers in the text a sort of mini-manual to states, in order to articulate a campaign of rejection about any application of the Martens Clause to AWS.

²⁵ ASARO, P., “*Jus nascendi*, robotic weapons and the Martens Clause”, in CALO, R.; FROOMKIN, M.; KERR, I. (Eds.), *Robot Law*, Cheltenham and Northampton, Edward Elgar Publishing, 2016, pp. 367-386.

²⁶ Literally: “In cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from dictates of public conscience”.

²⁷ DIEZ DE VELASCO VALLEJO, M., *Instituciones de Derecho Internacional Público*, 18th edition, Madrid, Editorial Tecnos, 2013, pp. 1.100-1.101.

²⁸ PUSTOGAROV, V., “The Martens Clause in International Law”, *Journal of the History of International Law*, n. 1, 1999, pp. 125-135.

Regarding the principle of proportionality, military actions that generate damages that exceed the specific advantage that can be obtained are prohibited²⁹. AWS cannot take complicate battlefield decisions regarding the appropriate use of force only by simple inference³⁰.

4.3. A multilateral treaty covering the AWS ban

A binding treaty that covers a global ban of AWS, under the authority of the United Nations, is of extreme urgency. The ideal framework would be to adopt an Additional Protocol at the Convention on Conventional Weapons (CCW) to regulate the matter, or to create an independent treaty, like in the case of the Ottawa Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction of 1997³¹, or other remarkable international treaties³².

In order to maintain civil innovation possibilities, it would be difficult to establish a regulation regarding research and development (R&D) aspects, and academics at SIPRI have recommended focusing the ban at the development end of the R&D cycle, where military capabilities of AWS are defined³³.

5. CONCLUSIONS

The necessity of a normative framework to protect human rights has been at the origins of the United Nations. Our objective must be to create a world where peace prevails, and where military conflicts are seen as absurd and unacceptable.

Since unknown computer processes make lethal decisions, AWS are technical innovations that lower our moral principles. A remarkable fraction of academics have depicted unfounded hypotheses, based on the image of the gentle military android and the avoidance of sexual assaults and other war crimes by using “ethical” software. Moral algorithms do not yet exist and with high probability they will never be effectively designed.

²⁹ Arts. 22 and 23 of the Protocol that is annexed at The Hague Conventions of 1899 and 1907.

³⁰ KERR, I.; SZILAGYI, K., “Asleep at the switch? How killer robots become a force multiplier of military necessity”, in CALO, R.; FROMKIN, M.; KERR, I. (Eds.), *Robot Law*, Cheltenham and Northampton, Edward Elgar Publishing, 2016, pp. 367-386.

³¹ The Convention progressed thanks to the efforts of civil society organizations from all over the world and remarkable activists. The campaign “Stop Killer Robots” has this interesting precedent.

³² Among them the Chemical Weapons Convention and the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons. Sadly, the Treaty on the Non-proliferation of Nuclear Weapons has had lesser success.

³³ BOULANIN, V.; VERBRUGGEN, M., *Mapping the development of autonomy in weapon systems*, Solna, Stockholm International Peace Research Institute (SIPRI), 2017.

War circumstances require a case-by-case human analysis, and not that a tiny computer inside a mini-drone (smaller than a smartphone), without consciousness and incapable to consider the value of a human life, decides in a fraction of second who has to die. This is immoral and must be stopped.

Defending the application of AWS has strong similarities in promoting the “outsourcing” of criminal justice to computers³⁴, and the indirect return of death penalty in the western countries that had abolished it. Mini-drones would operate as “low-cost” executors: instead of imprisoning, interrogating and conducting a trial, they would practice an easy and quite removal³⁵.

The “drone age” appears in a time of generalised loss of humanistic values in Europe, with the risk that such technologies fall into the wrong hands of despot governments, dictators and terrorist groups, putting our freedoms to an end³⁶. We cannot exclude that similar drones could be used in police contexts, with the risks for democracy and civil rights that they can spread.

For the exposed reasons, it is now the moment to establish an effective regulation that can preserve fundamental rights and the principles of international humanitarian law, banning definitely AWS. The Martens Clause illustrates the necessity of a multilateral treaty, which could be an Additional Protocol to the CCW or an independent treaty. In the case of anti-personnel mines, both instruments had been used to reach a deeper engagement, implementing a specific Convention after the initial Protocol.

While this regulation is on the way, the Martens Clause can be entirely applied to oblige that deadly decisions are made with meaningful human intervention, assuring that the principles of discrimination and proportionality are accomplished concerning new military technologies. We must stop this arms race before it is too late, as “once the Pandora’s box is opened, it will be hard to close”³⁷.

³⁴ ASARO, P., “Droits de l’homme, automatisation et déshumanisation des prises de décisions létales: les systèmes d’armement autonomes doivent-ils être interdits?”, *Revue Internationale de la Croix-Rouge*, Vol. 94, Sélection française 2012/2, pp. 489-517.

³⁵ KORAC, S., “Depersonalisation of killing. Towards a 21st Century use of force «Beyond Good And Evil?»”, *Philosophy and Society*, Vol. 29, n. 1, pp. 49-64.

³⁶ By the other hand, the European Parliament has adopted three resolutions promoting the ban of AWS, considering they can effectuate attacks without meaningful human intervention. Resolutions of 27th February 2014, and 5th July and 12th September 2018, the last one encouraging the adoption of a multilateral legally binding instrument.

³⁷ Open letter sent in August 2017 to the United Nations Convention on Certain Conventional Weapons, signed by 116 founders of robotics and AI companies.

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