Lethal Autonomous Weapons Systems:

A PRIMER FOR PHILIPPINE POLICY

NONVIOLENCE
INTERNATIONAL
ASIA

Acknowledgements

Acronyms

AI   Artificial intelligence

ATT   Arms Trade Treaty

AWS   Autonomous weapons system

CCM   Convention on Cluster Munitions

CCW   Convention on Certain Conventional Weapons

CSKR   Campaign to Stop Killer Robots

CSO   Civil society organization

DICT   Department of Information and Communications Technology

DMZ   Demilitarized zone

DOST-ASTI   Department of Science and Technology-Advanced Science and Technology Institute

EO   Executive Order

IHL   International humanitarian law

LAWS   Lethal autonomous weapons systems

LOAC   Laws of armed conflict

NISEA   Nonviolence International Southeast Asia

OSETC   Office of the Special Envoy on Transnational Crime

PLA   People's Liberation Army

RA   Republic Act

STMA   Strategic Trade Management Act

UAV   Unmanned aerial vehicle

UGV   Unmanned ground vehicle

Contents

Foreword

The research and development of lethal autonomous weapons systems (LAWS) is at its nascent stage, driven mostly by developed countries with an interest in expanding their military capabilities. The technology used to build them, however, already exists in parts and parcels. The central characteristics of LAWS are the autonomy to select a course of action and the intelligence to execute it as it intended. Autonomy and intelligence are its key features. In order to allow a machine to act autonomously and intelligently, its artificial intelligence (AI) or machine intelligence must be sophisticated.

For the past few decades, the growth of AI research and application ran parallel with economic development and rapid industrialization. Machines with varying intelligence were required to perform basic human tasks in medicine, transportation and logistics and even recreation. The first AI developed to play chess in 1997, called Deep Blue, was perhaps the ancestor to the 21st century's Google DeepMind, which defeated Go World Champion Lee Sedol in 2016.[1] When applied to industry, AI can be an incredible tool of progress. When applied to weapons, AI can either save lives or endanger them. The application of AI in weapons systems and other emerging technologies has become a subject of contention in recent years due to its potential to being misused.

This primer sheds light on recent developments surrounding LAWS and other emerging technologies in the field of weapons development. It shall begin with a definition of LAWS and its AI requirements. The primer will also briefly look at LAWS developments in select Asian countries and discuss their motivations for doing so. It shall follow with arguments for and against the development of LAWS. It will also look at how Philippines laws may relate to the development and use of LAWS. Finally, this document will delve into the different ethical and moral dilemmas concerning the proliferation of LAWS.

When citing LAWS, this primer pertains to fully autonomous weapons systems, and not just automatic and automated weapons systems. Occasionally, the term autonomous weapon system (AWS) will be used to refer to a semi- or fully autonomous weapon system that can cause harm regardless of its lethality.

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[1] Salder, M. & Regan, N. (2019, February 3). DeepMind's superhuman AI is rewriting how we play chess. *Wired*. Retrieved from https://www.wired.co.uk/article/deepmind-ai-chess.

Lethal Autonomous Weapon System:
THE BASICS

What are Lethal Autonomous Weapon Systems?

At the minimum, LAWS have been defined as "weapons that can select and engage targets without human intervention."[2]

Fully autonomous weapons systems are capable of identifying its threat, distinguishing it from a multitude of potential targets and taking action to pursue and engage that target.

A fully autonomous, intelligent weapon system that can target and pursue humans is not a distant prospect. Existing fully autonomous weapons, such as loitering munitions deployed to destroy the enemy's radar and air-defense systems, are already capable of independently seeking and eliminating its targets. The IAI Harpy and the IAI Harop are examples of such loitering munitions. Even semi-autonomous weapons can be upgraded to a fully autonomous system. The technology and means already exist, and so it is only a matter of time before a fully autonomous weapon system is able to target humans. In addition, lethality is not only the sole concern regarding these machines. Autonomous weapons systems (AWS) do not need to be lethal to be used as weapons or deployed against humans.

Research and development are ongoing. As such, there is no universally agreed definition on LAWS. Experts agree, however, that both autonomy and intelligence are necessary to perform independent functions such as selecting a target and judging the need to eliminate that target.

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[2] Ekelhof, M. & Struyk, M. (2014). Deadly decisions: 8 objections to killer robots. Utrecht: PAX, p. 4. Retrieved from https://www.paxforpeace.nl/media/files/deadlydecisionsweb.pdf.

How do other countries define LAWS?

The United States (US) considers weapons systems autonomous if it is "(a) weapon system that, once activated, can select and engage targets without further intervention by a human operator. This includes human-supervised autonomous weapon systems that are designed to allow human operators to override operation of the weapon system, but can select and engage targets without further human input after activation."[3] Human intervention in this case is ultimately limited to the "on and off switch", while the machine remains independent to act on its own once activated.

The United Kingdom (UK) has not yet specifically addressed fully autonomous weapons, but instead defined what it considers to be an autonomous system, namely, a system "capable of understanding higher level intent and direction... [are] able to take appropriate action to bring about a desired state... [are] capable of deciding a course of action from a number of alternatives without depending on human oversight or control."[4] This view highlights the intelligence of the autonomous system and its independence from human action. Intelligence means understanding the contextual clues of processed data, analyzing "higher level intent and direction", something which only humans can scrutinize. The UK definition also states that all other systems that fall short of this standard of intelligence shall be deemed an automated machine and not an autonomous one.[5]

China, meanwhile, refers to "intelligentized weapons" or "AI weapons" in its military modernization plans.[6] The People's Liberation Army (PLA) defines "intelligentized weapons" as "a weapon that utilizes AI to pursue, distinguish, and destroy enemy targets automatically; often composed of information collection and management systems, knowledge base systems, decision assistance systems, mission implementation systems, etc."[7] Again, a certain level of intelligence is required to be able to "pursue, distinguish and destroy" a target, which is common in most concepts on fully autonomous weapon systems.

How much autonomy is considered "autonomous" in machines?

Machines can have varying degrees of autonomy that are inextricably linked to the presence or absence of intelligence. A machine cannot be fully autonomous unless it can decide its next course of action on its own. Intelligence allows a machine to make that decision.

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[3] Department of Defense. (2017, May 8). Directive 3000.09, autonomy in weapon systems, November 21, 2012, incorporating change 1, May 8, 2017, pp. 13-14. Retrieved from https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/300009p.pdf.

[4] UK Ministry of Defence. (2017). Joint doctrine publication 0-30.2: Unmanned aircraft systems, p. 72. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673940/doctrine_uk_uas_jdp_0_30_2.pdf.

[5] Scharre, P. (2018). *Army of none: Autonomous weapons and the future of war*. New York: W.W. Norton.

[6] Kania, E.B. (2020, April). "AI weapons" in China's military innovation. The Brookings Institution. Retrieved from https://www.brookings.edu/research/ai-weapons-in-chinas-military-innovation/.

[7] 全军军事术语管理委员会 [All-Military Military Terminology Management Committee]. (2011). 中国人民解放军军语 [People's Liberation Army Military Terminology], (Beijing: 军事科学出版社 [Military Science Press]). Cited in Kania, E.B. (2020, April). "AI weapons" in China's military innovation. *The Brookings Institution*. Retrieved from https://www.brookings.edu/research/ai-weapons-in-chinas-military-innovation/.

The words automatic and automated are frequently interchanged, but they have minute differences; against autonomous machines, they are on the lower end of the spectrum of intelligent machines.

Varying levels of autonomy
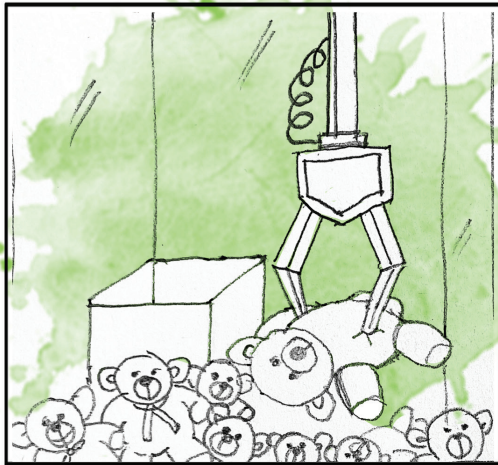
Automatic
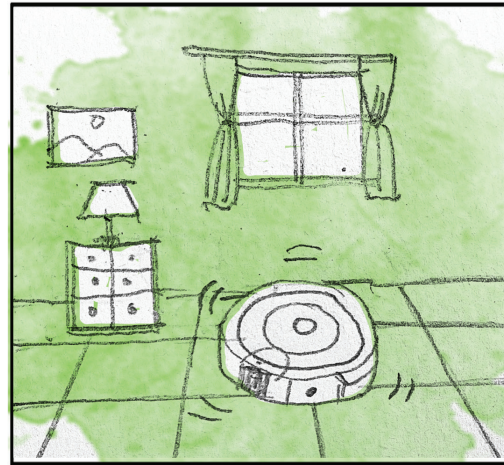
Automated
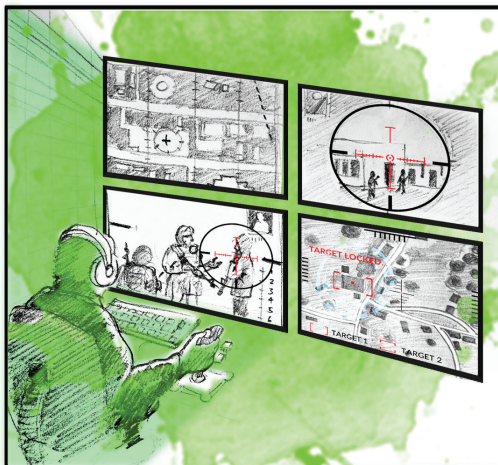
Semi-Autonomous

Fully Autonomous and Intelligent

How much intelligence is considered "intelligent" in machines?

Intelligence in LAWS is manifested in two things: **autonomous identification** and **autonomous engagement**.

Identification seems like a rudimentary undertaking for humans. But for a machine to develop this capability, certain algorithms must be applied. Exactly how complex it must be is demonstrated in the ability of deep neural networks, used in machine learning such as in Google DeepMind, to take an enormous amount of information and mathematically trace a set of actions that will achieve a pre-programmed set of objectives.

Google DeepMind's showdown with champion Lee Sedol in a complex game of Go
Source: CNet[8]

Image recognition software uses algorithms that match the features of an image with others in its database and at the same time distinguish them by process of elimination. In order to correctly identify an image, the software must be fed thousands, sometimes millions, of images to use as reference in its determinations.
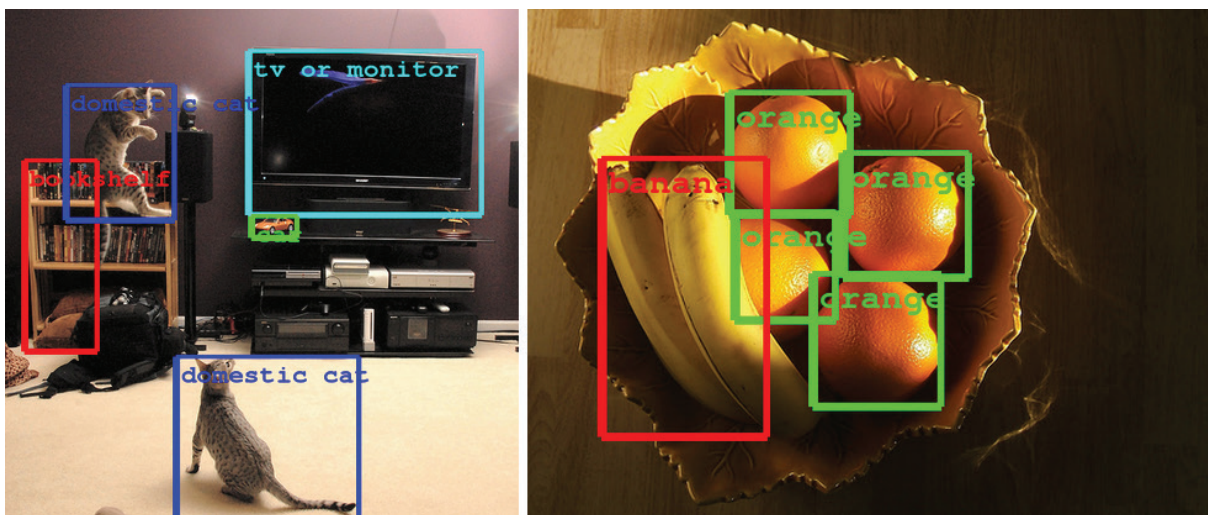
The results of GoogleNet's image recognition software challenge
Source: Google AI Blog[9]

Some facial recognition software take into account geometric shapes, depth and

[8] Reilly, C. & Lancaster, L. (2016, March 8). Google turns game of Go into massive AI-vs-human spectacle. *CNet*. Retrieved from https://www.cnet.com/news/google-deepmind-hooked-us-on-go-the-geekiest-game-youve-never-heard-of/.

[9] Szegedy, C. (2014, September 5). Building a deeper understanding of images. *Google AI Blog*. Retrieved from https://ai.googleblog.com/2014/09/building-deeper-understanding-of-images.html.

texture of faces, referencing these features with thousands of images before producing a result. The technology isn't full-proof, however. Deep neural networks capable of learning may create their own interpretation of an object from numerous image-matching exercises, as in matching the photo of an animal with an abstract or surreal image that it "deemed" identical.[10] There have also been reports of facial recognition software having a higher rate of positive matches for Caucasians than other ethnicities.[11]
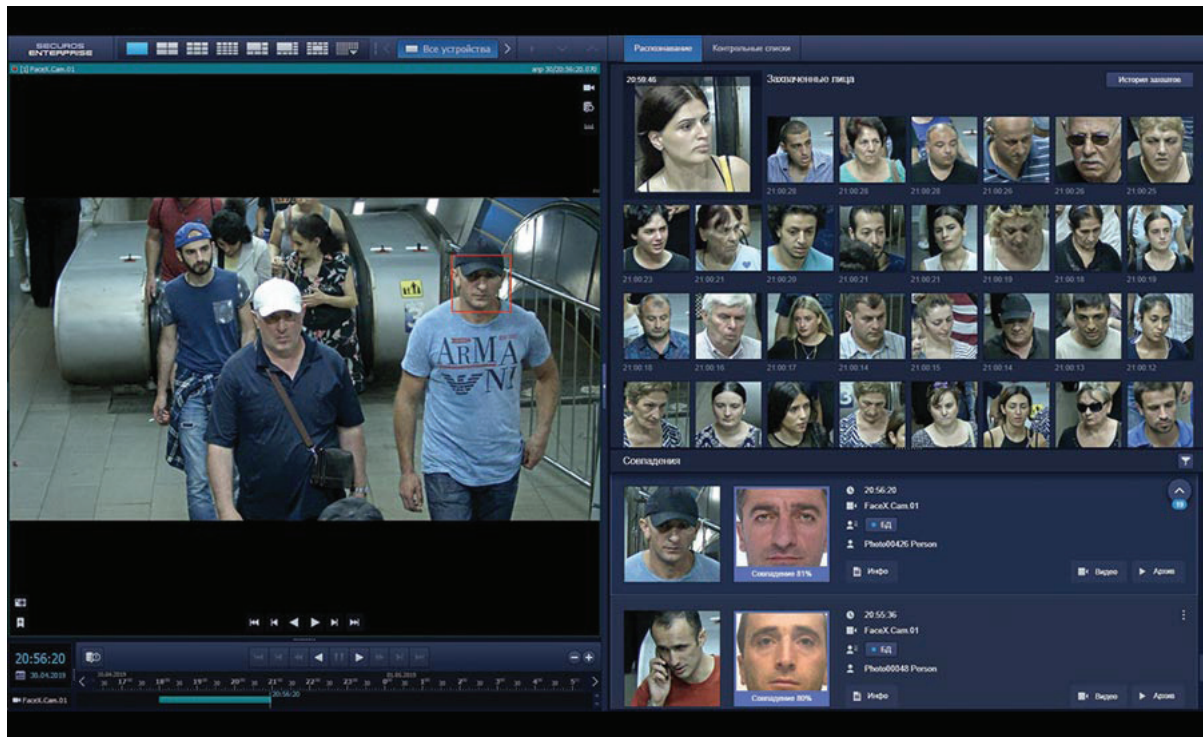
An example of facial recognition software
Source: Security Magazine[12]

> **" A fully autonomous weapon, relegates human input to turning the machine on and off. "**

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10   Scharre, P. (2018). *Army of none: Autonomous weapons and the future of war*. New York: W.W. Norton.

11   Lohr, S. (2018, February 9). Facial recognition is accurate, if you're a white guy. *The New York Times*. Retrieved from https://www.nytimes.com/2018/02/09/technology/facial-recognition-race-artificial-intelligence.html.

12   Ushering next generation facial recognition. (2019, August 15). *Security Magazine*. Retrieved from https://www.securitymagazine.com/articles/90672-ushering-next-generation-facial-recognition.

While intelligence allows a machine to determine its next task, autonomy enables it to act without human intervention. This means that humans are "out of the loop" in the decision-making and execution processes. Automated or automatic machines follow a specific programming that dictates its actions from point A to B. At any point during the performance of its programming, a human operator has the ability to intervene and redirect it by issuing new commands or shut it down. A fully autonomous weapon, meanwhile, relegates human input to turning the machine on and off.

Shutting down a fully autonomous machine, however, may have its limits. If an unmanned aerial vehicle is launched from a ship in the middle of the sea to a target outside of the human operator's, for instance, they may not be able to monitor its actions completely or be able to send a signal to shut it down. There are benefits to a machine's autonomy that render it safe from jamming or hacking, but there is also a degree of risk in not being able to completely predict a machine's actions and stop it when it malfunctions.[13]

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[13] Scharre, P. (2018). *Army of none: Autonomous weapons and the future of war*. New York: W.W. Norton.

Lethal Autonomous Weapons System:

A GLOBAL ISSUE

Why are LAWS a global issue?

Currently, there are only a few countries capable of producing LAWS and a few more capable of acquiring them. The prospect of more efficient warfare being monopolized by only a few states is cause for concern for other countries who may have to bear the brunt of the fallout. Geopolitical tensions around the world, internal conflicts and non-conflict related social unrest may serve as drivers to the escalation and spread of armed violence. As mentioned, AWS do not need to be lethal in order to inflict harm. Certain types of AWS could still cause widespread casualties in an instant, whereas human beings are capable of thinking beyond orders and practicing restraint.

WHO'S INVOLVED?

272 SCIENTISTS
INCLUDING ENGINEERS, COMPUTING, AI EXPERTS AND ROBOTICISTS IN 37 COUNTRIES HAVE CALLED FOR A BAN ON THE DEVELOPMENT AND DEPLOYMENT OF FULLY AUTONOMOUS WEAPONS.

AT LEAST 6 STATES
ARE KNOWN TO BE RESEARCHING, DEVELOPING AND TESTING FULLY AUTONOMOUS WEAPONS:
THE US, THE UK, CHINA, ISRAEL, RUSSIA AND SOUTH KOREA.

44 STATES
HAVE SPOKEN PUBLICLY ON FULLY AUTONOMOUS WEAPONS SINCE THE HUMAN RIGHTS COUNCIL DEBATE ON 30 MAY 2013.

Only a few states are currently producing LAWS
Source: Campaign to Stop Killer Robots[14]

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[14] Russell, S. (2016, January 17). Robots in war: The next weapons of mass destruction? *World Economic Forum*. Retrieved from https://www.weforum.org/agenda/2016/01/robots-in-war-the-next-weapons-of-mass-destruction/.

There is also the element of uncertainty when deploying a fully autonomous weapon. International human rights groups have raised concerns about the ethics of machines killing humans without a clear line of accountability. It remains to be seen whether a machine can be taught to observe the laws of armed conflict (LOAC), especially international humanitarian law (IHL). For instance, combatants who surrender are considered nonbelligerent and should therefore no longer be targeted. Technology could malfunction or escape from the supervision of its human operators. Even in cases where a robot can act more precisely and make decisions autonomously, humans should still be included in the loop to maintain control, such as having an emergency abort program.

Another important caveat that should be considered is the lack of an international regime that regulates the international trade and transfer of LAWS, its complex infrastructure, parts and components. Several countries worldwide still suffer from internal armed conflicts exacerbated by the proliferation of illicit weapons. The illicit spread of LAWS could only aggravate such conflicts. The software used in the detection of subjects is already available and easily accessible online. Unless unauthorized groups can be prevented from gaining access to LAWS and its parts, great caution should be exercised in developing and deploying them.

What are the arguments in favor of LAWS?

Some have pointed out the benefits of developing LAWS for use in warfare. Among the three most cited are speed, precision and efficiency.[15] Precision is especially important in the battlefield to reduce the number of casualties to as little as possible. In urban areas, it is generally difficult to pursue, identify and engage targets that are actively moving. Belligerent forces hiding behind civilians could be targeted without harming non-combatants. Conceptually, LAWS would be more capable of identifying the right targets and defending combatants compared to a human being, including a well-trained combatant.[16] China has already outfitted some of its older tanks with active protection systems while South Korea can add another barrier of protection by employing its robot sentry in the DMZ.[17]

" Some have pointed out the benefits of developing LAWS for use in warfare. Among the three most cited are speed, precision and efficiency. **"**

[15] Altmann, J. & Sauer, F. (2017). Autonomous weapon systems and strategic stability. *Survival, 59*(5), 117-142.; Fanning, D. (Producer), & Fanning, D. & Docherty, N. (Directors). (2019). In the age of AI [Documentary film]. United States: PBS.; Scharre, P. (2018). *Army of none: Autonomous weapons and the future of war.* New York: W.W. Norton.

[16] Scharre, P. (2018). *Army of none: Autonomous weapons and the future of war.* New York: W.W. Norton.

[17] Kania, E.B. (2020, April). "AI weapons" in China's military innovation. *The Brookings Institution.* Retrieved from https://www.brookings.edu/research/ai-weapons-in-chinas-military-innovation/.

What are the arguments against LAWS?

While most of the existing autonomous weapons systems are used mainly in a defensive capacity, there have been concerns regarding the appropriateness of its use as well as who is accountable for its actions.

Objections to LAWS are generally centered on three arguments: the inevitable unpredictability of deep learning AI, uncertainty on whether intelligence allows AI to perceive moral dilemmas and contexts, and the potential of LAWS to be used in unintended, unauthorized and eventually harmful circumstances.

First, as mentioned in a previous section, machine learning can employ numerous algorithms, but may not always produce accurate results. Image recognition software equipped with deep learning capabilities have shown that it can create its own understanding of a portrait. Instead of matching it with an image in its database, it identifies it with a picture of its own creation, usually an abstract, nonsensical, completely fabricated image. A human being would be able to make a distinction, but a machine with virtually unlimited learning possibilities will make a different determination. In addition, as AI is usually tested in a lab, there is no telling what errors or malfunctions may emerge once it is exposed to a real world setting. An AI-equipped weapon deployed in a conflict with minimal empirical testing is essentially an untested weapon that could cause more harm than good. Second, human beings may choose to go against orders if they encounter moral dilemmas, such as choosing not to target child soldiers or informants.[18] Would armed civilians defending their property, for instance, be considered enemy combatants? Third, how would LAWS be regulated to ensure it is used as it is intended and regulated carefully. There are many components to building LAWS, including the software that contains the AI programming and the parts of the hardware. The software

"Objections to LAWS are generally centered on three arguments: the inevitable unpredictability of deep learning AI, uncertainty on whether intelligence allows AI to perceive moral dilemmas and contexts, and the potential of LAWS to be used in unintended, unauthorized and eventually harmful circumstances."

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[18] Scharre, P. (2018). *Army of none: Autonomous weapons and the future of war.* New York: W.W. Norton.

for image identification is publicly available, developed separately by a number of AI companies. Drone technology is also readily available, having commercial uses in some professions (photography, for instance). Should unauthorized actors get a hold of the different components, there is a danger of LAWS proliferation that would be difficult to regulate. Without a careful understanding of the life cycle of LAWS and its components, non-state armed groups could gain access to LAWS and use it against government armed forces or to commit criminal activities.

What is the humanitarian impact of LAWS?

LAWS could have a devastating impact when deployed in both conflict and non-conflict settings. Because of the speed and efficiency of LAWS to eliminate targets or AWS to neutralize enemy resistance, the number of casualties could increase exponentially where these weapons systems are utilized. Complete military domination would make waging wars easier and more convenient, providing less incentives to employ more peaceful and diplomatic solutions.

Do LAWS violate human rights?

The development and use of LAWS could be detrimental to human rights in terms of physical safety, accountability, and democracy. It is uncertain how LAWS would act in real-world conflict settings with little to no empirical testing, thereby increasing the risk that it could cause more physical harm and devastation. Where malfunctions or wrongdoings occur, the accountability for the actions of LAWS and AWS is not clear. Where accountability is not clearly established, it would be difficult to hold a specific individual or command responsible. The implications on democracy are negative. Conflicts could escalate with ease and wars entered without the consent of the people. Casualties and deaths could be caused without certainty that the chain of accountability could be established.

How are women affected by the proliferation of LAWS?

Gender-based violence is a pervasive problem that disproportionately affects women. In conflicts, women are especially vulnerable and can be subjected to physical violence and sexual assault but also to other forms violence and marginalization due to armed conflict's impact on their lives and society. The deployment of LAWS in war does not ensure the protection of women in conflict, especially against sexual violence. Nor does it provide protection in domestic violence cases, where LAWS would hardly be used. If they are, it is still questionable whether a machine can develop an understanding for human rights and dignity and be able to distinguish threats not just in terms of lethality or the dichotomy of a friendly or enemy combatant, but also in terms of sexual violence and abuse

If LAWS are used, who is accountable?

Theoretically, LAWS should be capable of determining or assessing threat levels autonomously. As mentioned, in the event of mistakes or civilian deaths, the chain of responsibility and accountability is obscured with no meaningful human control over

LAWS. Accountability and human rights are fundamentally linked. Human control gives way to the recognition of human rights, the observance of LOAC and IHL and the power of restraint, compared to a more logical and less discerning AI in LAWS.

Which countries are already developing LAWS?

Historically, the US and the former Soviet Union were at the forefront of advances in autonomous weaponry in a race to outdo each other during the Cold War. It began with early warning missile systems, which were designed to detect missiles within a certain radius.[19] As wars spread, killing many combatants and non-combatants and increasing the costs of conflict, new types of weapons were designed to increase the efficiency of engaging the enemy while at the same time minimizing the casualties of war.

Partial list of semi- and fully autonomous weapons, active and in development
Sources: Bode & Huelss; (image) NISEA[20]

Some of these weapons are fully autonomous, such as the IAI Harpy or Harop. There is very little opportunity to stop these loitering munitions from eliminating their targets as they are designed to loiter and analyze a particular area for enemy activity for hours. The IAI Harop is also known as a suicide drone, as the body itself is the

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[19] Ibid

[20] Bode, I. & Huelss, H. (2018). Autonomous weapons systems and changing norms in international relations. *Review of International Studies*, 44(3), 393-413, p. 402.; Austero, M. & Savage, P. (eds.) (2020). *Artificial intelligence, emerging technology and lethal autonomous weapons systems: Security, moral and ethical perspectives in Asia.* Manuscript submitted for publication.

munition. It is designed to drop and detonate on a target once identified. Though the Samsung SGR-A, a robot sentry developed by South Korea, is designed to identify human targets, it cannot distinguish between friendly and hostile combatants and cannot loiter freely.

In Asia, the leading governments propelling the research into LAWS are China, South Korea and India, with a few other countries such as Singapore and Thailand considering it to augment the capacity of their militaries and law enforcement. In a study led by Nonviolence International Southeast Asia (NISEA), it appears that each sub-region in Asia have different motivations for considering the development of LAWS.[21]

In East Asia, for instance, security issues with North Korea motivate South Korea to pursue AI research in weapons. South Korea has already deployed a robot sentry, the Samsung SGR-A, in the demilitarized zone (DMZ). It has also acquired some fully autonomous weapons, such as the IAI Harpy.[22] China, meanwhile, has been active in AI research and development, seeking to overtake the US as the top AI developer in the world by 2025. China is a global exporter of weapons, and has also started exporting unmanned, automated systems. One such system is the Wing Loong platform and the CH-4 platform, both unmanned aerial vehicles (UAV).[23] Another UAV that is utilized by the PLA, the GJ-2, is capable of autonomous flight and precision strikes.[24] Production for the CH-4 platform has been ramped up in Pakistan, Myanmar and Saudi Arabia.[25] While Japan may be a developed country capable of weapon advancement, it has repeatedly declared publicly that it will not engage in such activities, though it has been vocal in international meetings on LAWS under the Convention on Certain Conventional Weapons (CCW).[26]

Southeast Asia has seen some foray into unmanned vehicles, such as Thailand's experimentation with unmanned ground vehicles (UGV). So far, Singapore has made the most strides, having developed an armed protector robot to provide additional security to troops, as well as a "robot dog" that enforces social distancing rules at the height of the coronavirus spread in the country.[27] Though its military modernization plans currently do not involve LAWS, the Philippines has initiated national discussions on its uses and dangers.

In South Asia, most countries have no plans of developing LAWS or precursors to LAWS, save for India, who has announced great plans for its military modernization. Pakistan has declared that it would ban the use and development of LAWS.[28]

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[21] Austero, M. & Savage, P. (eds.) (2020). *Artificial intelligence, emerging technology and lethal autonomous weapons systems: Security, moral and ethical perspectives in Asia.* Manuscript submitted for publication.

[22] PAX. 2019. *State of AI: Artificial Intelligence, the Military and Increasingly Autonomous Weapons.* Utrecht: PAX. April. Retrieved from https://www.paxforpeace.nl/media/files/state-of-artificial-intelligence--pax-report.pdf

[23] Kania, E.B. (2020, April). "AI weapons" in China's military innovation. *The Brookings Institution.* Retrieved from https://www.brookings.edu/research/ai-weapons-in-chinas-military-innovation/.

[24] Ibid.

[25] Ibid.

[26] Austero, M. & Savage, P. (eds.) (2020). A*rtificial intelligence, emerging technology and lethal autonomous weapons systems: Security, moral and ethical perspectives in Asia.* Manuscript submitted for publication.

[27] Ibid.

[28] Ibid.

What is the status of the discussion at the CCW on the issue of LAWS?

At the international level, both formal and informal discussions on LAWS have been making gradual progress, although not much of the international discussions have been formally adopted concerning LAWS. Diplomatic discussions are currently assigned under the framework of the Convention on Certain Conventional Weapons (CCW). A yearly Group of Governmental Experts (GGE) meeting, which began in November 2017, is held among states parties to the CCW to explore global developments and concerns regarding the development and use of LAWS. Following these meetings, and due also to a relatively more widespread awareness of the potentialities of LAWS, 19 governments have so far publicly supported future prohibitions on LAWS.[29]

What international laws are relevant to LAWS?

There are no existing international agreements dedicated solely to the regulation of LAWS or its precursors, though LAWS are technically still covered in the Martens clause of the Geneva Conventions, Additional Protocol II, as it pertains to emerging technologies not covered by the conventions at the time. The clause states that "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 the dictates of public conscience."[30] Countries must thus ensure that international humanitarian law is effectively applied in every conflict setting, regardless of future advancements in weaponry.

Other international agreements could also cover parts or components of emerging technologies in LAWS. The 2012 Arms Trade Treaty (ATT), the 2008 Convention on Cluster Munitions (CCM), and the 1996 Mine Ban Treaty (MBT) all cover a part or a component of an AI equipped weapon. Notably, the CCW has provided a means for banning a weapon that is still under development like the blinding laser weapon, which could serve as a precedent for creating a dedicated regulation regime on LAWS.[31] Due to the complexity of its development and production and the different parts and components required in constructing a fully autonomous weapon system, LAWS would require a separate international agreement that addresses its life cycle and the ethical concerns that emerge over its development and use.

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[29] Bode, I. & Huelss, H. (2018). Autonomous weapons systems and changing norms in international relations. *Review of International Studies*, 44(3), 393-413; Scharre, P. (2018). *Army of none: Autonomous weapons and the future of war*. New York: W.W. Norton.

[30] Protocol additional to the Geneva conventions of 12 August 1949, and relating to the protection of victims of international armed conflicts (Protocol I), 8 June 1977. Retrieved from https://ihl-databases.icrc.org/ihl.nsf/WebART/470-750004.

[31] United Nations [UN]. (2001, December 21). Group of governmental experts of the high contracting parties to the convention on prohibitions or restrictions on the use of certain conventional weapons which may be deemed to be excessively injurious or to have indiscriminate effects as amended. Retrieved from https://www.unog.ch/80256EDD006B8954/(httpAssets)/40BDE99D98467348C12571DE0060141E/$file/CCW+text.pdf/.

Philippines and LAWS

What are some Philippine national laws related to LAWS?

The Philippines has several laws, policies and regulations that could cover different components of LAWS, especially its hardware and software.[32] Among them are:

1) **Republic Act (RA) No. 10697 or the Strategic Trade Management Act (STMA)**

   The relevant provisions of the STMA concern its scope and commitment to combating terrorism and crime and preserve public safety:

   - To take and enforce effective measures to establish domestic controls to prevent the proliferation of WMDs and their means of delivery;
   - To maintain international peace and security, and promote economic growth by facilitating trade and investment through the responsible management of strategic goods and the provision of related services; and
   - Consistent with its foreign policy and national security interests, and in support of efforts to counterterrorism, control crime, and safeguard public safety, the State shall manage the trade of strategic goods and provision of related services in accordance with international standards and best practices.

2) **RA No. 10591 or the Comprehensive Firearms and Ammunition Regulation Act**

   The Comprehensive Firearms Act could cover parts of a LAWS' hardware, especially its weapon component. It regulates:

   - The ownership, possession, carrying, manufacture, dealing in and importation of firearms, ammunition, or parts thereof, in order to provide legal support to law enforcement agencies in their campaign against crime, stop the proliferation of illegal firearms or weapons and the illegal manufacture of firearms or weapons, ammunition and parts thereof.

3) **RA No. 10844 creating the Department of Information and Communications Technology (DICT)**

   The DICT is responsible for the provision of ICT infrastructure as well as the promotion of ICT development in the country. It would be one of the agencies that could be responsible for the information technology aspect of AI research and development in LAWS.

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[32] Presenter, Joves, H. (2020, February). *Legal and ethical issues surrounding autonomous weapons systems and emerging technologies*. Presented at Policy implications of issues related to autonomous weapons systems and emerging technologies, Quezon City, Philippines.

4) National Cybersecurity Plan 2022

The Philippines' National Cybersecurity Plan covers its short-term development plans to widen the accessibility of the internet among Filipinos, as well as protect and support critical infrastructure concerning cyberdevelopment and technology.

5) Executive No. 128

Through EO No. 128, the Department of Science and Technology-Advanced Science and Technology Institute (DOST-ASTI) was created to lead research and development in ICT and microelectronics as well as conduct research that supports the strengthening and modernization of science and technology infrastructure in the country.

6) RA No. 9851 or the Philippine Act on Crimes Against International Humanitarian Law, Genocide and Other Crimes Against Humanity

This RA could be related to the possible humanitarian impact of LAWS as it defines and penalizes "the most serious crimes of concern to the international community."

In addition, the Philippines is a party to the Geneva Conventions and its Protocols I and II, the CCW, the Convention on Cluster Munitions (CCM) and the Mine Ban Treaty. The Philippines is a signatory to the Arms Trade Treaty (ATT) and the Prohibition on Nuclear Weapons.

What has been done by the Philippine government on the LAWS issue?

The Philippines is one of very few Southeast Asian countries who have launched national discussions on LAWS. The Office of the Special Envoy on Transnational Crime (OSETC) held a national workshop on LAWS, convened with Nonviolence International Southeast Asia (NISEA), to initiate discussions on the definition and potential impact of LAWS on Philippine policies and regulations. The workshop was attended by key government agencies concerned with law enforcement, governance, foreign affairs, national defense and security. Throughout these dialogues and in related international fora on weapons regulation, the Philippines has always emphasized its commitment to IHL. A second national workshop is scheduled in 2020.

Why should the Philippines support negotiating a new treaty on LAWS?

The Philippines is afflicted by both internal conflicts and external security threats. Domestically, there are ongoing armed conflicts against non-state armed groups. The most notorious groups are the New People's Army, the Abu Sayyaf Group, and other ISIS-inspired groups.[33] The ISIS-inspired Maute Group and its allies were responsible for the siege of Marawi City in Southern Philippines, which caused extensive damages to the city that are yet to be repaired.

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[33] Franco, J. (2017). The battle for Marawi: Appropriating ISIS propaganda and importing the Wilayah model. *Security Reform Initiative.* Retrieved from http://www.securityreforminitiative.org/2017/06/22/battle-marawi-appropriating-isis-propaganda-importing-wilayah-model/. ; Hernandez, C. (2014). Security sector reform in Southeast Asia: From policy to practice. In F. Heiduk (Ed.), *Security sector reform in Southeast Asia: From policy to practice* (pp. 23-53). Hampshire: Palgrave Macmillan.

Policy Implications of the Issues Related to Autonomous Weapons and Emerging TecHnologi
A joint activity of the Office of the Special Envoy on Transnational Crime
and Nonviolence International Southeast Asia
26th February 2020, Quezon City PHILIPPINES

Photo credit: NISEA

In terms of external security threats, the country's porous borders make it a prime target for criminal groups engaged in transnational organized crimes, especially human and weapons smuggling, sea piracy and terrorist activities. Along with territorial disputes between other Southeast Asian countries and China, the government has pursued its long-stalled plans to modernize its military arsenal in recent years. The Philippine government unveiled a strategy to improve military capabilities until 2028.[34] Though the modernization plans do not yet include the development or acquisition of LAWS, the Philippines could still be affected by its proliferation and use. The illicit transfer of LAWS and its parts could serve as a security challenge to law enforcement and is especially compounded by transnational security and terroristic threats. A global LAWS arms race would also be inimical to the development and stability of the Philippines.

> " The illicit transfer of LAWS and its parts could serve as a security challenge to law enforcement and is especially compounded by transnational security and terroristic threats. "

[34] Parameswaran, P. (2019, August 28). What does the new Philippines defense budget say about future military modernization under Duterte? *The Diplomat*. Retrieved from https://thediplomat.com/2019/08/what-does-the-new-philippines-defense-budget-say-about-future-military-modernization-under-duterte/.

Civil Society Efforts

What are some of the civil society organizations efforts on the LAWS issue?

Civil society organizations (CSOs) have started raising awareness on the possible dangers and ethical concerns surrounding LAWS. A global Campaign to Stop Killer Robots (CSKR) was launched in response to the ethical and moral dilemmas and relative secrecy of LAWS development worldwide. There is growing worldwide concern over the use of LAWS against human beings, especially with the wider role of AI in our daily life and even in governance. Transnational security issues and tensions over territorial disputes have all contributed to increased fears about the weaponization of AI and its integration to LAWS, contributing to its informal name, "killer robots".

There is an emerging network of CSOs in the Southeast Asian region who are actively working on these concerns. Aside from the Philippines' national workshop, a Southeast Asian civil society meeting was organized by NISEA in Bangkok, Thailand in July 2019. Since then, several country campaigns have been launched in Cambodia, Indonesia, Philippines, and Thailand. A key principle agreed among this informal network of Asian CSOs is, apart from ensuring meaningful human control over LAWS is maintained, that a new international instrument on LAWS is deliberated formally at the international level. CSOs are mainly concerned about the use of AI in LAWS and not the development and use of AI on commercial matters in itself.

Nonviolence International, an NGO in Special Consultative Status with the
Economic and Social Council (ECOSOC) of the United Nations since 2005,
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