

## **Lethal Autonomous Weapons Systems & International Law: Growing Momentum Towards a New International Treaty**

### **Introduction**

On December 2, 2024, the United Nations (UN) General Assembly adopted a resolution on Lethal Autonomous Weapons Systems<sup>1</sup> with overwhelming support: 166 votes in favor, 3 opposed (Belarus, Democratic People's Republic of Korea, and the Russian Federation), and 15 abstentions.<sup>2</sup> The resolution mentions the potential for a two-tiered approach to prohibit some lethal autonomous weapon systems (LAWS) while regulating others under international law. This resolution is the latest in a series of international actions reflecting heightened concern about the development and use of LAWS in recent and ongoing conflicts, including in Ukraine and Gaza.

At the same time, the Convention on Certain Conventional Weapons' Group of Governmental Experts on Lethal Autonomous Weapons Systems (CCW Group of Experts)<sup>3</sup> has made notable progress on the issue of LAWS over the last decade, but has faced criticism for not moving faster due to its consensus model.<sup>4</sup> The issue of LAWS has become a focal point in international deliberations, with momentum building towards the development of clearer, more robust international legal frameworks.

### **Definition and Examples of Lethal Autonomous Weapon Systems**

The advent of LAWS has occurred due to advances in artificial intelligence, robotics, sensor technologies, and real-time data processing, enabling systems to independently identify, track, and engage targets.

There is presently no consensus definition of LAWS under international law,<sup>5</sup> although some progress has been made towards one.<sup>6</sup> Generally speaking, LAWS are weapons systems that, once activated, “select targets and apply force without human intervention.”<sup>7</sup>

Given the varying degree of automation in weapons systems, different typologies have been developed to describe the spectrum of human involvement. The most straightforward and commonly employed framework is as follows:

- **Semi-autonomous** (human-*in*-the-loop): Systems that, once activated, can select targets and apply force – but only with human authorization.
- **Supervised autonomous** (human-*on*-the-loop): Systems that, once activated, select targets and apply force without requiring human authorization but are supervised by a human who can intervene to override the system.
- **Fully autonomous** (human-*out*-of-the-loop): Systems that, once activated, select targets and apply force without human authorization, supervision, or intervention.

Based on this typology, both supervised autonomous and fully autonomous weapons meet the definition of LAWS capable of operating without human intervention. Here are a few examples:

The Phalanx Weapon System (Raytheon – US) has naval and land-based uses. On the seas, it “automatically detects, evaluates, tracks, engages and performs kill assessment against anti-ship missiles and high-speed aircraft threats.”<sup>8</sup> On land, Phalanx intercepts “rockets, artillery and mortar rounds in the air before impact.”<sup>9</sup>

HARPY (Israel Aerospace Industries – Israel) is a fully autonomous anti-radiation loitering munition that “is equipped to hunt—seek targets in a designated area, locate and identify their frequency, and autonomously pursue a strike from any direction, at shallow or steep dive profiles.”<sup>10</sup> In lay terms, it is a “fire and forget” autonomous unmanned aerial vehicle (UAV) and a missile that is designed to destroy enemy radar installations. It does not need prior intelligence on the target’s location before being launched.

Lancet-3 (Zala Group, a subdivision of the Kalashnikov Group – Russian Federation) is a loitering munition “for reconnaissance, surveillance, and strike mission . . . a smart multipurpose weapon, capable of autonomously finding and hitting a target. It can transmit video, which allows for confirming successful target engagement.”<sup>11</sup>

KARGU (Savunma Teknolojileri Mühendislik (STM) – Türkiye) is a “rotary wing attack drone designed to provide tactical ISR and precision strike [capabilities] for ground troops.”<sup>12</sup> While STM protests the finding, a UN Panel of Experts stated in March 2020 that the Kargu-2 was used by forces affiliated with the Libyan government to autonomously attack militias.<sup>13</sup>

Given the proliferation of LAWS, how is the international community responding?

### **Application of Existing International Law**

To start with, there is widespread international consensus that existing international law fully applies to LAWS. This includes, for example, the UN Charter, international humanitarian law (IHL), international criminal law, international human rights law, the law of state responsibility, international environmental law, international product liability law, and existing treaties on specific types of weapons (e.g., chemical, biological, and nuclear weapons).

With respect to IHL, both the International Committee of the Red Cross (ICRC)<sup>14</sup> and the CCW Group of Experts<sup>15</sup> have elaborated in some detail on various requirements under IHL that apply to LAWS. A synthesis of these obligations includes the following key points:

- **State responsibility:** States must ensure that LAWS they develop or deploy comply with IHL.
- **Accountability:** LAWS require “[c]ontext-appropriate human control and judgement”<sup>16</sup> to ensure compliance with IHL. Human operators, commanders, and superiors remain accountable under IHL for their use of LAWS.
- **Distinction:** LAWS must be capable of distinguishing between civilians and combatants, civilian and military objects, and active combatants and those *hors de combat* (incapable of participating in hostilities due to injury, incapacitation, or surrender).
- **Proportionality:** LAWS must be able to determine whether the expected incidental harm to civilians and civilian property would be excessive compared to the anticipated concrete and direct military advantage.
- **Precautions in attack:** LAWS must be capable of canceling or suspending an attack if it becomes evident that the target is not a legitimate military objective, is subject to special protection, or the attack would be disproportionate.

- **Principle of humanity and dictates of public conscience** (the Martens Clause): LAWS can only be used ethically, even with aspects not covered explicitly by IHL. It may be argued that “life-and-death decisions in armed conflict ceded to machines”<sup>17</sup> crosses such a line.
- **Weapons reviews:** Under article 36 of Additional Protocol I to the Geneva Conventions, States must ensure that any “new weapon, means or method of warfare” would not run afoul of international law. This involves an evaluation of their predictability and reliability to function as intended, without errors or unintended consequences.

Under existing IHL, LAWS are therefore prohibited from being employed where they: (1) are incapable of complying with IHL (e.g., distinction, proportionality, and precaution); (2) are, by their nature, inherently indiscriminate or cause superfluous injury or unnecessary suffering; (3) target civilians or civilian objects as such; (4) cannot be anticipated and controlled; (5) are used without human control and judgement, depending on the context; or (6) are intended or expected to result in widespread, long-term, and severe environmental damage.<sup>18</sup>

In terms of enforcement, existing applicable international legal rules and forums would apply to any use of LAWS that violate IHL, including State responsibility and individual criminal responsibility for grave breaches (including via command or superior criminal responsibility, which impose obligations to prevent and punish violations).

### **Towards a New International Treaty on Lethal Autonomous Weapon Systems**

António Guterres, Secretary-General of the United Nations, and Mirjana Spoljaric, President of the International Committee of the Red Cross, are among those who have called for a new international treaty setting out specific prohibitions (e.g., autonomous targeting of people without human involvement) and restrictions on LAWS (e.g., “limiting where, when and for how long they are used, the types of targets they strike and the scale of force used, as well as ensuring the ability for effective human supervision, and timely intervention and deactivation.”)<sup>19</sup>

While existing general rules and principles under international law apply to LAWS, without specific rules Guterres and Spoljaric caution that too much will be left to varied interpretations by States. They have called for the conclusion of negotiations on a new international treaty on LAWS by the end of 2026.

The CCW Group of Experts' rolling text from November 8, 2024, outlines several potential regulatory measures for LAWS. Some key aspects include:

- **Ensuring LAWS are predictable, reliable, traceable, and explainable** to maintain their lawful use under IHL.
- **Maintaining context-appropriate human oversight**, particularly in morally and legally significant decisions, such as during the identification and/or engagement of targets.
- **Limiting the operation of LAWS by:**
  - Restricting target types, duration, geographical scope, and scale of operations.
  - Enabling human operators to deactivate LAWS after activation.
  - Incorporating self-destruct, self-deactivation, or self-neutralization mechanisms.
  - Limiting number of LAWS engagements.
  - Avoiding deployment in areas densely populated with civilians or civilian objects.
  - Limiting targets to objectives that are by their nature military.
- **Preserving human control over mission parameters** to prevent LAWS from autonomously altering their objectives.
- **Mitigating biases in AI and automation by:**
  - Implementing measures to reduce potentially harmful bias of AI-driven decisions.
  - Conducting regular evaluations to detect and address harmful biases.<sup>20</sup>

Despite generating these valuable potential recommendations for reform, some civil society observers have questioned the ability of the CCW process to culminate in a consensus on new international rules for LAWS, noting alleged stalling tactics by the Russian Federation.<sup>21</sup> Consequently, the latest UN resolution on LAWS (mentioned at the outset) will launch informal consultations among member states in 2025 on the topic, drawing on the work of the CCW Group of Experts and inviting its Chair to participate. Momentum towards a new treaty appears to be building.

## Conclusion

While existing international humanitarian law, international criminal law, and international human rights law provide foundational rules and principles governing LAWS, gaps in specificity and enforcement highlight the pressing need for a dedicated international treaty. Such a treaty could harmonize interpretations, establish clear prohibitions and restrictions, and ensure accountability in the use of these technologies.

**About the Author:** Benjamin Perrin is a Professor of Law at the University of British Columbia, Peter A. Allard School of Law, and a member of the UBC Centre for Artificial Intelligence Decision-Making and Action. [www.benjaminperrin.ca](http://www.benjaminperrin.ca)

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<sup>1</sup> G.A. Res. 79/62, Lethal Autonomous Weapons Systems, U.N. Doc. A/RES/79/62 (Dec. 2, 2024), <https://documents.un.org/doc/undoc/ltd/n24/305/45/pdf/n2430545.pdf>.

<sup>2</sup> United Nations, *Lethal autonomous weapons systems: resolution / adopted by the General Assembly* (Dec. 2, 2024), <https://digitallibrary.un.org/record/4068497?ln=en>.

<sup>3</sup> United Nations Office for Disarmament Affairs, *Convention on Certain Conventional Weapons – Group of Governmental Experts on Lethal Autonomous Weapons Systems* (2024), <https://meetings.unoda.org/ccw-/convention-on-certain-conventional-weapons-group-of-governmental-experts-on-lethal-autonomous-weapons-systems-2024>.

<sup>4</sup> Stop Killer Robots, *First CCW Meeting After UNGA Resolution Maintains Status Quo* (Nov. 15, 2024) <https://www.stopkillerrobots.org/news/first-ccw-meeting-after-unga-resolution-maintains-status-quo/>.

<sup>5</sup> United Nations Office for Disarmament Affairs, *Lethal Autonomous Weapon Systems (LAWS)* (2023), <https://disarmament.unoda.org/the-convention-on-certain-conventional-weapons/background-on-laws-in-the-ccw/>.

<sup>6</sup> United Nations Office for Disarmament Affairs, *Remarks of the Chair of the GGE on LAWS H.E. Robert in den Bosch (Kingdom of the Netherlands)* (Aug. 30, 2024), <https://unodaweb-meetings.unoda.org/public/2024-09/Chairs%20remarks%20GGE%20on%20LAWS%2030.08.24-3pm.pdf>.

<sup>7</sup> United Nations Secretary-General, *Note to Correspondents: Joint Call by the United Nations Secretary-General and the President of the International Committee of the Red Cross for States to Establish New Prohibitions and Restrictions on Autonomous Weapon Systems* (Oct. 5, 2024), <https://www.un.org/sg/en/content/sg/note-correspondents/2023-10-05/note-correspondents-joint-call-the-united-nations-secretary-general-and-the-president-of-the-international-committee-of-the-red-cross-for-states-establish-new>.

<sup>8</sup> Raytheon, *Phalanx Weapon System* (Dec. 3, 2024), <https://www.rtx.com/raytheon/what-we-do/sea/phalanx-close-in-weapon-system>.

<sup>9</sup> *Id.*

<sup>10</sup> Israel Aerospace Industries, *HARPY Anti-Radiation Loitering Munition* (Dec. 3, 2024), <https://www.iai.co.il/p/harpy>.

<sup>11</sup> Global Defense News Army Recognition Group, *Lancet-3* (July 25, 2024), <https://www.armyrecognition.com/military-products/army/unmanned-systems/unmanned-aerial->

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<sup>12</sup> STM, *KARGU Combat Proven Rotary Wing Loitering Munition System* (Dec. 3, 2024),

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<sup>13</sup> Letter from the Panel of Experts on Libya Established Pursuant to Security Council Resolution 1973 (2011) to the President of the Security Council, at 63,U.N. Doc. S/2021/229 (Mar. 8, 2021),

<https://documents.un.org/doc/undoc/gen/n21/037/72/pdf/n2103772.pdf>; see also Humanitarian Law & Policy, *Loitering Munitions: Flagging an Urgent Need for Legally Binding Rules for Autonomy in Weapon Systems* (June 29, 2023), <https://blogs.icrc.org/law-and-policy/2023/06/29/loitering-munitions-legally-binding-rules-autonomy-weapon-systems/>.

<sup>14</sup> Neil Davison, *A Legal Perspective: Autonomous Weapon Systems Under International Humanitarian Law*, 30 U.N. Off. Disarmament Aff. Occasional Papers 5 (2018),

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<sup>15</sup> Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapon Systems, *Existing International Humanitarian Law applicable to Lethal Autonomous Weapon Systems*, CCW/GGE.1/2024/CRP.3 (May 27, 2024), [https://docs-](https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2024)/CCW_GGE1_2024_CRP.3.pdf)

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<sup>16</sup> United Nations Office for Disarmament Affairs, *GGE on LAWS* (Nov. 8, 2024), [https://docs-](https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2024)/Revised_rolling_text_as_of_8_November_2024_final.pdf)

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<sup>19</sup> United Nations, *UN Secretary-General, President of International Committee of Red Cross Jointly Call for States to Establish New Prohibitions, Restrictions on Autonomous Weapon Systems* (Oct. 5, 2023),

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<sup>20</sup> United Nations Office for Disarmament Affairs, *GGE on LAWS* (Nov. 8, 2024), [https://docs-](https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-_Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2024)/Revised_rolling_text_as_of_8_November_2024_final.pdf)

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