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GA1: Disarmament and International Security

Research Report

Topic 3: Preventing the misuse of autonomous and remotely operated systems (AROS).



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Introduction-

Autonomous and Remotely Operated Systems (AROS), both pose a serious threat to public safety and can be used to counter criminal and terrorist threats. In the wrong hands, AROS such as drones can be used to launch attacks or spread biological, chemical or other weapons. Even consumer drones can be modified to lethal weapons, allowing terrorists to plan and launch disruptive, and potentially deadly attacks. Whilst technological developments pose AROS as a primary terrorist threat, AROS as equally as important in effective counter terrorism.¹ This report will be discussing the potential threats and uses of AROS.

Definition of Key Terms-

Autonomous and Remotely Operated Systems: systems that can be operated from a distance via electric or radio signals. This term also encompasses systems which act independently of human control. This includes systems that operate on land, sea and in the air. Examples include drones and autonomous missiles.

Background Information-

Though pilotless flight technology has been around since it was developed by the USA and Britain in WW1, the use of drones (and other AROS) has become much more common place in recent years. ²Many weaponised AROS are far too expensive and sophisticated for radical groups to access them without state support, and much AROS use is in state conflicts. Countries

like the US have extensive drone programs³, which enables the use of this technology in a military context.

However, the emergence of a new technology has opened the possibility for the misuse of AROS- hobbyist drones. These drones do not come outfitted with the technology to harm, but with some engineering they can be developed into weapons.⁵ Weapons that are affordable and accessible to terrorist groups. AROS can be used in place of older technology, such as car bombs, to deliver explosives. Their aerial capabilities allow them to access areas other vehicles

¹ UN, Office of Counter-Terrorism, “Autonomous and Remotely Operated Systems”, 2023
<https://www.un.org/counterterrorism/autonomous-and-remotely-operated-systems>

² Imperial War Museum, “A Brief History of Drones” <https://www.iwm.org.uk/history/a-brief-history-of-drones>

³ Department of Defence, “Unmanned Aircraft Systems”,
<https://dod.defense.gov/UAS/#:~:text=The%20Department%20currently%20operates%20more,weighs%20more%20than%2032%2C000%20pounds.>

cannot, and more inconspicuously. They do come with their downsides, most commercial drones, such as the one designed for filmmaking, can only carry up to 25kg,⁴ limiting the payload of explosives they can carry.

These drones, along with other AROS, can present a threat not just to civilian lives (as bomb vehicles) but also in combat. They have the capability to collect sensitive information to plan targeted, sophisticated attacks. AROS have been utilized by terrorist since at least 2004, when Hezbollah (a militant group) flew a military grade drone over Israeli airspace.⁵

Aside from remotely operated systems, the ethical issues of autonomous systems must be considered. Recently, weapons that target and deploy without human intervention have been utilized more frequently. It must be questioned how ethical it is to place life and death decisions in the hands of technology. As will be discussed later in the report, meaningful human control of weapons is important.

Major Countries and Organisations Involved-

USA: The United States of America are leaders in drones, and other AROS, and have used them in combat for years.⁶ They also have an extensive approach to counterterrorism, and as such would have a vested interest in preventing the misuse of this technology.

Russia: Due to the ongoing conflict with its neighbour Ukraine, Russia has incorporated autonomous weapons into its 10-year defence plan.⁷ Russia also has a history of incorporating a degree of autonomy into its missile targeting, including during the soviet era. As they are investing in this technology, they would have an interest in how it is regulated.

⁴ Grepow, "Understanding Drone Payload: A Comprehensive Guide" 20 October 2024, [https://www.grepow.com/blog/understanding-drone-payload-a-comprehensive-guide.html#:~:text=Commercial%20Drones%3A%20Medium%2D-sized%20drones,\(11%20to%2055%20lbs\).&text=Heavy%20Lift%20Drones%3A%20These%20specialized,inspections%2C%20and%20medical%20supply%20deliveries.](https://www.grepow.com/blog/understanding-drone-payload-a-comprehensive-guide.html#:~:text=Commercial%20Drones%3A%20Medium%2D-sized%20drones,(11%20to%2055%20lbs).&text=Heavy%20Lift%20Drones%3A%20These%20specialized,inspections%2C%20and%20medical%20supply%20deliveries.)

⁵ Sims, Alyssa. "The Rising Drone Threat from Terrorists." *Georgetown Journal of International Affairs* 19 (2018): 97–107. <http://www.jstor.org/stable/26567532>.

⁶ Pilkington, Ed "Former US military personnel urge drone pilots to walk away from controls" *The Guardian*, 17 June 2015 https://www.theguardian.com/world/2015/jun/17/former-us-military-personnel-letter-us-drone-pilots?CMP=fb_gu

⁷ Starchak, Maxim, "Russian defence plan kicks off separate AI development push", 16 August 2024 <https://www.defensenews.com/global/europe/2024/08/16/russian-defense-plan-kicks-off-separate-ai-development-push/>

Relevant UN Resolutions-

UN General Assembly Resolution 70/174 (2015)

This resolution emphasizes the ethical considerations of emerging technologies, including autonomous and remotely operated systems, urging member states to prioritize their use for peaceful purposes. It calls for international cooperation to prevent the misuse of technologies that could disrupt global security. The resolution highlights the importance of ensuring compliance with international humanitarian law, stating:

*"Emerging technologies, including autonomous systems, must be guided by principles that uphold peace, security, and the respect for human rights."*⁸

UN Security Council Report on Emerging Technologies (2019)

This report outlines the potential risks and benefits of AROS and proposes measures for regulating their use. The Security Council urges member states to collaborate in developing standards that prevent their misuse in armed conflicts and terrorist activities. It highlights the role of transparency, stating:

*"Transparency and accountability are crucial in managing the risks posed by autonomous systems, ensuring their development aligns with international law and ethical considerations."*⁹

Convention on Certain Conventional Weapons (CCW) Framework¹⁰

The **Group of Governmental Experts (GGE)** on Lethal Autonomous Weapons Systems under the CCW has been a critical forum for discussing the regulation of AROS. While the framework has not yet produced a legally binding treaty, it has laid the groundwork for international norms. The discussions emphasize:

- The necessity of maintaining *"meaningful human control"* over autonomous systems.
- The compatibility of AROS with international humanitarian law, ensuring they do not disproportionately harm civilians.
- Proposals for confidence-building measures and transparency in the deployment of autonomous systems.

⁸ United Nations, "Resolution 70/174 on Emerging Technologies," https://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/70/174.

⁹ United Nations Security Council, "Report on Emerging Technologies," <https://www.un.org/securitycouncil/content/emerging-technologies>.

¹⁰ United Nations Office for Disarmament Affairs, "The CCW and Emerging Technologies," <https://www.un.org/disarmament/ccw/>.

UN Human Rights Council (2021)

In its examination of the impact of artificial intelligence and autonomous systems on human rights, the Human Rights Council has called for stricter regulations to ensure that these technologies are not used in ways that undermine human dignity or rights. The Council highlighted concerns over the lack of accountability for actions taken by autonomous systems, recommending member states adopt policies that guarantee oversight and responsibility.

United Nations Institute for Disarmament Research (UNIDIR)

UNIDIR has played an active role in providing research and policy recommendations regarding AROS. In their reports, they have suggested frameworks to govern the development and deployment of such technologies, advocating for transparency and enhanced international dialogue. UNIDIR has consistently emphasized that:

"The global community must work together to establish preventive measures that limit the potential harm caused by the misuse of autonomous systems in military or civilian settings."¹¹

Previous Attempts to Solve the Issue-

The Convention on Certain Conventional Weapons (CCW)

The CCW ¹²has served as a pivotal forum for addressing the challenges posed by autonomous and remotely operated systems. Within this framework, the Group of Governmental Experts (GGE) was established to specifically discuss the implications of Lethal Autonomous Weapons Systems (LAWS). The GGE focused on critical areas such as ensuring meaningful human control over weapons systems to prevent indiscriminate harm, maintaining compliance with international humanitarian law, and establishing accountability mechanisms.

Germany and France have consistently supported efforts to regulate autonomous weapons within the CCW, favouring incremental approaches over outright bans. On the other hand, major military powers like the United States, Russia, and China have resisted binding regulations, prioritizing military innovation and national security considerations. Despite extensive discussions, the CCW has yet to achieve consensus on legally binding treaties, reflecting the geopolitical divide on this issue.

¹¹ United Nations Institute for Disarmament Research, "Research on Autonomous Systems," <https://www.unidir.org/programmes/emerging-technologies>.

¹² United Nations Office for Disarmament Affairs, "Group of Governmental Experts on LAWS," <https://www.un.org/disarmament/topics/>.

The Campaign to Stop Killer Robots

Launched by a coalition of NGOs, including Human Rights Watch, the Campaign to Stop Killer Robots has been instrumental in advocating for a complete ban on fully autonomous weapons. The campaign emphasizes the ethical, legal, and humanitarian risks of delegating life-and-death decisions to machines. By engaging with governments, civil society, and the media, the campaign has successfully raised global awareness and brought the issue into the forefront of international debates.

The campaign's advocacy efforts have influenced discussions within the United Nations and other international forums. However, despite its moral and humanitarian appeal, the campaign faces significant challenges in convincing major powers to support an outright ban. Countries investing heavily in military robotics argue that such technologies are vital for maintaining strategic advantages, limiting the campaign's ability to drive substantial policy changes.¹³

Export Controls and Dual-Use Regulations

Several nations and regional blocs, such as the European Union, have sought to mitigate the risks of misuse by implementing stricter export controls on dual-use technologies, which can serve both civilian and military purposes. For example, the Wassenaar Arrangement, a multilateral export control regime, includes provisions to regulate the transfer of technologies associated with autonomous systems.

While these controls aim to restrict access to sensitive technologies by non-state actors and adversarial states, their effectiveness is undermined by uneven implementation across member states. Additionally, the rapid commercial availability of technologies like drones and artificial intelligence software complicates efforts to prevent their proliferation.

The Tallinn Manual on Cyber Warfare (Tallinn Manual 2.0)

Although primarily focused on cyber operations, the Tallinn Manual provides valuable guidance for interpreting international law in the context of emerging technologies, including autonomous and remotely operated systems. Developed by legal experts under NATO's Cooperative Cyber Defence Centre of Excellence, the manual emphasizes that autonomous systems used in armed conflicts must adhere to principles of proportionality, distinction, and accountability under international humanitarian law.

While the manual is not legally binding, it has influenced policy discussions and provided a framework for addressing the ethical and legal challenges posed by these systems. Its emphasis on accountability has been particularly relevant, as it underscores the need to

¹³ Campaign to Stop Killer Robots, "Campaign Overview and Advocacy," <https://www.stopkillerrobots.org/>.

establish clear lines of responsibility for the actions of autonomous systems. [06]

Transparency and Confidence-Building Measures (TCBMs)

Transparency and confidence-building measures have been promoted by the United Nations to reduce the risks associated with the misuse of autonomous and remotely operated systems. These measures encourage nations to share information about their development and deployment of autonomous systems, fostering trust and collaboration.

Initiatives such as joint military exercises, data-sharing agreements, and the establishment of verification mechanisms aim to enhance mutual understanding and reduce the potential for misunderstandings or escalations. However, these measures are often voluntary and lack enforceable commitments, limiting their effectiveness. Additionally, growing mistrust between major powers further hinders the implementation of robust confidence-building measures.¹⁴

Possible Solutions-

The UN or international organizations could:

Establish a Global Governance Body for Autonomous Systems

- Create a dedicated international body under the United Nations to oversee the development, deployment, and regulation of autonomous and remotely operated systems (AROS).
- This body would monitor technological advancements, ensure compliance with international laws, and act as a forum for resolving disputes related to AROS.

Promote Regional Treaties and Agreements

- Encourage regional blocs such as the European Union, ASEAN, and the African Union to adopt their own frameworks for regulating AROS.
- Regional agreements could address specific threats and encourage cooperation among neighbouring states, serving as building blocks for global regulations.

Invest in Research for Defensive Technologies

- Prioritize investments in technologies designed to counteract the misuse of AROS, such as systems capable of neutralizing rogue drones or autonomous weapons.

¹⁴ United Nations, "Transparency and Confidence-Building Measures," <https://www.un.org/disarmament/>.

- These defensive measures could help mitigate risks while discussions on regulations continue.

Develop Accountability Mechanisms

- Establish clear lines of accountability for the misuse of autonomous systems by mandating that states and private entities using these technologies maintain logs of operational decisions.
- An international tribunal could be created to adjudicate cases involving the misuse of AROS, ensuring swift justice and deterrence.

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