The Impact of the Weaponization of Autonomous Systems on Public Opinion

A Memorandum to Convention on Conventional Weapons Delegates

Mines Action Canada

Introduction

Continuous improvements in robotics mean we are quickly approaching a point when robots deployed in combat situations may be able to detect, target and engage human beings or equipment without any human control. The challenges this development poses range from ethical, moral, and legal questions to cultural, social, military, and political concerns. All of these areas are of significant importance yet none deal specifically with the ramifications of the weaponization of autonomous systems on the general public attitude towards robotics. This general attitude is important as it forms the basis for people's trust in robotic systems, which have innumerable possible positive civilian applications. Individuals must have trust in the tools they use and when it comes to complex tools such as robotic systems trust in the tool to achieve the desired results is crucially important. The weaponization of autonomous systems could jeopardize this trust, a fact not often brought up in conversations about the issue. We must therefore expand the examination of autonomous weapon systems (AWS)[1] from specific discussions related to ethics, morality and law to a more general approach. The development of AWS has the potential to create ill-will and a negative perception of robotics systems. The public perception of robotics and autonomy is important as these systems will be more and more part of our everyday lives in the future. Humanity could benefit immensely from the effective employment of robotics systems therefore it is crucial that people have a positive perception of these systems. While these aspects of the discussion may seem to some abstract, by taking a broad view of the trust people have in robotics, we can help shed light on how this momentous change in military technology could affect people's everyday lives.

Trusting Technology

If technological development is to impart benefits to the vast majority of humanity then it must develop in concert with the moral and ethical concerns of the population. The potential for many types of robotic systems to positively impact our lives is immense, and trust that they will complete the tasks as expected is the key to ensuring this positive potential is realized. There is a small but growing body of evidence that the public perception of robotics and autonomy more generally could be done serious harm by the development and deployment of AWS.

A study conducted by Charli Carpenter, a professor of Political Science at the University of Massachusetts, found that 55 percent of Americans oppose the trend towards the usage of AWS (of which 40 percent described themselves as "strongly opposed").[2] In contrast, only 26 percent classified themselves as supporting this trend, with merely 10 percent saying they "strongly favoured" it.[3] The study also provided several other important insights into the

public view of these systems. First, there tended to be steady opposition across party lines and education levels. Second, currently serving and former members of the US military as well as their family members tended to be more strongly opposed to these systems than the general population.[4] This level of opposition, being as widespread and diverse as it is, should be taken into account when considering the possible consequences of deploying AWS. With levels of opposition already over 50 percent, it is highly unlikely that the deployment of these systems would shift public opinion towards AWS, especially in the wake of the malfunctions or accidents that will occur in the regular course of their use.[5]

In addition to the aforementioned survey, several other polls have highlighted the public's already strong apprehensions about the role of robotics in society more generally. A poll conducted by One Poll in the United Kingdom and overseen by Martin Smith, a professor of robotics at the University of Middlesex, found that 46 percent of respondents thought the field of robotics was advancing too quickly and undermining traditional ways of life as well as 35 percent who said they were concerned about the use of military drones.[6] Other polls, such as the Pew survey conducted to capture the views of the US public on technology and the future, have highlighted public apprehension about the role of robots as caregivers for the elderly.[7] All this apprehension comes at a time when the economy may experience frictional unemployment as more jobs are replaced through automation while others are created in new industries.

Responses to AWS

Instead of waiting until it is too late, technologies like autonomous weapon systems must be evaluated in terms of how they could impact our culture and society now. Putting the myriad legal issues surrounding the development and deployment of AWS aside, the opinion of the public at large has rarely been taken into account when discussing the usage of these systems. Policy makers and defence officials need to better incorporate the views of the public in their decision making processes as they are accountable to the people they represent and protect. A breakdown of the trust humans have in robotic systems caused by the usage of AWS may inhibit the ability of countries to use other autonomous technologies for the benefit of their citizens. The image of AWS committing errors that cost lives would likely render people reticent to employ similar technologies in other situations. Someone could be forgiven for not wanting a robot to care for their ailing parents while a system with similar characteristics kills a civilian in a combat zone. This breakdown of trust may also increase skepticism about technological progress more broadly among the population, thus inhibiting progress in other areas that may be beneficial.

It is clear that there already exists substantial opposition simply to *the trend* towards using AWS. There has been opposition to the development and deployment of AWS from faith leaders, such as the November 12 declaration by more than 70 religious leaders, including the Archbishop Desmond Tutu calling for a ban on AWS.[8] That declaration follows on a similar call issued by over 20 Nobel Peace laureates and the more than 270 technical experts that have signed the International Committee for Robot Arms Control's statement calling for a pre-emptive ban of AWS.[9] All of these initiatives serve to underscore the growing opposition to autonomous weapon systems from a variety of individuals whether they be civil society activists, technical experts, academics or decision makers.

Industry Response

It is not just campaigners that see the potential for harm to be done to the relationship between humans and robotics. At least one prominent robotics company, Clearpath Robotics

of Canada, has already endorsed the Campaign to Stop Killer Robots and published an open letter detailing their reasons why. The company's Chief Technology Officer and co-founder Ryan Gariepy wrote that robots would lack the moral, ethical, and emotional understanding to intervene against inhumane orders. He also detailed how robots would be unable to appropriately ensure the legitimacy of targets, and also be unable to ensure a proportionate use of force. Moreover, he explained why a robotics company that could stand to make a considerable profit by supplying these weapons to militaries was joining the campaign:

> "Clearpath Robotics strives to improve the lives of billions by automating the world's dull, dirty, and dangerous jobs. This belief does not preclude the use of autonomous robots in the military; we will continue to support our military clients and provide them with autonomous systems – especially in areas with direct civilian applications such as logistics, reconnaissance, and search and rescue.
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> In our eyes, no nation in the world is ready for killer robots – technologically, legally, or ethically. More importantly, we see no compelling justification that this technology needs to exist in human hands. After all, the development of killer robots isn't a necessary step on the road to self-driving cars, robot caregivers, safer manufacturing plants, or any of the other multitudes of ways autonomous robots can make our lives better. Robotics is at a tipping point, and it's up to all of us to decide what path this technology takes."[10]

As Gariepy noted, the potential for robotics to positively impact our lives is massive. One of the key areas for which robots are being developed is search and rescue in disaster areas. The Defence Advanced Research Projects Agency (more commonly known as DARPA), part of the US Department of Defence, is currently running a challenge designed to greatly enhance the ability of robots to operate autonomously in disaster zones. The agency envisions robots being able to enter the most hazardous of disaster zones, such as nuclear reactors, to assist in surveying disaster areas, searching for survivors, or shutting down leaks of hazardous materials.[11] The ability to utilize these systems would not necessarily be limited to developed countries either. Programs like Roboticists without Borders run from the Centre for Robot-Assisted Search and Rescue at Texas A&M University, show that a model for on-call robotic systems can work at little or no cost to the requesting institution.[12] In addition to search and rescue and disaster management, robots can obviate the need to use marine mammals for military operations, help clear mines, or even help in the fight against Ebola or other infectious diseases. [13] With these and more benefits that humanity could realize from the effective employment of robotics systems, it is crucial that people have a positive perception of these autonomous systems. It is unlikely that arming them and turning them loose on the battlefield without meaningful human control will contribute to trust in robotic systems as beneficial tools for humanity.

A Time for Action

With a more complete understanding of the possible consequences of the development and deployment of autonomous weapon systems we can begin to formulate possible solutions. As the most important factor in the relationship between humans and robotics is trust, anything that can be done to strengthen and deepen this trust is of paramount importance. To that end, a pre-emptive ban the production of AWS can serve several important purposes. First, an international legal instrument banning autonomous weapon systems instantly raises people's comfort level with respect to robotics systems. With the knowledge that these systems would not be armed, the link that many draw between robots and unaccountable killing based on

popular culture is severed. Over time, as new generations who have only ever known robots as peaceful tools will become further detached from the idea that they could be armed. Second, an international legally binding instrument provides states with assurances that other states are not developing these systems. This prevents the destabilizing effects of arms races which could easily lead to the deployment of AWS even before the most basic abilities to distinguish between friend and foe could be developed, with all the danger to civilians this entails. The likelihood of a robotic arms race with negative consequences for states and civilians should not be understated. Arms races breed fear and suspicion between states and can lead to the deployment of weapon systems before they are truly ready. In the case of AWS it is unlikely humanity will ever be morally and ethically comfortable. The various reasons why humanity is unlikely to be morally or ethically comfortable with AWS is outlined clearly in PAX's publication "*Deadly Decisions: 8 objections to killer robots*."[14] It is clear that we must vigilantly safeguard what trust the public has in robotic systems, as well as strive to improve this trust in order to take full advantage of the utility of robotic systems. If AWS are developed and used on the battlefield, we risk a public backlash against robotics more generally and a situation where autonomy on the battlefield will taint the idea of autonomy in all areas of life essentially "throwing the baby out with the bath water".

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[1] While this paper uses the term autonomous weapon systems, there are a variety of terms often used interchangeably to describe these systems. These include: lethal autonomous weapon systems, fully autonomous weapon systems, lethal autonomous robots, killer robots, and many others.

[2] Charli Carpenter, "How Do Americans Feel About Fully Autonomous Weapons?," June 19, 2013, http://www.whiteoliphaunt.com/duckofminerva/2013/06/how-do-americans-feel-about-fully-autonomous-weapons.html

[3] Ibid.

[4] Charli Carpenter, "US Public Opinion on Autonomous Weapons," available at: www.whiteoliphaunt.com/duckofminerva/wp-content/uploads/2013/06/UMass-Survey_Public-Opinion-on-Autonomous-Weapons.pdf

[5] Robotics experts have stated adamantly that there will be malfunctions and accidents should AWS be deployed on the battlefield eg. Gariepy at the Canadian Red Cross' IHL Conference, 13 March 2015.

[6] "Third of Britons fear rise of robots, says poll" *The Guardian*, May 6, 2014, http://www.theguardian.com/technology/2014/may/06/third-of-britons-fear-rise-of-robots-poll

[7] Aaron Smith, "U.S. Views of Technology and the Future," *Pew Research Center,* April 17, 2014, http://www.pewinternet.org/2014/04/17/us-views-of-technology-and-the-future/

[8] "Religious leaders call for a ban on killer robots," *Pax For Peace,* November 12, 2014, http://www.paxforpeace.nl/stay-informed/news/religious-leaders-call-for-a-ban-on-killer-robots.

[9] "Computing experts from 37 countries call for bam on killer robots" *International Committee for Robot Arms Control,* October 16, 2013. http://icrac.net/2013/10/computing-experts-from-37-countries-call-for-ban-on-killer-robots/

[10] "Clearpath Robotics Takes Stance Against 'killer robots'," *Clearpath Robotics,* August 13, 2014. http://www.clearpathrobotics.com/press_release/clearpath-takes-stance-against-killer-robots/

[11] "What is the DARPA Robotics Challenge?," *DARPA Robotics Challenge,* http://www.theroboticschallenge.org/overview

[12] "Roboticists Without Borders," *Center for Robot Assisted Search & Rescue at Texas A&M University*, http://crasar.org/roboticists-without-borders/

[13] Sharon Weinberger, "Robots replace costly US Navy mine-clearance dolphins," *BBC,* November 8, 2012, http://www.bbc.com/future/story/20121108-final-dive-for-us-navy-dolphins; David Pugliese, "Canada to provide bomb-hunting robots to Kurds fighting in Iraq," *Ottawa Citizen,* September 18, 2014, http://ottawacitizen.com/news/politics/canadian-military-robots-headed-to-iraq; Sharon Gaudin, "Cameras, robotic mules could help battle Ebola in West Africa," *Computer World,* November 20, 2014, http://www.computerworld.com/article/2850560/cameras-robotic-mules-could-help-battle-ebola-in-west-africa.html.

[14] PAX, "Deadly Decisions: 8 objections to killer robots," available at: file:///C:/Users/jnott/Downloads/deadlydecisionsweb.pdf.