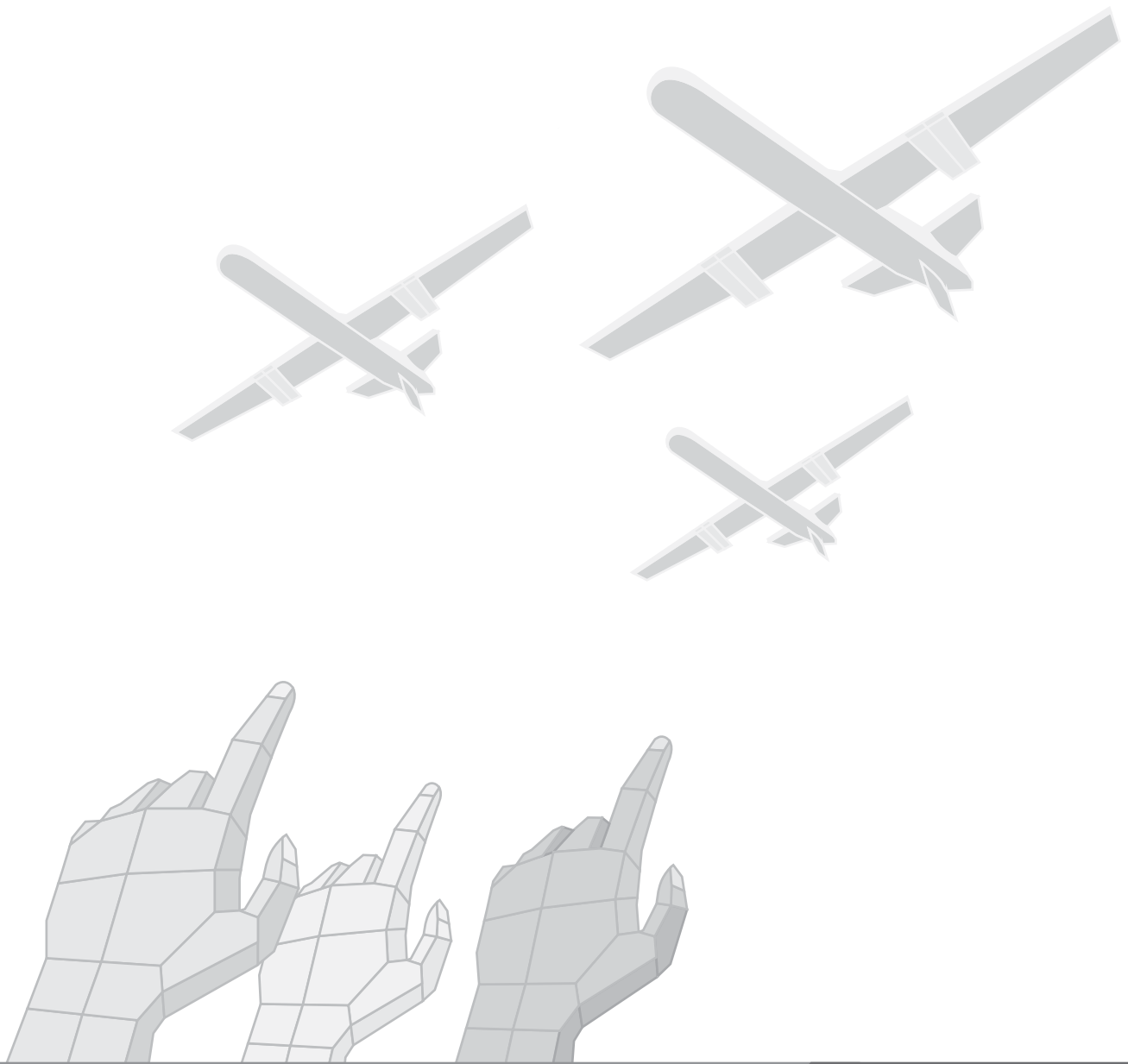# The Ethics and Governance of Lethal Autonomous Weapons Systems:

An International Public Opinion Poll

Release: November 9th, 2015
Vancouver, Canada

ORi
Open Roboethics initiative

Summary

Engaging members of the public on the ethics and governance of lethal autonomous weapons is an important activity when determining their appropriate use. The Open Roboethics initiative (ORi) conducted a systematic international survey on the ethics and governance of Lethal Autonomous Weapons Systems (LAWS) – weapons systems in which the system makes the decision to use lethal force without requiring human intervention – as compared to Remotely Operated Weapons Systems (ROWS) in which a person in a remote location makes the decision to use lethal force.

In our survey, a majority of our participants indicated that:

- all types of LAWS should be internationally banned (67%).
- LAWS should not be developed or used (56%).
- LAWS should not be used for offensive purposes (85%).
- they would rather their country use remotely operated (ROWS) instead of lethal autonomous (LAWS) weapons systems when waging war (71%).
- they would rather be attacked by ROWS instead of LAWS (60%).

These results indicate that our survey participants are reluctant to endorse the development and use of LAWS for waging war. Given the humanitarian, social, political, economic and technological ramifications of LAWS worldwide, these results suggest that more international public engagement is necessary to support democratic decisions about what is appropriate when developing and using robotic weapons technologies.

About the Open Roboethics initiative (ORi):
The Open Roboethics initiative (ORi) is an international roboethics think tank founded in 2012. Our objective is to enable robotics and artificial intelligence (AI) technology stakeholders to work together to understand, inform and influence the role of robotics and AI in society. Headquartered at the University of British Columbia, Vancouver, Canada, ORi consists of an interdisciplinary and international group of expert volunteers passionate about developing open approaches to roboethics.

Military drones have recently emerged as one of the most controversial new military technologies. Unmanned and often weaponised, these robotic systems can be relatively inexpensive, can patrol the skies continuously, and have the potential to do much of the work of traditional manned military aircraft without putting pilots at risk. For these reasons and others, drones have come to occupy a central role in the overall military strategy of those nations that have them. Many of the nations that don't have them, want them.[1]

Currently, military drones, including other ground-based robotic weapons systems, are remotely operated, and sometimes referred to as Remotely Operated Weapons Systems (ROWS). With ROWS, the decision to use lethal force remains a human decision. However, technology that could support the ability of military drones to autonomously make the decision to use lethal force is under development. That is, eventually, military robots could kill without human intervention. The very real prospect of those new Lethal Autonomous Weapons Systems (LAWS) raises important ethical questions that have been taken up by the public media, governments, civil society, and the United Nations.

Terminology:
ROWS (Remotely Operated Weapons Systems): weaponized systems in which a person in a remote location makes the decision to use lethal force.
LAWS (Lethal Autonomous Weapons Systems): weaponized systems in which the system, without requiring human intervention, makes the decision to use lethal force.

What kinds of decisions are we comfortable delegating to machines? And what kinds of decisions should remain in human hands?

Should robots be allowed to make life and death decisions? Who gets to decide?

The decisions whether or not to build or use LAWS are a matter of democratic and humanitarian concern. For reasons of ethical and democratic legitimacy it is crucial to engage the public in the discussion, and to take into account their views on this topic. International law underscores the importance of public engagement in such matters. The Martens Clause, included in the additional protocols of the Geneva Conventions, makes explicit room for the public to have a say on what is, and is not, deemed permissible in matters of armed conflict, especially where new technologies are concerned. It reads:

"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."

(Additional Protocol II to the Geneva Conventions)

Though legal scholars often disagree on how best to interpret and implement the Martens Clause, it remains a fact that from the perspective of the Clause, the public is called upon to help shape international laws of armed conflict that have yet to be established. Public engagement is one way to support the requirements set out in the Clause.

Though some public survey work has been conducted on the topic, most of it has been limited to English-speaking, often US-based, perspectives. No systematic international public engagement work has been reported to date.

In the spirit of the Martens Clause, the Open Roboethics initiative conducted a systematic international online survey to gauge public opinion on the ethics and governance of ROWS and LAWS.

The survey was translated into 14 different languages, including all major spoken languages. The survey consists of six (6) questions related to the ethics and governance of LAWS, and four (4) demographic questions.

This report highlights our key findings.

Survey Translations:

Our survey is available in: Arabic; Chinese (Simplified); Chinese (Traditional); Dutch; Norwegian; English; French; German; Italian; Korean; Persian; Portuguese; Russian; Spanish

The translations are available in our interactive web report:
http://www.openroboethics.org/2015-laws-result/

At the time of writing this report, 1002 people had responded to the survey, though some questions had more responses than others. At least 915 people completed all of the six (6) major questions in the survey.

Most participants were from the United States (n=203), Canada (n=167), South Korea (n=100), Mexico (n=63), and the UK (n=50), with the remaining participants hailing from 49 countries. The average reported participant age was 34. In total, 11% of people who completed the survey reported having served in the military, and 44% reported having at least one family member who is or has served in the military.

You Can Still Participate in the Survey:

ORi will continue to collect data indefinitely. Feel free to share the link with friends and colleagues to help us better understand public opinion on this important topic.

http://www.openroboethics.org /laws_survey/

Public opinion on the ethics and governance of LAWS can change over time, and we want to continue to reach out to individuals from under-represented countries in the hopes of painting a more complete picture of international public opinion. Therefore, the online survey will remain open indefinitely. We invite you to complete the survey and to share the link with colleagues, friends and others to help continue the open discussion on this topic. Anyone can participate at:

http://www.openroboethics.org/laws_survey/

In addition to this report, a snapshot of the data from this year (2015) is available in an interactive web format on our website:

http://www.openroboethics.org/2015-laws-result/

Explore the Raw Data!:

You can visit our website to view the full set of results, and filter them by country and other variables.

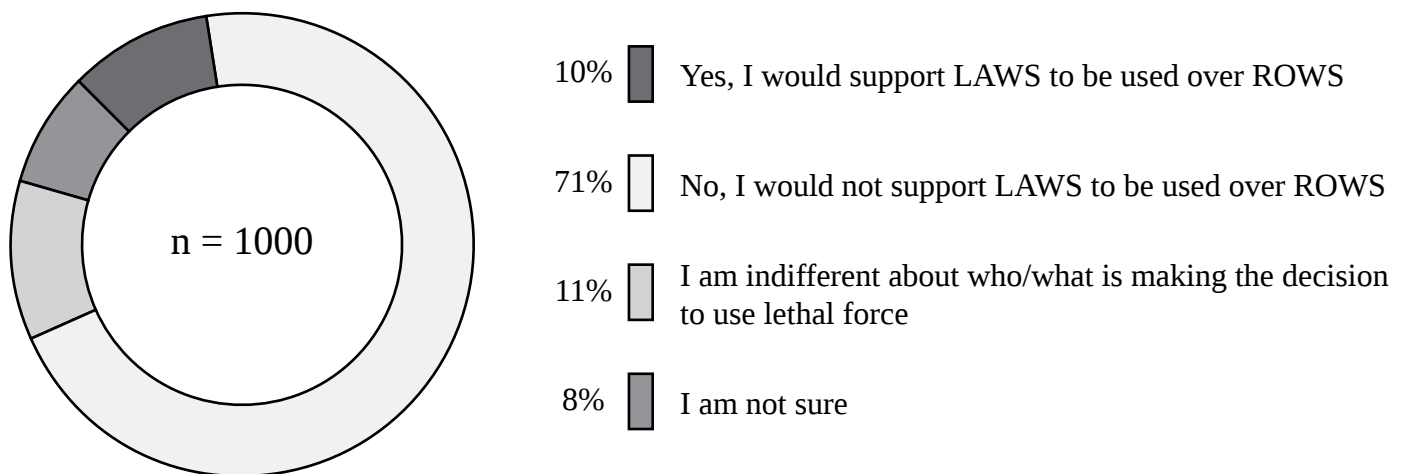http://www.openroboethics.org/2015-laws-result/

In order to eliminate confusion of the terminologies used throughout the survey (LAWS and ROWS), each of the six main questions were accompanied by the definition of the terminologies. The first two questions (Q1, Q2) provided a measure of the public's sentiment on the use of LAWS over ROWS from the perspective of an aggressor and a target of aggression. The order of these two questions was randomized to avoid bias.
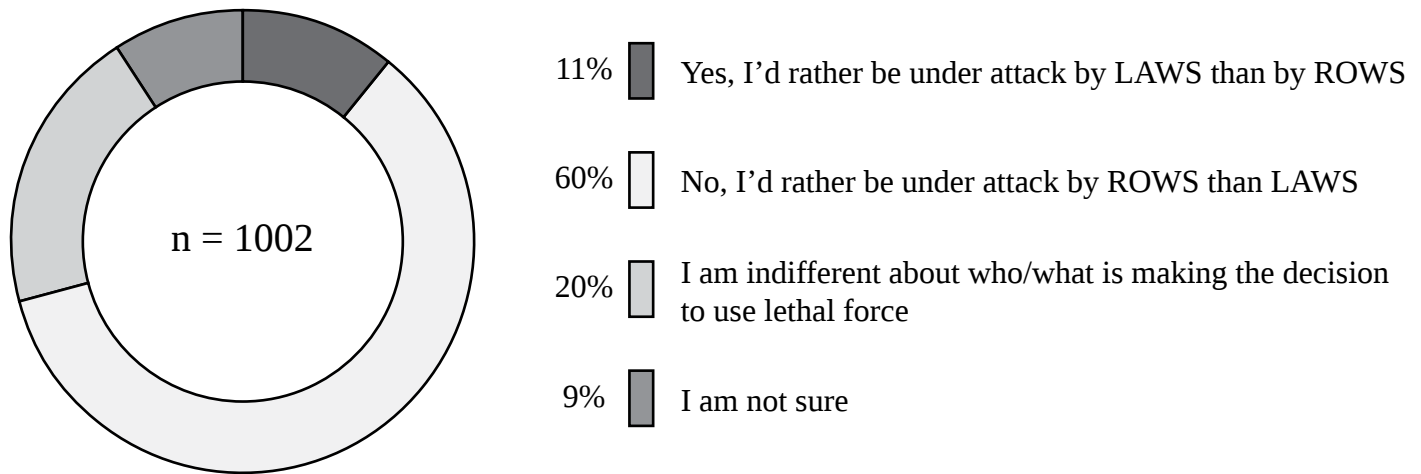
Quick Facts:

- 67% of people indicated that all types of LAWs should be internationally banned.
- 56% of people said that LAWs should not be developed or used.
- 85% of people indicated that LAWs should not be used for offensive purposes.
- 71% of people indicated they would rather their country use ROWs instead of LAWs when waging war.
- 60% of people indicated they would rather be attacked by ROWs instead of LAWs.

Q1. Consider **Lethal Autonomous Weapons Systems (LAWS)** technology becoming available to your country in the near future. If your country goes to war against another country, would you support the use of LAWS over **Remotely Operated Weapons Systems (ROWS)**? With LAWS, the system will make the decision to use lethal force without human input, whereas ROWS requires a person to make the decision for it.

n = 1000

10% Yes, I would support LAWS to be used over ROWS

71% No, I would not support LAWS to be used over ROWS

11% I am indifferent about who/what is making the decision to use lethal force
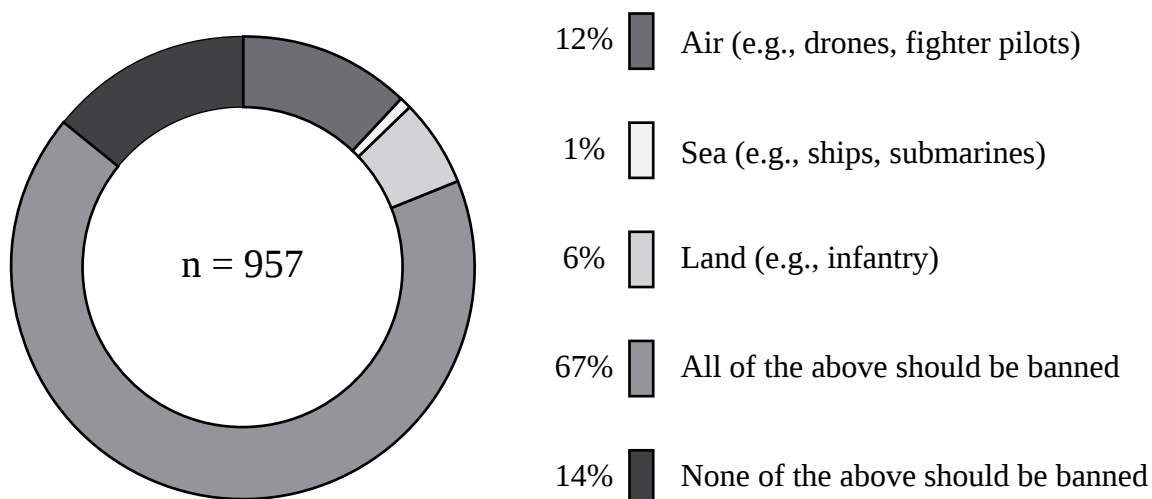
8% I am not sure

Q2. Hypothetically, if **Lethal Autonomous Weapons Systems (LAWS)** technology becomes available to a country that is attacking your country, would you rather be under attack by LAWS than **Remotely Operated Weapons Systems (ROWS)**? With LAWS, the system will make the decision to use lethal force without human input, whereas ROWS requires a person to make the decision for it.

n = 1002

11% Yes, I'd rather be under attack by LAWS than by ROWS

60% No, I'd rather be under attack by ROWS than LAWS

20% I am indifferent about who/what is making the decision to use lethal force
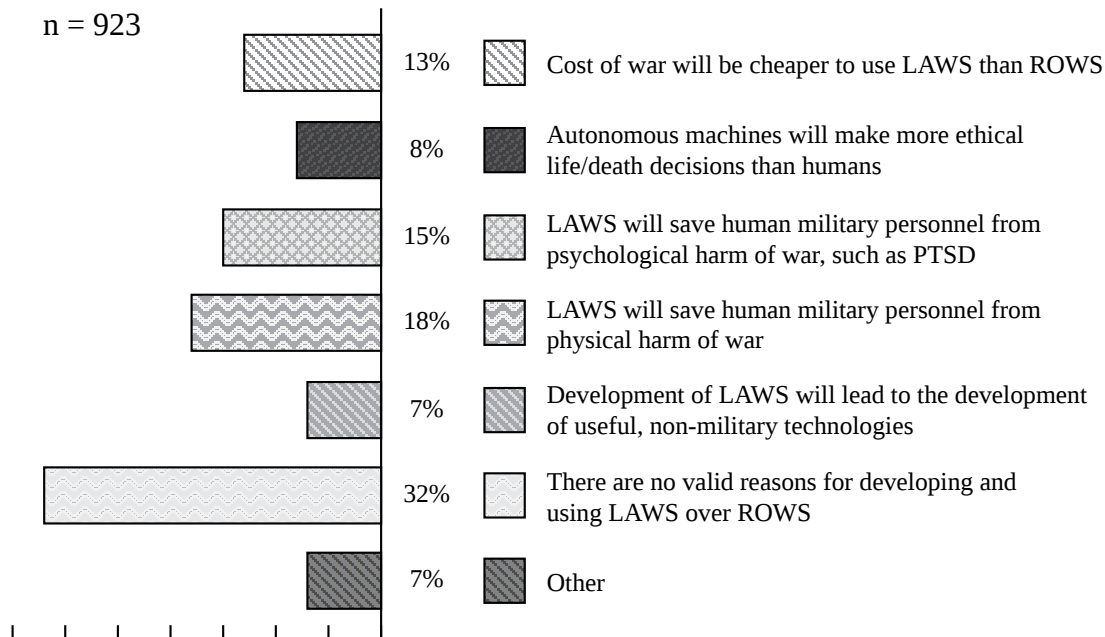
9% I am not sure

The third question aimed to identify whether the participant's sentiment on the development and use of LAWS differed by the type of autonomous weapons system under consideration (e.g. air, sea, land). This question also provided an implicit measure on the participant's general support or rejection of LAWS.

Q3. If certain types of LAWS are to be internationally banned from development and use, what types of LAWS do you feel most strongly should be banned? (Choose one)

n = 957

12% Air (e.g., drones, fighter pilots)

1% Sea (e.g., ships, submarines)

6% Land (e.g., infantry)

67% All of the above should be banned
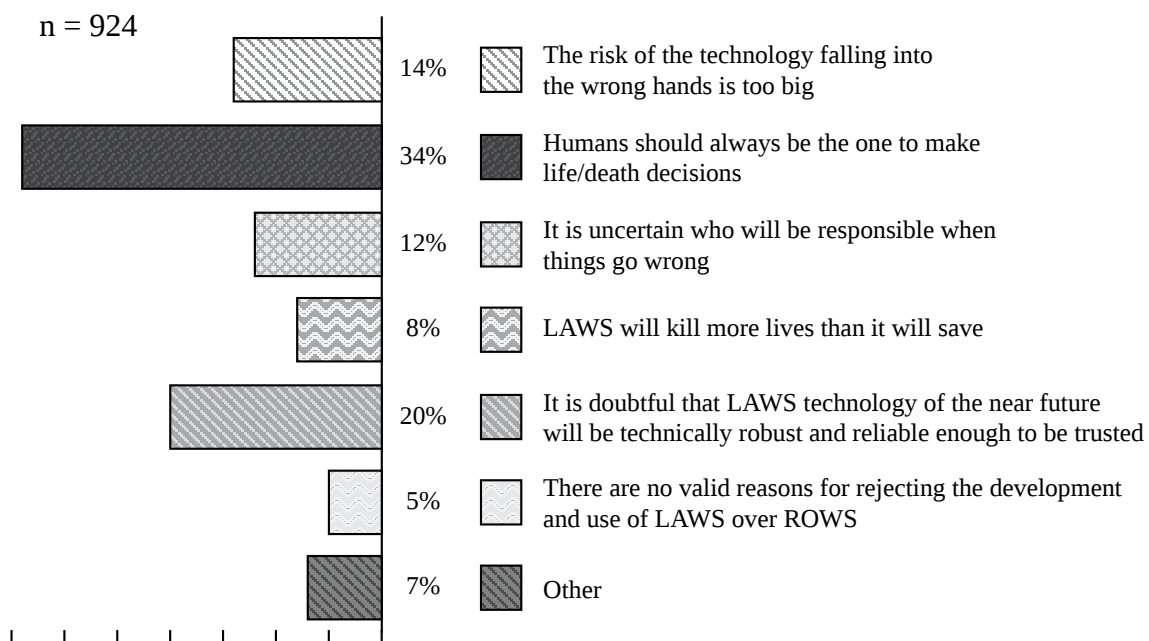
14% None of the above should be banned

Questions 4 and 5, which were designed to get participants to consider the reasons for supporting or rejecting a technology, were presented in random order. The list of reasons provided to the participants was based on results of an earlier qualitative study in which the most common reasons for/against LAWS were collected.[2]

Q4. What do you think is the main reason for supporting the development and use of LAWS in battlefields? (Choose one)
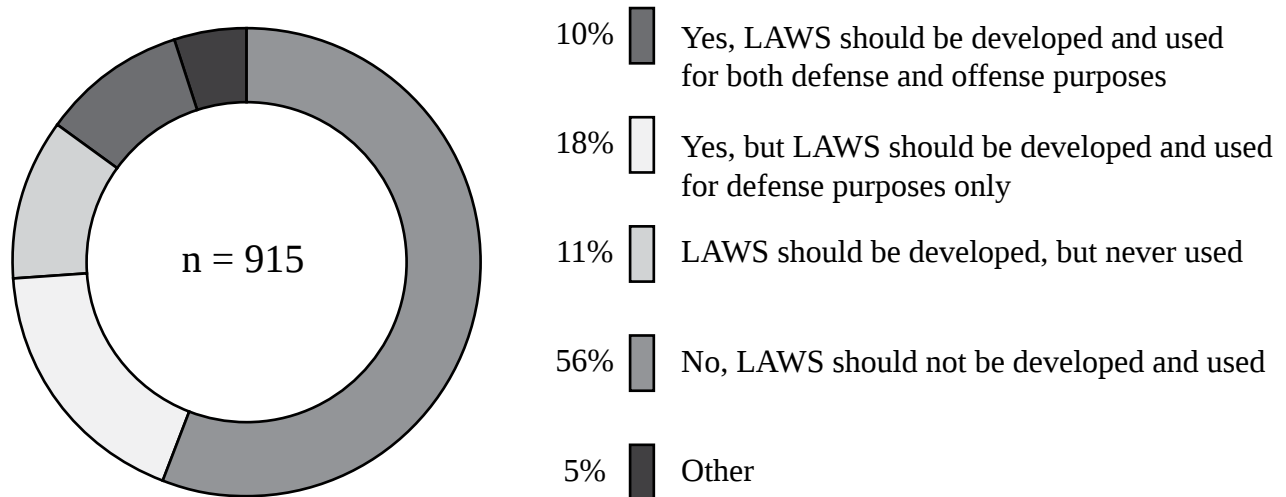
n = 923

13%	Cost of war will be cheaper to use LAWS than ROWS
8%	Autonomous machines will make more ethical life/death decisions than humans
15%	LAWS will save human military personnel from psychological harm of war, such as PTSD
18%	LAWS will save human military personnel from physical harm of war
7%	Development of LAWS will lead to the development of useful, non-military technologies
32%	There are no valid reasons for developing and using LAWS over ROWS
7%	Other

Q5. What do you think is the main reason for rejecting the development and use of LAWS in battlefields? (Choose one)

n = 924

14%	The risk of the technology falling into the wrong hands is too big
34%	Humans should always be the one to make life/death decisions
12%	It is uncertain who will be responsible when things go wrong
8%	LAWS will kill more lives than it will save
20%	It is doubtful that LAWS technology of the near future will be technically robust and reliable enough to be trusted
5%	There are no valid reasons for rejecting the development and use of LAWS over ROWS
7%	Other

[2] **Moon, A.**, Danielson, P., and Van der Loos, H.F.M. (2012), *Survey-based Discussions on Morally Contentious Applications of Interactive Robotics*, International Journal of Social Robotics. 4:77-96

The last of the technology-based questions were intended to measure whether the participant's opinion on the technology changed after considering reasons for supporting or rejecting LAWS.

Q6. In general, should LAWS that make life/death decisions without human operator be developed or used?

n = 915

10% Yes, LAWS should be developed and used for both defense and offense purposes

18% Yes, but LAWS should be developed and used for defense purposes only

11% LAWS should be developed, but never used

56% No, LAWS should not be developed and used

5% Other

People Who Made This Work Possible