The Disadvantages of Using Autonomous Weapons in Wars

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Thesis: Autonomous weapons, which have been in development since the end of the 19th century, have two major disadvantages on the battlefield which are regarding technological and social issues.

# Historical development

## Historical overview of the development

### The emergence of autonomous weapon systems (Wyatt, 2021)

### Development until today (Wyatt, 2021)

## Cutting edge technology

### Modern day lethal machines (Jha, 2016)

#### Ground-based automated systems

#### Unmanned aerial systems

#### Maritime autonomous weapon systems

# Technological issues

## Inefficacy in object recognition

### Deep neural network vulnerabilities (Nguyen et al., 2015)

## Manipulation by enemy

### The damage of cyber attacks on autonomous machines (CS Monitor, n.d.)

# Social issues

## Socioethical problems

### Accountability (Scharre, 2018, p. 328)

#### Accountability gap (Crootof, 2016, pp. 1391-1392)

### Moral responsibility for killing (Scharre, 2018, p. 347)

### The value of human life (Goose & Wareham, 2017)

#### World War II (Grossman, 2009, pp. 37-38)

In classic wars, human factor affected the course of battle negatively, but with the development in artificial intelligence and autonomous weapons, this factor was aimed to be eliminated. Autonomous weapons can be defined in different ways, but the most common definition is a weapon system that once triggered, is capable of selecting and engaging targets without additional assistance from a human operator (Allen, 2022). These weapons can be used in air, ground and sea as drones, mine sweeper vehicles and autonomous warships. Despite these wide utilities, autonomous weapons, which have been in development since the end of the 19th century, have two major disadvantages on the battlefield which are regarding technological and social issues.

First of all, humanity has wanted to abandon one-to-one warfare and move to a model that increases emotional and physical distance for centuries, and has tried to achieve this goal by developing various weapons throughout history. In this process, firearms and cannons were found and developed, and in the last few centuries, autonomous weapon systems have been developed with computer and robotic technologies. As Wyatt explain (2021), it is said that the first example of an autonomous weapon was a fleet of 200 unmanned paper balloons carrying 15 kg of explosives built by the Austrian army in 1849. These Balloons were expected to move along a copper wire with the help of the wind and some bombs were successfully delivered. However, some balloons went off course or turned back due to faulty wind. In the following years, balloons were used for surveillance purposes during the American Civil War. The emergence of remote-controlled vehicles, thanks to radio control, at the end of the 19th century played a major role in the development of autonomous weapons. According to Wyatt's claim (2021), Nikola Tesla showed people what could be done with remote control and aimed to use these systems in wars. Autonomous weapons, which were not developed much until the World War I, saw great developments in the WWI and WWII. During the cold war, autonomous weapons were not developed due to the lack of military interest, but autonomous weapons used in the world wars were used in the Cuba and Vietnam wars. The wars in the late 20th century and the beginning of the 21st century, and in the tense environment that followed, countries turned to developing autonomous weapons to strengthen their military units, as they believed that autonomous weapon systems would play a major role in the future. As Jha said, these advanced autonomous weapons can be used in different tasks such as surveillance, explosive ordnance disposal, logistics support, search and rescue missions (2016). Autonomous weapons are often used for intelligence, surveillance and reconnaissance (ISR) with unmanned aircraft systems (UAS). Unmanned ground systems (UGS) can enhance the military's service capabilities such as ISR, tanks and transport. The Navy, on the other hand, has missions such as mine countermeasures, ISR and support, as well as missiles and torpedoes. In addition, Navy ships have the ability to automatically target incoming missiles. When the examples of autonomous weapons in different environments are examined in more detail, the technologies and capabilities used are quite different. Firstly, the data Jha collected shows that Platform-M, developed by Russia and equipped with 4 grenade launchers and Kalashnikov rifles, is a multi-purpose weapon system designed for intelligence gathering, detecting and eliminating fixed and moving targets, firepower support, patrolling and protecting key sites (2016). This weapon, which undertakes many missions on land, is a great threat to the enemy. Secondly, In Air Systems, unmanned aerial vehicles can be used in many missions. These vehicles undertake aerial reconnaissance, battlefield management, telecommunications, search and rescue, ammunition deployment, air-to-ground and air-to-air missile launches. These systems weaken the opponent both strategically and physically. While most drones are semi-autonomous, Taranis and X-47 UAVs are being developed as completely autonomous. Finally, autonomous unmanned marine systems were used in the early days for oceanographic surveys and mine clearance. These vehicles are highly concealable and attract the attention of armies in terms of being able to enter prohibited areas and gather information. Autonomous unmanned marine system can act alone or be attached to a ship, submarine, or larger robot.

The first disadvantage of using autonomous weapons on the battlefield is related to technological issues. This might result from either the machine or the connection between the machine to the base of operations can be possessed by the enemy and cause severe problems. Firstly, autonomous weapons use different kinds of systems to identify their surrounding territory and the allied or enemy troops in the area, these systems use different kinds of coding and algorithms but their purpose is similar to each other. According to an experiment done by Nyugen et. al. (2015), these systems are able to be deceived by the enemy because the machines use a similar way of coding the image they see around them. The images encoded by some machines can mislead targeted machines by making them believe that the image they created is something else entirely, the images can convince the targeted machine by %99.99 (p.6). These kinds of technologies, if developed, can have catastrophic effects on the battlefield because they can simply convince the machine that the area is clear or it can make the deceived machine fire in the wrong direction, and the worst of all is that these machines can be deceived without notice and cause different kinds of friendly fire problems. Secondly, these machines have a link to their base of operations and this link can be hijacked by the enemy. There is a new expression called “Cyber War” which refers to technological war that is generally caused by people who want to cause trouble to enemy nations by shutting down important websites or causing different kinds of problems in the enemies' daily lives. This also happens in militarist wars, there are cyber forces created by countries that try to attack enemy nations via computers or defend their nations' technological infrastructure. The military issue in this is the autonomous machines can be hacked by the enemy and be used as a friendly fire tool or simply to steal the enemy technology and develop it themselves. Peterson (2011) states that an American sentinel drones link to its home base was cut off and the drone was hijacked by the Iranian army. They successfully landed the drone at one of their airports instead of the original base of the drone which is in Afghanistan (para.2). Events like this show the world that autonomous war machines are not safe in various ways. Cyber security is a big problem for these machines and the reliability of using them on the battlefield properly. Technology is a constantly developing area but even though the technology of cyber security improves, the technologies to infiltrate these security systems improve with them. An article published by Andrius Sytas relates Russian hacker groups' attack in June 2022 on Lithuanian websites. Their attack on Lithuanian websites has caused the distortion of 1.652 web resources (2022). Attacks on a nation’s infrastructure, critical information, and transmitting different kinds of malignant viruses are some ways of technological usage that should not be done by any country or adversary because these attacks affect civilian lives and the effects of these attacks are incalculably dangerous. Autonomous war machines can be used on the battlefield but there are more possibilities of dangerous occasions than their benefits, the ability to mislead these machines and the dangers of cyber wars make these machines dangerous to use at any cost.

Lastly, use of autonomous weapons on the battlefield may lead to social issues. Since autonomous weapons cannot make judgment like a human being, and they can act independently, their use on the battlefield causes some socioethical problems. To begin with, autonomous weapons cause uncertainty about accountability. If an accident happens, or a war crime occurs deliberately, it is unclear who is responsible for this act. In addition, Scharre (2018) expresses that military and defense contractors are often exempt from liability during times of conflict (p. 328). This implies that engineers who produce autonomous weapons cannot be judged. In fact, sometimes individuals may not be responsible, and this situation is called the accountability gap. For example, As claimed by Crootof (2016), in 1988, an Iranian commercial plane was shot down by a US warship which was operated in a semi-autonomous mode. Neither operators nor commanders were found guilty, but the US Government paid $61.8 million to the victims’ relatives without admitting its mistake (pp. 1391-1392). From the example given above, it is clear that involving autonomous weapons in the accident created an accountability gap. In addition, this accountability gap causes public distrust of justice since there is no guilty individual even though there is a serious crime. Next, autonomous weapons cause a decrease in the moral responsibility for the killing. If soldiers decide to use their weapons, they should also consider the impacts of this decision during the whole assault in terms of civilian casualties, proportionality and surrendered enemies. On the other hand, if soldiers only push the button for a short time and authorize an autonomous weapon for the rest of an assault, they do not feel morally responsible as before. Using an experiment result, Scharre (2018) expressed that if soldiers believe that they transferred their moral responsibility of killing to autonomous weapons, they can behave more senselessly, and this situation may cause more killing (p. 347). The last socioethical issue is about the value of life. People are afraid of killing someone since they are afraid of death, and they do not want this to happen to anyone else. This situation shows its effect intensely in wars. Army psychologist Grossman (2009) explains that during World War II, army historian S. Marshall interviewed soldiers who had come off the front lines, and found that 15 to 20 percent of soldiers were actually shooting at the enemy (pp. 37-38). In contrast, autonomous weapons do not have human feelings such as afraid of death. Therefore, they do not respect the life of people. As Goose and Wareham stated, autonomous weapons would be disrespectful to human life since they have the authority to decide killing even though they are incapable of understanding the worth of life (2017). What is more, autonomous weapons do not feel emotions such as mercy and empathy. As a result, they do not hesitate to kill an enemy close to surrender, or they cannot think about whether the people who are about to die have a family waiting for them or not. In short, use of autonomous weapons causes an increase in socioethical concerns in society.

To sum up, the use of autonomous weapons causes various significant technological and social problems because of drawbacks regarding the current technology such as inefficacy in object recognition and lack of emotion. The use of these weapons is increasing rapidly despite these inefficacies, and this makes the technology even more dangerous than it already is. If these technologies are desired to be used in battlefield, more research should be conducted and the technology should be more precise about the duty it is programmed to do. If they choose to ignore these requirements, the outcomes may be catastrophic for all countries.

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