

Military Drones

From a Software Studies' perspective

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Abstract

Unmanned Aerial Vehicles, or 'drones' as they are being called in popular discourse, are becoming more and more popular in the military. They are cost- efficient, they can acquire information without getting spotted by the enemy and the pilots flying them are safe and far away from the actual battleground. This paper focuses on the drones from a software studies' perspective. Using the simulations and simulacra theory from Jean Baudrillard and the text *The (im)possibility of ethics in the information age* from Lucas D. Introna, this paper will point out why using drones in modern warfare can be problematic.

Keywords

Drones, Future Warfare, Baudrillard, Simulacra, Introna, Software Studies

Introduction

US drone strikes more deadly to Afghan civilians than manned aircraft (Ackerman 2013).

This was the conclusion drawn from a study conducted by research scientists and US military advisors Larry Lewis and Sarah Holewinski. The advisors studied air strikes in Afghanistan from mid-2010 to mid-2011, using classified military data and civilian casualty rates. Their findings showed that drone strikes caused 10 times more civilian casualties in Afghanistan than strikes by manned fighter aircrafts (Ackerman 2013). This study strongly contradicts Obama's speech held in May in which he states that "conventional airpower or missiles are far less precise than drones, and likely to cause more civilian casualties and local outrage" (The Huffington Post 2013). In the last decade America has used a lot of drone technology in different war zones. The flight hours of drones used by the US Air Force between 2001 and 2010 have increased by 3000 percent (Benjamin 2012, 21). The United States is not the only one keen on using drones for war; many other countries are buying drones for the military.¹ In January 2013, German chancellor Angela Merkel, "informed the Bundestag, the lower house of Parliament, that it considered the acquisition of armed drones "absolutely necessary" for the country's defense" (Kim 2013). According to Lewis and Holewinski the key question raised is: "What explains the discrepancy between civilian casualties from UAV [unmanned aerial vehicles] and manned aircraft strikes?" (Ackerman 2013).

In this paper I want to analyse drones from a software studies' perspective, since these drones are being piloted from a distance using a lot of software. I am not attempting to answer the question from Lewis and Holewinski, since there are many factors that can weigh into this discrepancy, but I will argue why the use of drones can be problematic from a software studies' perspective. What does the military do with the software and what does it do with them? In order to get my point across, I will first explain the simulation and simulacra theory of Baudrillard. Secondly I will discuss the text *The (im)possibility of ethics in the information age* by Lucas D. Introna. After I finished explaining my theoretical viewpoint I will elaborate on the functionality of drones and explain which problems could arise from a software studies' perspective, using Baudrillard and Introna. It is important that the usage of drones is being discussed from a software perspective, since there have been far more civilian casualties than there were thought to be. With the increasing amount of military drones, it seems likely that this will be the future of warfare (Burnett 2013). It is therefore important that this innovative, new way

¹ A full list of known countries with drones can be found here: <http://dronewars.net/6-who-has-drones-2/>

of warfare is being investigated. Especially since not much has been written on this subject from a software studies' perspective.

Baudrillard

In *Simulacra and Simulations* Baudrillard (1988) argues that the boundaries between real and unreal have become somewhat blurred. To prove this he uses a Borges fable as an example, where a map of an empire has the same scale as the empire itself. And when the empire reduced in scale, the map would be reduced in the same way. This process would repeat itself until the empire was gone. According to Baudrillard this is a perfect example of simulation. But nowadays simulations do not represent reality anymore. This is because people construct "their reality" based on messages they get through media. He calls this constructed reality through mediated messages a simulacrum or hyperreality. This simulacrum is an idea of reality, which is being formed in their head, it is thus a copy without an original. He even states that there is no difference anymore between the real and simulation, real has become simulation and simulation has become real. People perceive simulacra rather than reality itself, if that is even possible That is why we live in this simulacra or hyperreality. A good example by Baudrillard (1995) is the Gulf war in 1990-1991. Many people have images and associations with this war, but haven't experienced the war in real life. People only know the war from the media, which shows and explains the war in their own way. The people then construct the idea of a Gulf War based on all the information they get through the media. This could be very different than the truth, since they see only a part of it. Baudrillard argues that there is less and less truth, because we base our reality on what we see in the media. People feel themselves a deeper connection to simulations as video games and televisions shows than to instances in reality that they reference. "It is no longer a question of imitation, nor duplication, nor even parody. It is a question of substituting the signs of the real for the real" (Baudrillard 1996, 254). Baudrillard calls this "the perfect crime" (1996). But this can also be dangerous, since by the selectivity of media this simulation of reality could be altered. Because the line between real and unreal is being blurred, there seems to be no difference between the truth and a lie. This leads to people adapting their behaviour, culture, taste, ethical considerations, political affiliations and scientific assumptions, to the conditions that the simulacrum offers. It is almost impossible for these people to question this, because they live in this simulacrum, which defines their, rational emotional, spiritual and philosophical presumptions.

Introna

Introna builds his work on Baudrillard and argues “that information technology through mediation (simulation) is introducing a sense of hyperreality into our existence that is making it increasingly difficult for obligation to grab us” (Introna 2002, 73-74). This means that mediation through technology can result in a disconnection with reality and the community. This can then lead to dulled or deactivated ethical sensibilities. Introna uses Nick Leeson as an example. Leeson gambled away the life savings, pensions and careers of many proper names attached to the Barings collapse. He did this without any guilt, because the families he ruined were only represented through bank account balances and as numbers on his screen. Because he saw only numbers on his screen and paper, he couldn't see the real faces from the people corresponding to the numbers. He therefore lost the connection to reality and his ethical sensibilities. Introna argues

[t]hat electronic mediation with its hyperreal effect—even if we do not take it to its Baudrillardian extreme—is turning disasters into hyperreal events and proper names into meaningless electronic representations; hyperreal events and representations that come before us, but do not involve us. In hyperreality we are less and less likely to meet our obligations face to face. (Introna 2002, 80)

Since all these numbers on Leeson's screen were meaningless, it was easy for him to start gambling with the money, jobs et cetera of all these people. He never came face-to-face to these people what made it easy to make these unethical deeds. All the money he lost was becoming a hyperreal world, that didn't seem to exist. In reality he ruined the life of many people.

Drones

As I have written in the introduction, the American Army is increasingly using drones in war situations. But what are drones exactly? In this chapter I will explain what these drones exactly are, and why we can study them from a software studies' perspective. Then I will connect my findings to the theories from both Baudrillard and Introna.

Drones, or Unmanned Aerial Vehicles (UAV) as the American Army prefers to call them, already have a long history. The first attempt towards a powered UAV was done by Archibald Low with the Aerial Target in 1916 and was intended to serve as a target for training pilots in World War I (Taylor 1977). This prototype didn't make it to production, but other models were built and used during the First World War. Later on, drones were deployed in the closing stages of the Second World War, but the first major combat use of Unmanned Aerial Vehicles (UAVs) was during the Vietnam War (Gregory 2011, 189). At the start of this century there was little interest in drones. The U.S. Military occasionally used them for surveillance missions with unmanned aircrafts like the General Atomics Predator. After 9/11 followed by the U.S. invasions of Afghanistan and Iraq, the drones rapidly became an essential tool for the U.S. armed forces (Horgan 2013). The United States deployed less than 200 drones in 2002, but this number has increased to 11.000 military drones for 2013. They are being used for a wide variety of missions from surveillance to targeting and bombing. "Within a generation they could replace most manned military aircraft" (Horgan 2013), according to John Pike, a defence expert at the think tank GlobalSecurity.org.

There are many different kinds of drones, but they can roughly be divided into two categories: one is used for reconnaissance and surveillance and the other is used for killing and destroying targets. These UAV's are aircrafts that can be controlled by 'pilots' from the ground or by autonomously following a pre-programmed mission (Cole en Wright 2010), the latter method becoming increasingly popular. According to the U.S. Defense Department, "The Predator is a system, not just an aircraft", because of the unique way the Predators are deployed and controlled (Valdes 2011).² The number of UVA's has risen dramatically in recent years. There are many reasons for this: with flight times up to two weeks they are able to complete longer missions compared to manned aircrafts (Hennigan 2010); a UVA is much cheaper compared to a manned military aircraft and there is no danger for the flight crew. Because of remote operation they can fly very high, without being noticed by people on the ground. This operating

² The Predator is a type of drone that the United States Army used until 2010. I will use the Reader drone as a case study in this paper, since this drone has replaced the Predator.

is done via satellite from a military base outside Las Vegas Nevada (see figure 1), while the drones are physical in the warzones like Afghanistan and Iraq (Cole en Wright 2010). The ground crew in the conflict zone launches the drone and than operation is handed over to the “pilots” in Nevada. One person actually flies the drone, another person operates the monitors, cameras and sensors, a third person maintains contact with the supervisors, ground crew and commanders in the war zone (Valdes 2011).



Figure 1: Control room in Nevada
Source: HowStuffWorks.com

All the information collected by a drone is processed by software and sent to a control room in Nevada. This information consists of live video images from all cameras, infrared, night-vision, electromagnetic spectrum sensors, gamma ray sensors, biological

sensors, and chemical sensors. The pilot flying the drone is only provided with information that has been selected by the other pilots operating the monitors, sensors and screens. This information is a mix of live camera feeds and information from the sensors. The battlefield information is being mediated electronically via the camera and sensors. Another pilot controlling the camera decides which part of the ground is shown on the screen. But this view is restricted by the angle of the camera. Observers have complained that zooming in is like looking through a soda straw” (Gregory 2011, 193). A very big part of the real field is left out, which could be very important. The information shown next to the video images, is being processed by software, which selects the most relevant data (Valdes 2011). Because the pilots don’t actually see the battlefield in real life and all the information is electronically mediated, the pilots construct their own reality of the actual battlefield, according to Baudrillard. The information is preselected or enhanced by software or other operators, which could lead to a distorted view of what is actually happening in the conflict zone. This distorted view is, as Baudrillard calls it, a simulacrum in which the pilot is living. The pilot could make wrong decisions, since he can only see what is being created by the information he gets via the screens. This simulacrum is not reality, according to Baudrillard. Drone pilot (and former F16 pilot) Maj. Ted partly confirms this, by arguing that:

"In an aircraft, you can look outside, and you know how high you are from the ground. You know that the guys I am supporting are over there and the bad guys are over there. [...] But here I have a picture, and it shows me turning left, but I don't feel myself turning. I don't feel the speed; I can't look quickly and see where everybody's at. [...] "I have multiple computer screens showing two-dimensional information that I have to then mentally build that picture." (Baldor 2012)

Aside from this altered reality, I would like to argue that a pilot's ethical sensitivities are being lowered by the way the pilot is flying the drone. As mentioned before, the pilot is safe in his home country, behind a number of screens and a controller resembling a videogame joystick. He sees video streams of the conflict zone sent to him via satellite. These videos may often "lose" their connection with reality. These images are being enhanced by software or through infrared, night vision. (Valdes 2011). Aside



Figure 2: Video shot from the drone
Source: CBSnews.com

from these enhancements, videos are fused with other types of intelligence and information, which are simulated by software, helping the pilot in making the right choices. This information can consist of speeds, distances, heights, weather simulations, targets et cetera. The pilot doesn't see real images anymore, but images enhanced with all kind of extra information. The pilot is looking at a screen similar to video games (see figure 2). Critics also claim that this mediation reduces late modern war to a video game in which killing becomes casual (Gregory 2011, 188). Introna argued that information technology through mediation makes it increasingly difficult for obligation to grab us (Introna 2002, 73-74). Staring at the monitors the pilot loses connection with reality since he only sees information and video streams that aren't exact representations of reality. This makes it easier to commit unethical acts like killing a civilian or ignoring orders. These unethical acts are turned into hyperreal events, because of the these meaningless electronic representations. One of the pilots flying a drone admitted: "Sometimes I

felt like a God hurling thunderbolts from afar” (Martin 2010, 3). This may have implications, as owner of tomdispatch.com Engelhardt explains: ‘Those about whom we make life-or-death decisions, as they scurry below or carry on as best they can, have like any beings faced with the gods no recourse or appeal” (Engelhardt 2009).

Another problem using drones for observation and war is the data that is being collected by all the cameras and sensors on the drone. Since these drones can fly for many hours up to (depending of the drones) to a couple of weeks, they collect a lot of information. In 2011 a drone was already equipped with at least 30 cameras and several sensors (Saenz 2010). These amounts are still increasing. The amount of video that is being collected by the drones has increased by 300% from 2007 to 2008. The amount of footage from 2008 would take 24 years to watch by a person (Saenz 2010). Imagine the amount of video data that is being collected in 2013. This data used to be analysed by militaries, who would watch the footage for hours in search of important information. But with these amounts of information, the military is in need of software that automatically analyses the footage. In 2012, the US military was already looking for software capable of automatically analysing the video (Michaels 2012).³ If software is indeed going to analyse the video images, than the military will give agency to the software. According to Bruno Latour (e.g. 2005) and his Actor Network Theory, non-human objects like technology are not neutral. This is why we could see software as an active agent, which shapes knowledge and produces facts out of the video feeds it is analysing. Media scholars Frank Kessler and Mirko Tobias Schäfer argue that:

Although software provides the means to manage complexity, it also produces another level of complexity: its working logics are hidden under opaque interfaces and remain incomprehensible to most users; important tasks are delegated to software, and the output of computation processes co-construct knowledge and, what is maybe even more important, influences decisions on many levels in contemporary knowledge economies. (Kessler en Schäfer 2013)

The software that the military might use in the future is thus not neutral, and could influence the decisions the US army has to take when in combat.

³ It was for me impossible to find out if they already use software to analyse the video footage from the drones. This could be because a lot of information about the army is classified

Conclusion

The military and governments of many countries are positive about the use of drones in the army, as I have shown in the introduction. But a study showed that ten times more civilians were killed by Unmanned Aerial Vehicles compared to manned airplanes (Ackerman 2013). In this paper I have tried to investigate drones from a software studies' perspective, since these drones are piloted with software. First I have argued that, following Baudrillard's simulation and simulacra theory, pilots flying the drones from Nevada see an altered version of the actual battlefield. Since the cameras only show a part of what is happening in the conflict zone, and an operator selects which camera and which part of the field the pilot is watching, a pilot can create his own reality that differs from the real battlefield. Secondly, by using the text of Introna I have argued that the pilot loses touch with reality because of software-enhanced images and all kinds of information added to the screens. The images he sees on the monitors look more like a videogame than real life and it is turning people into meaningless electronic representations. This might lead to unethical deeds, since he is no longer face-to-face with "real" people. Thirdly I argued that the amount of data that is being collected is growing rapidly every year. The military is unable to view all this information. They want to use software to analyse the data, through which they are giving agency to the software analysing the data. Following Latour and his Actor-Network-Theory, non-humans, like software, are not neutral but active agents. It shapes knowledge and produces facts out of the video stream it is analysing. With these arguments I have shown why using drones can be problematic from a software perspective.

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