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ORIGINAL PAPER

Drones, information technology, and distance: mapping the moral epistemology of remote fighting

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Abstract Ethical reflection on drone fighting suggests that this practice does not only create physical distance, but also moral distance: far removed from one's opponent, it becomes easier to kill. This paper discusses this thesis, frames it as a moral-epistemological problem, and explores the role of information technology in bridging and creating distance. Inspired by a broad range of conceptual and empirical resources including ethics of robotics, psychology, phenomenology, and media reports, it is first argued that drone fighting, like other long-range fighting, creates epistemic and moral distance in so far as 'screenfighting' implies the disappearance of the vulnerable face and body of the opponent and thus removes moral-psychological barriers to killing. However, the paper also shows that this influence is at least weakened by current surveillance technologies, which make possible a kind of 'empathic bridging' by which the fighter's opponent on the ground is re-humanized, re-faced, and re-embodied. This 'mutation' or unintended 'hacking' of the practice is a problem for drone pilots and for those who order them to kill, but revealing its moral-epistemic possibilities opens up new avenues for imagining morally better ways of technology-mediated fighting.

Keywords Military robotics · Drones · Ethics · Distance · Information technology · Phenomenology

Introduction

When on August 6, 1945 at 8:15 AM B-29 bomber Enola Gay dropped an atomic bomb on the city of Hiroshima, the crew soon witnessed blinding light and a mushroom-shaped cloud, covering the entire city in smoke and fire. They also felt the shockwave of the explosion of "Little Boy". What they didn't see or feel, however, was that and *how* this explosion killed approximately 70,000 people (and more in the following years). They didn't see how the skin of their victims was bleeding and burning. They didn't see people that looked "like walking ghosts", as a survivor described them. They didn't see the suffering and death of men, women, and children. They must have been fascinated by the looks of the explosion, for sure, but their experience of its effects on their victims was most likely not very different from that of Captain William S. Parsons before the event, when he was arming the bomb: "I knew the Japs were in for it, but I felt no particular emotion about it." (Parsons quoted in Takaki 1995, p. 43).

In the beginning of the twenty-first century, a different bombing practice is becoming increasingly common: one that involves vehicles without a crew on board. Unmanned aerial vehicles (UAVs), also known as 'drones', are aircrafts that are controlled by computers or by pilots on the ground. Here I will restrict my discussion to aircrafts that are controlled by humans at all times, and use the terms "UAV" and "drone" interchangeably[1] to refer to such human-controlled aircraft.

The military can and do use UAVs for surveillance, but also for bombing targets on the ground. Today many

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[1] Some people object to this and attach a specific meaning to 'drones', for instance 'autonomous UAV', but I decided to go with common usage.

countries produce and use drones. Drones have been used in Afghanistan, Pakistan, Yemen and Somalia. They have killed both combatants and civilians—not just a few, but hundreds. The main reasons why the technology is used by the military is that it helps to achieve a key tactic and strategic military aim in times of war: it inflicts 'as much damage on the enemy while trying to risk as few personnel and resources as possible' (Valdes 2012). Those who control the aircraft—now humans and computers, in the future perhaps *only* computers—can keep far away from danger. The drones can operate in distant places via satellite communication; the pilots receive images and radar from the aircraft while they enjoy the safety of sitting in a chair on the ground (or sometimes on a remote ship). Their 'cockpit' is sometimes compared with the interface of a video game: it is believed that with their "joysticks" they remote-control the aircraft, watching the images on the various screens in front of them. Sharkey describes the practice as follows: 'Missions are flown […] thousands of miles away from the operations. The operators sit at game consoles, making decisions about when to apply lethal force.' (Sharkey 2012, p. 113). This also means that the pilots and other members of the drone crew, who are often physically located at an airbase in their home country, can return to their families after their 'job' is done. Killing can be done within office hours.

The use of military drones raises many ethical issues, which have been attracting media attention (e.g. the discussion about "collateral damage", i.e. the unintended killing of innocent civilians) and in the past years also inspired new and interesting work in philosophy of robotics. For example, it has been questioned if this kind of warfare amounts to a 'just' war (Asaro 2008) and what kind of warfare it creates in the first place (Singer 2009), if and how more autonomous UAVs could be designed in an ethical way (Arkin 2008; Lin et al. 2008; Sparrow 2009; Sullins 2010), and—last but not least—who or what is responsible for an autonomous weapon system (e.g. Sparrow 2007).

With regard to the question regarding ethical conduct and moral responsibility of military personnel involved in drone fighting, we must question if and how drone pilots and their commanders can possibly act in a morally responsible way, given the physical distance there is between them and the damage they cause. The moral problem, which has already been mentioned by Singer (2009) and Sharkey (2012), seems straightforward and plausible: it seems that drones make killing easy, since they are remote-operated. It seems, in other words, that drone pilots, being even further removed from their 'targets' than the crew of the Enola Gay, are likely to 'feel no particular emotion about' the moral consequences of their actions, which makes it easier for them to kill. Technology seems to have a key role in this process, since a range of technologies makes it possible that there is such a huge distance between killer and killed. Taking this claim to a more general and abstract level, we could formulate the following somewhat paradoxical thesis about technologies that are meant to bridge distance (so-called "teletechnologies"): *By means of new teletechnologies, (more) physical distance is bridged, but at the same time (more) moral distance is created.*

In this paper I will further elaborate, support and critically discuss this claim about the relation between distance, morality, and technology with regard to the practice of drone fighting. In particular, I hope to stimulate and enrich the discussion about this issue (1) by re-framing the problem as a moral-*epistemological* one, (2) by focusing on the role of *information technologies* in relation to the problem, (3) by bringing a wider palette of conceptual tools to the discussion, inspired by Aristotle, Heidegger, Levinas, and social studies of science and technology (STS) literature, and (4) by using recent media interviews with drone pilots and other military personnel.

The outcome will be a conceptual space that gives us a better understanding of (a) the kind of knowledge that is generated in this particular fighting practice and its relation to morality, and of (b) the moral implications of this kind of knowledge for thinking about the relation between (military) information technology, distance, and morality. Thus I will show that ethics of military robotics could benefit from a more precise moral epistemology of ICT-mediated fighting and a more detailed discussion of the moral implications of the relations between knowledge, distance, and information technologies.

In particular, I will argue that in general the practice of using drones is illustrative of the claim that new technological practices that aim to bridge physical distance create more moral distance and make it difficult for people to exercise moral responsibility, but that the moral-epistemic situation of drone pilots and their information technologies (1) should not be understood as giving rise to total disembodied and a-social subjectivity and (2) also offers opportunities for what I call 'empathic bridging', due to new surveillance technologies.

First, I will use Aristotle to (re)formulate the 'easy killing' argument as a problem that concerns the relation between knowledge and morality. I will argue that there is a sense in which remote bombers *do not know what they are doing* and that this is morally problematic since it does not fulfil one of the classical conditions of responsibility ascription. I will also emphasize that this seems to be particularly problematic in contemporary ICT-mediated practices, which increase the distance between fighter and target. I will compare the knowledge one has in remote fighting with the knowledge one has in face-to-face and

body-to-body fighting, and cite psychological work on the relation between distance and killing.

Second, I will elaborate the psychological claim about distance and killing by drawing on Levinas and on Heideggerian thinking about engagement (Dreyfus and Borgmann): there is indeed a moral problem *if*, because of the new technological practice, you cannot see the face of the other and if you are disengaged from the world and detached from others. However, I will also critically discuss the application of this idea to drone fighting.

First I will argue that a Levinasian ethics is blind to ethical concerns that arise external to the I-you relationship, such as societal and political concerns and ethical 'work' in the form of deliberation, regulation, and principles, which can, *do*, and should still play *a* role in military ethics, even if it is perhaps a less effective and less relevant form of moral knowledge than (other) knowledge constructed within the practice itself.

Then I will show that while it is true that remote fighting implies a *less* embodied, social and engaged way of being-in-the-world, drone pilots are still embodied, social, meaning-giving beings, who may bridge the moral distance between them and their 'targets' by imagining the lives of those they are supposed to kill. Based on comments by drone pilots and their commanders as report in the media, I suggest that surveillance (which takes up most of the time of drone crews) leaves room for, and makes possible, active interpretation and construction of the social and personal reality on the ground, in particular the construction of narrative, which makes possible an empathic response and makes it less plausible that drone fighting makes killing as 'easy' as the moral distance thesis suggests. I will argue that although this 'empathic bridging' does not generally prevent drone operators from killing, it may be regarded as an unintended 'mutation' or indeed 'ethical hacking' of the (otherwise) distancing technologies, the acknowledgment of which helps us to better understand the moral geography of the practice and to explore better ways of fighting.

I end with recommendations for further research that can enhance discussions about the ethics of military robots, in particular with a call for more collaboration between philosophers of technology and STS-type ethnographical fieldwork, in addition to the empirical-psychological research already done inside and outside the military, in order to better understand the practice and its moral-geographical dimensions.

Moral responsibility, knowledge, and the phenomenology of fighting

Inspired by Aristotle's arguments in the *Nicomachean Ethics*, we can helpfully distinguish between two conditions for responsibility ascription: the agent must not be forced to do something (the freedom/control condition) and the person must not be ignorant about what she is doing—in other words: she must *know* what she is doing. (Book III, 1109b30-1111b5). Discussing the first condition in relation to drones is very interesting given development of more autonomous drones (and indeed much more common in the literature), but in this paper I am concerned with the second, epistemic condition and with the case of human-controlled aircraft. It seems that those who engage in remote killing such as in the Hiroshima bombing case or in drone cases do not meet this second condition: because of the *distance* they do not fully know the consequences of their action for people on the ground—for intended and non-intended victims. In particular, if we assume that the exercise of moral responsibility is made possible by putting oneself in the place of the other,[2] the implication of this particular lack of knowledge seems to be that the pilots cannot respond in a sympathetic, empathetic way towards the people on the ground, and therefore cannot exercise full moral responsibility for their actions. Let me first further unpack the problem and elaborate this argument; I will revise it later.

Consider the following hermeneutic-phenomenological exercise, which is meant to better understand what kind of knowledge is involved in fighting. I will compare the knowledge and experience one has in remote, face-to-screen fighting with the knowledge and experience one has in close fighting: face-to-face fighting and body-to-body fighting.

[2] In this paper I assume a meta-ethical position inspired by Hume, Smith, Dewey, Nussbaum, and Rorty (among other thinkers) which holds that moral feelings and moral imagination are central to morality. The claim is that rational argument is not sufficient and that we need feelings and imagination instead of, or at least next to explicit and principled moral deliberation (for the latter claim see Coeckelbergh 2007). We may even agree with Rorty that the Platonic rationalist ethical project is entirely misguided and that instead of asking "Why should I be moral?" we (moral philosophers) should ask the question how we can act morally towards strangers (Rorty 1993). One answer to this question is that the exercise of empathy, putting oneself in the other's shoes, helps one to become more moral. In this paper I will not (further) discuss my meta-ethical position in order to create room for my discussion of the main thesis concerning technology and moral distance in relation to drone fighting. However, both the question and the 'empathy' answer are centrally relevant to the discussion about drone fighting presented here. My question in this paper can be regarded as a 'follow up' on Rorty's question and answer: if this is what we need to morally bridge out towards strangers, what epistemic, experiential conditions are necessary and sufficient for this empathy to get off the ground? If the main question is about who is a member of our moral community, we want to know how we decide about the border between 'inside' and 'outside', how we (can) draw 'strangers' into that community. In particular, in this paper I am interested in the role played by how the opponent appears to us in fighting (e.g. as a stranger, as a target, or as a human being): under what epistemic conditions does he appear as 'one of us'?

In body-to-body fighting, the fighter sees the eyes and body of his opponent, and has body contact with him. He smells him, feels him, hears him. The fighters see, smell, and feel the skin, the bodily movements, the breathing, the sweat, and perhaps the blood of their opponent. During the fight they are frequently and literally *in touch*. This has epistemic and moral consequences. The fighter knows that his opponent is also a person and a human being, who also struggles to win, who has feelings (e.g. hate), and who also feels pain when he is hit. The fighter is also very aware of his own body; in a sense his body is his weapon, the fighter 'is' weapon and agent at the same time. Moreover, he receives immediate feedback from his opponent, everything he does meets concrete, physical resistance. He also feels everything the opponent does. He is totally involved in the fight. He is immersed in it, is highly concentrated. In his experience there is no mind separated from a body. In the experience of what Csikszentmihalyi calls 'flow', the fighter is one. He does not and cannot take (reflective) distance or distance himself from his opponent. The fighters are 'condemned' to one another. Furthermore, the fight is a *personal* matter: he fights with a particular person, not with an 'enemy'. He knows his opponent or, if not, he gets to know the person during the fight in various ways. During the fight the fighters also share the same physical, geographical space, for example a bar or a street corner. Perhaps they even live in the same place (village, city) and share the same social background and culture.

Having this kind of knowledge and experience may not prevent the fighters from fighting (and indeed from wanting to *win* the fight), but it may prevent cruelty and killing, since because of the close contact and close distance they retain some degree of empathy. (Perhaps the fighters even respect one another, as in martial arts.) The fighter who does not only want to win but also wants to *kill* (or is ordered to do so), however, faces a problem: on the one hand, he knows he wants to (or has to) violate the opponent, but given the kind of knowledge relation he has to his opponent, he is not inclined to do this. He sees a human being and a person. He sees a vulnerable body, *just like his own*. And if he tried to kill him, he would have to see his face, his blood, his guts. He would have to see the pain and the dying. He would have to violate someone who is *like him*. In a sense, in this situation the opponent does not appear as an *enemy* (yet), but as another person. The fighter-as-killer wants to avoid what we may call 'empathic bridging': empathy prevents him to reach his aim. In order to kill the other, he needs not a bridge but a screen. In close fighting there is 'too much' empathic mirroring for killing to be 'easy': the fighter senses his own vulnerability in the other. Moreover, from the point of view of defence, the situation is far from ideal: even if the bodies of the fighters do not touch (all the time), the fighter is located so near to his opponent that he is extremely vulnerable. He is totally exposed, he can be easily beaten and wounded. Thus, the fighter may feel that, if he wants to wound or kill the opponent without getting wounded or killed himself, he is *too close* to his opponent and that he wants more *distance*.

Historically, the solution to these problems has been the development of weapons, which create distance between fighters: weapons are *distancing technologies*. It is easier to kill if you throw a stone at someone who is located a bit further away from you. In addition, the distance protects you: the 'promise' of the weapon is always that you can strike without endangering yourself. By attacking (first) you take away the danger; this is the 'promise' of the weapon. Furthermore, you can also take protective measures, which are again distancing technologies: technologies that distance you from what is now slowly but surely becoming the *enemy*. With shields fighters try to reduce their own vulnerability. Now spears, knives and swords are still short-range weapons which already create some distance, but retain their capacity to produce in the fighter an experience and knowledge of the opponent as another person: the fighter still sees the eyes of his opponent, the body-to-be-stabbed, the bleeding, hears the cries, and so on. Longer-range weapons such as guns further increase the distance. One can now kill at longer distance: this is less psychologically 'painful' to the killer, the other is further away and may appear as a stranger, as 'the' enemy, as a puppet, as a *target*: as something-to-shoot-at, as something-to-be-killed. And because of the distance, one also feels less vulnerable oneself. Defensive architectures protect the fighter. Artillery and bombing further increase the distance, which again invites new defensive technologies. Thus, the history of military technologies and the history of fighting can be interpreted as a history of creating increasing distance, both for offensive and defensive reasons. As Sharkey summarizes the history of weapons and war:

> Military robots are the fruit of a long chain of weapons development designed to separate fighters from their foes. Throughout the history of war, weapon technology has evolved to enable killing from ever-increasing distances. From stones to pole weapons to bows and arrows to cannon to aerial bombing to jet propelled missiles, killing has become ever easier. Not only have distance weapons lead to a more effective killing technology, but attacking from a distance also gets around two of the fundamental obstacles that warfighters must face: fear of being killed and resistance to killing. (Sharkey 2012, p. 111)

Drone bombing and, more generally remote controlled military robots, then appears to be the ultimate military distancing technology. The fighter's own vulnerability is close to zero (or so it seems) and those he is ordered to kill

appear as remote targets. The separation between fighter and opponent is complete. Drones seem to be illustrative of a move towards a kind of 'final' stage in the history of military technology understood as a history of distancing technology, in which the distance between fighter and 'the ground' is maximized. If there is a next step, it is fighting and killing from *space*—a step which I believe has already been taken.

It seems that in the history of military technology there is a kind of distancing arms race: the opponent will (also) develop offensive and defensive technologies that create distance, and the race is about who can create a fighting position that is *most distant* in order to decrease one's own vulnerability (defensive reason); yet at the same time the technology needs to be 'bridging' enough to enable killing of the distant target (offensive reason). Drones seem to do that job perfectly.

Note that this analysis and interpretation of fighting does not imply that fighting at close range *necessarily* prevents killings and atrocities; even if there is proximity between the fighters, there may be other factors and circumstances which create conditions under which empathic bridging is not promoted (e.g. peer pressure, alcohol and drug abuse, hate propaganda, etc.). More generally, distance does not *determine* fighting. Furthermore, if and to the extent that distance matters in fighting, it is not always absolute distance that counts; *relative* distance also matters with regard to one's vulnerability and indeed to the outcome of the fight. For example, someone—you and/or your opponent—may be very skilled at fighting at a particular range (thus having an advantage at that range rather than another, being less vulnerable at that range), may use a weapon for which there is a specific optimal range (thus having an advantage at that range, being less vulnerable at that range), or may find herself or himself in a particular situation that promotes a specific fighting range (creating particular vulnerabilities). And with regard to the history of warfare, the tendency towards distancing does not mean that *all* fighting is done in a more distant fashion or that *all* weapons used and developed today are long range weapons. In contemporary military organizations a variety of weapons are used (suitable for different ranges) and soldiers are trained in different types of combat, including hand-to-hand combat. Nevertheless, the brief phenomenology of fighting and interpretation of warfare history offered here reveals meaningful relations between fighting *experience* and knowledge (including perception of one's opponent, one's emotions and empathy, and one's *experience* of vulnerability), distance, killing, and the use and development of weapons. In particular, the analysis suggests that in general more distance creates epistemic and psychological conditions under which it becomes easier to kill, and that weapons can be meaningfully interpreted as distancing tools, as technologies that mediate distance between fighters in a specific way: they bridge physical distance, but also at the same time create moral distance.

The psychology of killing and the face of the other

There is also psychological evidence for the relation between killing, distance, and military technology. In his classic *On Killing* (1995) Grossman argues that 'it has long been understood that there is a direct relationship between the empathic and physical proximity of the victim, and the resultant difficulty and trauma of the kill.' (Grossman 1995, p. 97) Whereas long-range killing, for example by bombing and artillery, is relatively easy, when the distance decreases, killing becomes increasingly more difficult. He gives the examples of bayoneting, using a spear, stabbing, and killing with bare hands through martial arts techniques, and compares these with the experience of the bomber, who may be 'fascinated and satisfied with his work' (p. 101) and is far removed from the experience of people on the ground. A short(er) distance creates emotional and empathic obstacles to killing; when these are absent, killing becomes easier. The bomber does his job without knowing the exact consequences of his act. 'Emotionally, the distance involved permitted them to deny [the horror of what they were doing]' (p. 102). There is no psychiatric trauma. A shorter physical distance, he suggests, means more *moral* distance. When one fights 'eyeball to eyeball with the sweat and the emotions of combat' (p. 108), when it is 'a vivid and personal matter' (p. 115), it is much more difficult to kill. Grossman writes:

> At close range the resistance to killing an opponent is tremendous. When one looks an opponent in the eye, and knows that he is young or old, scared or angry, it is not possible to deny that the individual about to be killed is much like oneself. […] As men draw this near it becomes extremely difficult to deny their humanity. Looking in a man's face, seeing his eyes and his fear, eliminate denial. (Grossman 1995, p. 118)

(Note that even if the enemy is dehumanized, there is still psychological trauma at the sight of blood and guts (Protevi 2008).)

Moreover, Grossman also supports the moral-epistemological argument with regard to distance and responsibility in another way: at close range, there is 'the undeniable certainty of responsibility on the part of the killer'. (Grossman 1995, p. 114) If you *know* what you're doing or what you might do to the other, you have to (literally) *face* your responsibility.

Here the point Levinas made in his philosophy about the ethical responsibility that emerges from 'the face of the other' is relevant. The kind of ethics Levinas talks about is not an ethics that is derived from principles and that is meant to guide deliberation—there is usually no time for this in close-range fighting situations—but an ethical demand that arises directly in a relational situation: from (seeing) the face of the vulnerable other, which says "Do not kill me". The face is a 'nakedness' (Levinas 1961, p. 74) that renders killing impossible:

> Infinity presents itself as a face in the ethical resistance that paralyses my powers and from the depths of defenceless eyes rises firm and absolute in its nudity and destitution. (Levinas 1961, pp. 199–200)

Grossman's remark about killing from behind confirms Levinas's point, now formulated in terms of the naturalist perspective of empirical psychology. He says that one of the factors that enables killing from behind, in spite of the close proximity, is that 'the face cannot be seen'. Face-to-face killing means to overcome 'some form of natural resistance'.

> Man has a tremendous resistance to killing effectively with his bare hands. When man first picked up a club or a rock and killed his fellow man, he gained more than mechanical energy and mechanical leverage. He also gained psychological energy and psychological leverage that was every bit as necessary in the killing process. (Grossman 1995, p. 132)

(For those philosophers who are more convinced by the neuroscience type of psychology: in a follow-up article Grossman has also supported his argument by means of studies of physiological and brain responses, see Grossman 2001.)

Of course distance is not the only 'factor' that has moral significance in relation to killing; Grossman also discusses the demands of authority (the Milgram studies), the role of the group (group killings), the predisposition of the killer (aggressive), etc. But with regard to drones the distance argument seems to be the most relevant one: the physical distance made possible by drones seems to create a moral distance: it becomes easier to kill. Today the bomber doesn't even fly to and over the place (s)he bombs; the killing becomes *even more* remote than it already was. Between the people on the ground and the fighter there is more distance. Information technology attempts to bridge this distance by representing the distant place, but at the same time it also *makes possible* the remote fighting and killing, and psychologically engaging with a stick and a screen is not the same as flying an airplane and certainly not the same as fighting at close range. The *knowledge* one has of the enemy is very different in each of these cases, and this has moral consequences. It seems that it becomes easier to kill and that, as many have argued, fighting at a distance is not a particularly courageous thing to do. As Cervantes lets Don Quixote say about artillery:

> Happy the blest ages that knew not the dread fury of those devilish engines of artillery, whose inventor I am persuaded is in hell receiving the reward of his diabolical invention, by which he made it easy for a base and cowardly arm to take the life of a gallant gentleman (Cervantes 1605; see also Cervantes quoted in Brooks 2012).

Indeed, there seems to be something cowardly and unfair about remote killing. The problem with regard to fairness in the case of drones is not only or not so much the unequal power of the parties on the 'attack' side (e.g. missile vs. gun), but the unequal vulnerability on the 'defence' side. The first party does not commit his life to the fight, does not risk his life; nothing is at stake for the drone fighter—at least not in terms of human lives (the vehicle is still vulnerable, of course, and its loss is regarded by the military as substantial). This asymmetry may be regarded as unfair, and in terms of virtue and vice the drone fighter could be called 'cowardly'. On the other hand, he and those who order him to kill also carry a huge responsibility, somewhat comparable to an invulnerable, all-powerful, and all-knowing god who selects the weeds and removes them[3]—here by, literally, descending from heaven to earth and strike the poor earthlings. Who can carry *that* kind of responsibility?

However, this picture of the practice as necessarily implying a huge moral distance as suggested by Cervantes (and by Sharkey) is not entirely correct and fair. Drone fighting is rather different from artillery fighting and certainly different from discharging 'some random bullet', as Don Quixote describes the artillery of his day. Let me first clarify the role of information technology in drone fighting in order to further explain what could be morally problematic about drone fighting, and then nuance and revise the thesis about drones and moral distance.

From human being to target: the role of information technology

For my question what kind of knowledge is generated in this practice, it is important to emphasize that this 'ultimate distance weapon system' (Sharkey 2012, p. 112), which 'allows warriors to do their killing from the comfort of an armchair in their home country—even thousands of miles

[3] The agricultural metaphor I use here also turns up in the name of a US drone called 'Reaper': the name means 'harvester' and refers to the figure of the Grim Reaper: death personified as a man with a scythe: an agricultural hand tool for removing or harvesting plants.

away from the action.' (Ibid., p. 125), *is made possible by a particular kind of technology*: contemporary information and communication technology, that is, electronic technologies. The knowledge drone pilots and those who command them have of the enemy, is gained through interactions with screens and other instruments in the drone 'cockpit'. And those instruments communicate with satellites and technologies in the drone. The kind of knowledge of the opponent that is constructed in and by what STS scholars would call a 'network' of people and things (see for example Latour's work, e.g. Latour 2005) seems to be such that it makes possible and even facilitates killing. Just as STS shows how scientific knowledge is constructed in laboratories by means of a network of humans and things (Latour calls these actors and 'actants'), we can show how in drone practices knowledge of the opponent is constructed in a social-technological context. Although a full philosophical and anthropological analysis would require more work (including ethnographical studies), let me offer the following preliminary account based on experiences of drone pilots as reported in the media (*Foreign Policy*, *The New York Times*, *The Guardian*, *Reuters*).

First, drone crews are not only themselves a team of people (pilot, sensor operators, surveillance analysts, maintenance crew) which has its own social dynamics, but they are also embedded in a larger network of people and a political context, including senior officers, intelligence analysts, military lawyers, political actors, etc., who make possible that a particular person appears as a target to the fighter (e.g. make a particular person appear on a kill list, a death list) and put constraints on who counts as a target (e.g. the lawyer may advice not to kill that particular person, the head of state may enter or remove someone from the death list or even command a particular operation and killing). This distribution of epistemic action is a problem if we consider the relation between the epistemic condition and the control condition for ascribing moral responsibility: who is responsible for this epistemic operation, for the knowledge that X is a target? I will not further discuss this problem here, but it is one that deserves attention in current research about drones and moral responsibility.

Second, the role of information *technology* is vital in constructing this knowledge. If the other (dis)appears as 'data', as 'information', as 'a dot on a screen', as an entity within a *computer game*, then it is easier to push the button. At such a distance—physical distance and additional epistemic distance created by the specific technologies—it appears that one kills the 'enemy', perhaps, but not human beings who are 'like us' (in the experience of the fighter: like *me*). In this kind of fighting, the other does not have a face. The screen literally screens off the other as an other that is not *totally other*. The other appears as an absolute stranger or even as an object. The screening technologies prevent empathic bridging. The victim's *informationalisation* precedes and makes possible his extermination. Before he is physically killed, he is first morally-epistemically disarmed. Epistemologically speaking, he is already killed before the missile hits him. Being tagged as a target, he has become a node in a network of information, which reveals him as a something-to-be-killed. He does not appear as a human being but as a bit that can only have two values, and his value is now changed from I to 0. Game over for him, and more points for the fighter who killed him. Thus, the effect of the technology on the fighter is not only 'psychological' in the sense that it renders empathic responses difficult and thus takes away a barrier to killing, as Sharkey and Grossman suggest; the technology also changes the way the fighter perceives and deals with those he is ordered to kill. In this sense, the technology does not only 'make' or 'construct' someone as a target; it also makes and constructs the fighter as a *killer*.

This social-epistemic and techno-epistemic operation should not be understood in 'psychological' terms alone. The technology does not just switch on or off a particular 'faculty' (sympathy or empathy) or brain regions (those regions of the brain that are active when we sympathize); it also changes the way we think and act. Thus, I wish to add a Heideggerian hermeneutical point in addition to the empirical-psychological one already acknowledged in the literature. The empirical-psychological version of the thesis assumes that there is a human opponent which we perceive in a morally neutral, objective way and which then can or cannot receive our sympathy, depending on the distance created by the technology. The Heideggerian assumption I start from is that there is no neutral way of conceiving of the opponent, that the opponent *already* appears to us as a target because of the technology, as a standing-to-be-killed (in analogy with Heidegger's term 'standing-reserve', see Heidegger 1977). The technology and the distance it creates does not only produce a barrier between our empathic capacity and the opponent, it changes the very way we perceive that opponent. In this sense, the technology creates a different world for the fighter. This has moral consequences. Let me further develop (and then nuance) the Heideggerian argument.

The thesis about distance, technology and morality is not only supported by Levinas but is also in line with Heideggerian thinking in philosophy of technology. In particular, the work of Dreyfus and Borgmann suggests that electronic technologies are morally problematic because they do not promote engagement and commitment. For example, Dreyfus has shown that the internet can be interpreted as means to leave your body behind and become invulnerable, and that teletechnologies jeopardise real commitment (Dreyfus 2001). And Borgmann has argued that technological devices make goods available

without requiring much engagement and skill (Borgmann 1984). This point seems also applicable to electronic technologies: they make life *all too easy* in the sense that they do not ask us to directly and bodily engage with our material and physical environment. The distance de-skills us: we become dependent on the technology and we do no longer know how it works, what it does, and indeed what we are doing. Moreover, according to Borgmann modern technologies also threaten the social, communal life: when the fireplace is replaced by the screen, we become removed from one another. The moral distance between us and the world, and between us and others, increases.

Applied to the case of electronic weapon technology, this analysis of modern and contemporary information technology would presumably imply that the fighters who watch the screens work in a way that does not create a kind of knowledge that is grounded in lived bodily experience, in handling things on the ground, in skilfully engaging with what happens on the battlefield and with others, and that therefore we have a *moral* problem here since, because of the new technological practice, the fighter cannot see the face of the other and becomes both experientially and morally disengaged from the world and detached from others. This renders what we could call 'screenfighting' morally problematic. It seems that the killing is easier since the practice *appears* to the pilots as a videogame: promoting an entirely detached view of the battlefield, it suggests that you can kill as much as you want; your action does not have real moral consequences. The 'easier' the technology, the more moral and social distance it creates. But is this an adequate analysis of the actual practice of drone fighting?

Hacking distancing technologies, or re-humanizing the enemy: imagining faces, bodies, and narratives in screenfighting

The thesis about drone fighting and moral distance must be nuanced and revised in at least two ways.

First, even if drone fighting had the effect of creating (more) moral distance, it does not exclude ethical reflection based on values and concerns that live in the society of which the military is always part. By focusing only on the face-to-face relation between me and the other, that is, the I-you relation (if I may borrow Buber's terms here), Levinasian ethics neglects the wider social context of the practice and excludes moral concerns that arise outside that relation, such as those that are produced in ethical deliberation about war and about a just society. Next to this analysis, we need to learn from broader theories about society and politics in order to better understand how a particular fighting practice can emerge and be sustained, and what kind of 'macro' ethical issues come up. And while we must remain critical of what moral principles and moral reasoning can do in real-life situations such as those on a battlefield, a morality that is only based on the personal face-to-face encounter is too narrow.

Explicit moral reflection can play a role at several levels. To begin with the fighters themselves: drone pilots and those who command them are not morally passive fighting machines, but can and *do* reflect on what they do as moral subjects. The same is true for politicians and the citizens they claim to represent, and for the designers of the technology. An analysis of the epistemic and moral impact of drone fighting may actually inform discussions about drone fighting within the military and contribute to pubic discussions and political deliberations about the ethical quality and justification of this kind of fighting.

Second, although it may be true that remote fighting implies a *less* embodied, social and engaged way of being-in-the-world (to use Heidegger's term), drone pilots are still embodied, social, meaning-giving beings, and also experience their fighting and killing in an embodied way. Let me explain this. The fighter who watches a screen is indeed removed from the 'real' battlefield and from the 'real' cockpit and 'real' airspace, but this does not imply that his way of knowing what goes on 'over there' amounts to a totally disembodied mode of knowing. The drone pilot may not only draw on his previous 'real' experience of flying an airplane and of bombing; his 'electronic' way of fighting is *also* one that requires 'bodily' involvement and involves 'bodily' experience. As he handles the stick and watches the screen, he does not completely "leave his body behind", as a Dreyfusian might argue. This is so for at least two reasons. One is a principled one and has to do with our kind of existence. As a human being, the operator can only know *through* his body and *through* his engagement with the technologies and—via the technologies—with the battlefield and the people on that battlefield. Mediation by ICTs does not amount to totally disembodied perception and knowledge. Even if our experience and knowledge is mediated in such a way that we experience *more* distance and are often *less* aware of our body, we always remain human beings and cannot fully escape an embodied mode of knowing. The more practical, empirical reason—which is related to the principled one since it presupposes embodied existence—is that interviews with drone operators suggest that pilots *do* have an embodied killing experience. Colonel D. Scott Brenton, who remotely flies a Reaper drone, is reported to acknowledge 'the peculiar new disconnect of fighting a telewar with a joystick and a throttle from his padded seat in American suburbia' but the journalist also reports that when he fires a missile in order to kill someone 'the hair on the back of his neck stands up' and that when he leaves 'a dark room of video screens',

'his adrenaline [is] still surging after squeezing the trigger' (Bumiller 2012). This is because drone warfare is *not* a 'sanitized video game' (Bumiller 2012). I will further explain below why.

Furthermore, as social beings the members of the drone crew are (still) part of a social environment and network at the airbase and elsewhere (e.g. family and friends). They may not literally see people and talk to people while flying the plane, but their cognitive and moral way of dealing with the world and with others is deeply shaped by the forms of sociality of which they are part and 'in' which they live. When they enter the airbase, they do not completely leave behind 'home'. And the military and the practice of drone fighting have their own forms of sociality. Thus, although one cannot deny the physical, social, and moral distancing effects of the technological practice, as embodied and social beings, drone pilots are likely to experience some empathetic bridging when they view their targets and therefore do not *that* easily overcome their inhibitions on killing. Their screens then work as moral mirrors: they see others who, like them, have family and friends, have bodies, are vulnerable too.

Moreover, this is likely to happen when and since the *technology* changes in such a way that the screenfighters get 'closer' to those they are supposed to monitor and perhaps kill. They can now zoom in on particular people and see what they are doing. This epistemic situation is still different from actually being on or near to that battlefield or being in that city, for sure, but it is a qualitatively different epistemic situation from World War II bombing: drone pilots do not only see a 'city' and 'smoke'; increasingly they also see *people*, what they do, and what happens to them when they are bombed, wounded, killed. To quote Colonel Brenton:

> I see mothers with children, I see fathers with children, I see fathers with mothers, I see kids playing soccer (Brenton quoted in Bumiller 2012)

This does *not* make it easier to kill, since one sees the people, their lives, and the effect of the bombing on them and their families. This is due to technology: 'the drones have powerful cameras that bring war straight into the pilot's face' (Bumiller 2012). In contrast to the Hiroshima bomber, the pilot now *knows what he is doing*. It turns out that the new 'distancing' technologies, which always also were 'bridging' technologies, are now creating a kind of epistemic bridge that somewhat mitigates the distancing effects that were morally problematic. The epistemic bridge then becomes a moral bridge, one that lets empathy cross to the *other* side, so to speak (albeit in one direction only). Of course there is still a significant qualitative epistemic and moral difference between a face-screen-face relation and a 'real' face-to-face relation. But at least the new technologies create the possibility for the screenfighters to bridge the moral distance between them and their 'targets' by imagining the lives of those they are supposed to kill.

Let me further develop this argument. There is a real possibility that empathic bridging happens since surveillance of (potential) targets takes up much of the time of the 'crews' in the control room. The actual killing is only a small part of what they do; usually they watch (potential) targets. In addition, it would be wrong to understand the epistemic relation between drone crews and their opponents as purely 'technical' or as mere consisting of (passively) 'watching' screens. People do not perceive the world in a passive and 'neutral' way. What they see on the ground is never entirely 'objective'. Perception is active; there is always interpretation: the interpretation communicated to them by their commanders, but also *personal* interpretation. The military practice leaves room for, and makes possible, active interpretation, in particular the construction of *narrative*. People make up stories about the people they monitor. Time renders this possible. As said, drone crews have time for that; they spend a lot of time on keeping an eye on particular people.

> Drones can engage in "persistent surveillance". That means they don't just swoop in, fire missiles and swoop out; they may spend hours, days, or even months monitoring a particular target. [Drones are] equipped with imaging technologies that enable operators even thousands of miles away to see details as fine as individual faces […]. (Brooks 2012)

How easy is it to kill people you came to *know* in this way, if you have seen their *face*? Did not that 'target' become more of a *person*? Did not the appearance of the opponent and interpretation of his status shift? Once the drone operator gains 'a certain intimacy' (Bumiller 2012) with the lives of the people on the ground (this is what pilots operating in Afghanistan reported), he sees that the people he is supposed to kill are similar to himself. They also have families, they also 'wake up in the morning, do their work, go to sleep at night' (an Air Force major quoted in Bumiller 2012). And if drone crews see the suffering of persons they inflict, their fighting can no longer entirely be compared to a video game; it is not even the same as firing a missile from an airplane in which you are present. Lieutentant Colonel Mike Weaver, a veteran F15 fighter pilot says: 'I've flown manned aircraft and believe me this, in terms of combat, is more up close and personal.' (Weaver quoted in Caroll 2012). Drone operators explicitly dismiss the suggestion that they are playing a video game (Bumiller 2012), and it seems they do so for good reasons. A CIA drone operator told a journalist:

> I dropped bombs, hit my target load, but had no idea who I hit. [With drones], I can look at their faces… see these guys playing with their kids and wives… After the strike, I see the bodies being carried out of the house. I see the women weeping and in positions of mourning. That's not PlayStation; that's real. (drone operator quoted in Brooks 2012)

For the drone operator, the 'reality' of the situation is constructed in terms of the suffering and death on the ground and the relation between his actions and that suffering and death. He knows it is real because he *sees* what happens to the people and thus knows that *his* actions make a difference between life and death. Or in the words of a pilot who used to fly missions from an air force base outside Las Vegas: 'There's no video game in the world that makes the difference between life and death (pilot Chad quoted in Caroll 2012). This puts a heavy load of moral responsibility on the shoulders of these people and those who order them to kill. Again: it does *not* render killing easy, but rather the very opposite.

Moreover, how easy is it, once you killed the person you got to know to some degree, to live with what you have done *afterwards*? Even if at the time of killing there are no moral feelings and certainly no moral reflections, such feelings and reflections may visit the killer when he is back home. Pilots may recall images of the people they killed. They may think again of the person who first played with his children and was then killed. They may recall' 'images of a child killed in error' (Bumiller 2012). They may *reflect* on their actions, on themselves, and on their own lives. Lieutenant Colonel Kent McDonald, who was involved in an Air Force study of stress risk for drone pilots, remarks:

> when they have to kill someone, and when they're involved with missions when they're observing people over long periods of time, and then they either kill them or see them killed, it does cause them to rethink aspects of their life and it can be bothersome. (McDonald quoted in Stewart 2011)

Thus, in the experience of the drone operator there is a process of re-personalisation next to a process of de-personalisation. Faces disappear (because of the distance rendered possible by the teletechnology) and re-appear (because of the camera technology). The person on the ground appears as a target but also (at the same time) as a human being with a life, a family, and so on, like the drone operator. The pilot who kills is also confronted with the consequences of his deed: he sees the victim's suffering or death, he also sees and knows the social context of the victim, the particular people (who were) involved in that particular life. This makes it possible that the face of the other calls the pilot to exercise his moral responsibility and that the pilot puts himself in the shoes of the other—at the time of the operation or later.

We can conclude that the new technologies create and maintain distance, but at the same time also make possible an empathic response. The moral mirroring that goes on in these situations or afterwards brings back moral responsibility (it contributes to meeting the second, epistemic Aristotelian condition) and makes it less likely that killing becomes as 'easy' as the moral distance thesis suggests, although it does not prevent killing.

Finally, if and in so far as this kind of bridging is not seen as an undesirable 'by-product' of the practice, indeed as a 'problem' that needs to be solved (say a kind of moral "collateral damage"), but rather as a process that can help to *avoid* killing, it may amount to (making possible) a kind of 'ethical hacking'[4] of the (otherwise) distancing technologies and of the drone fighting practice: the surveillance technology that is meant for fighting and for killing then becomes an *anti*-killing technology; it thus subverts the very purpose of the technology. *Bringing back the faces* can then be regarded as one way of trying to contribute to peace—or at least one way of trying to find a way of fighting that involves less killing and suffering.

Conclusion

In this paper I have argued that remote fighting by means of drones has epistemic implications that are highly morally significant. Inspired by philosophers from the phenomenological tradition and drawing on psychological work on killing, I have first argued that the information technologies involved create not only physical distance but also an epistemic gap between the fighter and his (potential) targets—more generally, the people on the battlefield, on the 'ground'. This has moral implications: fighters are less likely to engage in empathic bridging and find it easier to kill. The particular technology does not 'cause' people to kill, of course, but if the fighting practice is mediated by the teletechnologies that render possible the drone practice, this frames the way the fighters perceive their opponents and hence influences the way they act towards them, the way they fight. It seems that drone fighting-as-screen-fighting puts up a physical, epistemic, and moral screen between the fighter and his opponent. This process is

[4] I use the term 'ethical hacking' or 'moral hacking' not as synonyms of so-called white (hat) hacking, although such hacking might play a role in it. Rather, I refer to the production or happening of consequences of a technology not intended by the designers or mainstream users of the technology that subvert the purpose of the technology in a way that has morally good consequences. I write "production or happening" since I wish to leave open the question which role human agency plays in this process.

illustrative of a more general tendency, which I hope to further explore in a larger research project: teletechnologies create not only physical but also epistemic and moral distance.

However, inspired by STS and STS-influenced philosophy of technology and based on reports in the media about what we may call the *moral stress* of drone pilots, I have not rested content with my initial thesis and indeed with the phenomenology of fighting sketched in the beginning of this paper. Taking a closer look at the practice, I have turned to what drone crews actually do in their cockpits and control rooms, and this has enabled me to nuance and revise the main thesis about drone fighting in at least two ways.

First, I have emphasized that drone pilots and others involved in the practice reflect on their own work, and I have suggested that there are other moral issues and considerations to be taken into account if we want a more comprehensive ethics of drone fighting. The 'micro' analysis of the relation between information technologies, distance, and morality is not meant to *replace* broader, 'macro' social and political theory or explicit moral deliberations by all stakeholders; on the contrary, such theories of society and such deliberations are much needed. The challenge is then to connect and integrate these different types of analysis and interpretation.

Second, I have shown that the moral-epistemic distancing effects of the teletechnologies are somewhat mitigated by surveillance technologies used by the drone crews, which, although they are at the same time teletechnologies, also make it possible that people re-personalize and 're-face' their opponents by monitoring what they do, by constructing narratives, by imagining their lives. Surveillance technologies create the possibility of empathic bridging. In so far as they bring back a kind of knowledge of the opponent that confirms rather than denies his humanity, personality, embodiment, and vulnerability, recent drone-fighting technologies make it *less*, not more easy to kill. This can be regarded as a kind of 'mutation' or non-intended 'hacking' of the practice, twisting its very purpose (or so it seems). This is a problem for those who order the pilots to kill (military commanders but also some politicians) and for those who think that fighting should be all about killing. For others it is a hope-giving observation that shows the 'human' side of a practice often described in terms of 'killing machines' or 'killer robots': as long as there are human pilots and reconnaissance people in the loop, it is not a matter of mindless action and mindless killing; there is killing, but there is also interpretation, empathy, narration. People involved in the practice also 're-think aspects of their life': they are active hermeneutical and reflective agents.

It must be granted, however, that this empathic bridging does not seem to prevent drone operators from killing. To the extent that this is the case, the thesis concerning drone fighting and moral distance still holds. It seems that the bridging going on in this kind of remote fighting does not match the strength and intensity of the bridging that happens in close fighting; there is still a quantitative difference (physical distance) and qualitative difference (moral distance) between the two situations. Although close fighting can also result in killing, of course, it remains plausible that there are *more* psychological, epistemological, and hence moral barriers to killing when one is physically close to the body, the face, and the eyes of one's opponent, when one fights without (much) mediation of weapons or information technology, when one feels what one does to the other as much as one feels what the other does to oneself, when indeed empathic bridging is easier since the mirror is not made of screens but of flesh, when there is a *different* kind of reality—that is, a different kind of reality experience, of the kind that makes it *less* easy to kill.

Nevertheless, a closer look at the practice of drone fighting has given us more insight into the moral geography of (drone)fighting, which turned out to be less straightforward, more complex and richer than expected. The more nuanced discussion of the issue offered in this paper challenges us to further reflect on how fighting—if it must be done at all and if it can be justified at all—can be done in a more ethical, more responsible way, and what kind of technologies we need to make this possible. The discussion presented here is only preliminary with regard to this purpose. More philosophical reflection is needed, but such reflection needs to be well-connected to empirical studies. For instance, there are limitations to using media reports as a source; in order to better understand drone fighting practices and the psychological experience of drone operators more empirical work and more engagement with ongoing empirical work is needed, including studies of the relation between ICT and (drone) fighting experience. Further research, for example by means of more collaboration between philosophers, military psychologists, STS scholars, and drone designers could give us a more detailed picture of the current practice that can inform and guide designers and users of these military technologies, as well as those who are supposed to exercise democratic control over them.

We cannot predict, let alone fully *design* the technological and military future. There is no blueprint for a perfect world here, and we must acknowledge that there is no fighting without suffering or without the risk of killing (or getting killed). But good and more detailed philosophical and empirical analysis of what is happening now can help us to imaginatively and practically explore better

ways of doing things and stretch the borders of our moral community.

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