# Ethics, Drones, and Killer Robots

Christopher Coker

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## Abstract and Keywords

The debate about “killer robots” is rarely out of the news. Autonomous Weapons Systems may soon replace drones. Drone strikes, however, are also likely to increase in number. For the International Relations community the main debate is an ethical one: is the direction in which we are taking war likely to increase or decrease our moral competence to wage it? This chapter argues that we are not best placed to ask these questions, because we have an incomplete understanding of the extent to which our humanity is changing and what it means to be human. The latest contribution towards self-understanding made by Actor Network Theory (ANT), machine ethics, and socio-biology suggest we need to urgently reframe the questions we are asking.

Keywords: drones, robots, autonomous. just war, actor network theory, emergence

IT was the oldest IR “theorist” of all, Thucydides who called war “*to anthropon*”—the human thing. It is what we humans do, and we do it with a good deal more inventiveness that any other species. Thucydides wrote his book because he wanted his readers to care about war’s extraordinary moral complexity: what happens when social intelligence breaks down and war degenerates into the senseless warfare from which it had emerged only a few thousand years earlier. He wanted to explain how armies can break down when some instincts get the better of others, when soldiers cease to “network” effectively.

War is still at the heart of International Relations Theory (IRT) just as what Michael Howard calls “the Thucydidean coordinates”—interest, fear, and honour—are still at the heart of war. But our understanding of war needs rebooting, as too does our understanding of “humanity”—not only the name we ascribe to a species but also the qualities we deem it to embody, such as the capacity to care about the fate of others. Unless we keep up with these changes, International Political Theory runs the risk of no longer being central to our everyday empirical concerns, the real-world problems which this volume of essays sets out to engage. My contention is that the concept of humanity that most IR theorists take for granted is deeply flawed; that theorists need to take on board the latest re-

search in fields such as neuroscience, socio-biology, and even robotics. The best way for theory and reality to serve each other as they should is to reflect more deeply on ontological questions such as what it means to be human, and how conceptions of our humanity are intimately bound up with our use of technology.

What Thucydides told us is that war changes in character over time. But I suspect he would have been very surprised at the extent of recent changes. “Men make a city, not walls or ships empty of men,” he wrote (*Peloponnesian Wars*, 7.17.7). But of course we are planning to take this road. The ramparts of our own cities are now partly “virtual” and vulnerable to cyber attack. Our skies are already full of unmanned aerial vehicles or drones. Even concepts of sacrifice and altruism are changing fast. “I hope (p. 248) that many more computer chips will lay down their lives for their country,” remarked an American general after a drone was brought down over Bosnia in the 1990s. There may come a point, writes Thomas Adams, when we may regard tactical warfare as the business of machines, and not appropriate to humans at all, and direct human participation on the ground may become rare (Adams 2001: 9). All this is bound to reshape our understanding of our own agency and/or autonomy. No one is suggesting, by the way, that Autonomous Weapons Systems will take over any time soon, or that humans will be out of the loop altogether, but we will be coexisting with machines more and more in the future. And the greatest change of all may be ethical. “I will stand my Artificial Intelligence over your humanity any day of the week, and tell you that my AI will [ . . . ] create fewer ethical lapses than a human being,” remarked John Arquilla, the executive director of the Information Operations Center at the Naval Post-Graduate School (Markoff 2010).

For IR theorists these changes represent an enormous challenge. The best way to tackle them head on is probably the tradition of American pragmatism. What the pragmatists would argue is that at this preliminary level of development it is probably not only premature but unhelpful to come up, as do the critics of “killer robots,” with prescriptions (especially against their use); it is more important at this juncture to ask the right questions. Theory demands no less.

# Revisiting Just War Theory

Let me take Just War Theory (JWT) which is now the primary default position when going to war in part because of its pragmatism: it is flexible enough to adjust to changes in the character of war itself. It consists of a historically evolved set of normative principles for determining when resort to military force is just (*jus ad bellum*) and how war can be justly conducted (*jus in bello*) (see Chapters 16 and 17). The most important principle of the former is that war must have a just cause, and must be last resort, and must be waged with at least a reasonable prospect of success. The essential principle of the latter is that of discrimination, or non-combat immunity, which requires that we are able to distinguish between enemy combatants and civilians, and to ensure that due care is taken to minimize civilian deaths.

Since drone strikes first became commonplace, there has been a consistent claim that they violate the principal precepts of JWT.

*Jus ad bellum*: Are drone strikes, to begin with, acts of war? Is the use of drones an act of self-defence? And do drone strikes compromise the sovereignty of states such as Yemen or Pakistan?

*Jus in bello*: Are drone strikes as accurate as the military claim? Civilian casualties are clouded in secrecy; most of the casualty lists are drawn up by civilian groups and think tanks, and they vary enormously. The former US Defense Secretary Leon (p. 249) Panetta claimed they were "the most precise weapons in the history of warfare" (Chamayou 2015: 140). If so, is the selection of targets as precise as claimed? Is that the same as "moral accuracy"?

*Jus ante bellum*: Harry van der Linden has recently added a new category of just war thinking that requires the military itself to be part of the equation. It involves issues such as "moral deskilling" (Zygmunt Bauman's term for what happens when pilots are dissociated from what they are doing). Are they in danger of "moral injury"? Does remote control translate into moral distance, and does that translate in turn into moral indifference (Bauman 2012: 16)?

These questions also revolve around an issue central to the *jus in bello*: that killing is consistent with human dignity. Is there something deeply dishonourable about killing people who cannot fight back? Is targeting a militant similar to killing a soldier who is asleep? What is new in war, adds van der Linden, is watching a soldier asleep for some time and experiencing his humanity rather than his hostile status, and then deciding to pull the trigger. "Isn't to go after humanity instead of the threat an affront to humanity itself?" (van der Linden 2015: 189).

All these questions are increasingly debated. What is missing from the debate is an understanding of the fundamental change in our relationship with the machines we build.

# Human–Machine Interface

There are three different schools of thought about what is happening. The first, put forward by writers such as Richard Lewontin, is that our genetic potential is unresolved naturally. The human body is full of possibilities that from the very first have required technology and tools to become manifest and concrete (Lewontin 1982: 169). Timothy Taylor insists that basic biological needs seem to have arisen in tandem with our emergent technology: "The intelligence that makes us inventive is enabled by inventions." The emergence of the first tools produced an expansion of the mind half a million years later. "The ability to *internalise* our own creations by abstracting them and converting 'out there' tools into a mental mechanism is what allows the entire scientific project" (Taylor 2012: 150–1).

Each of us, in other words, is bound bodily to the tools that we use, in neurological ways we are only just discovering (Moreno 2006: 57). One example is the way in which drone pilots are already coping with cognitive overload—a term that describes a situation when the amount of information that needs to be processed simply exceeds the mind's capacity to store or process the information received. In such a situation we either instantly forget the information at hand (which makes it impossible to store or retrieve it later), or we are unable to see whether it contradicts or confirms information we have already stored away. And because we need our memory to concentrate, (p. 250) we always have to remember what we are meant to be concentrating on. Our attention tends to wander all the time. Indeed, many drone pilots are already suffering from attention problems and low performance as a result of the long hours they put in, sometimes eight hours at a stretch each day. Attention deficit is not yet a "disorder," but is certainly a challenge. It is one that neuroscientists have been working on for some time. The upshot has been to make pilots more "mindful" of collateral damage by getting them to focus on different things, in effect rewiring the function of their attention system (*International Herald Tribune* 2011). Monitoring their brain rhythms, heart rate, and eye movements allows supervisors to "scan" their attentiveness and so ensure that they are focusing on the job. A pilot can be "shut off" if he is getting stressed out, and control transferred to others. Does this make the pilot herself an automaton? Or is it just one of the ways in which, as those who write about machine ethics tell us, machines can help us to act more ethically?

A second way of understanding the interface between machines and human beings is to consider the way in which we have *co-evolved* from the beginning. For Bruno Latour, the technical is the key to our own cultural evolution. For him history offers a "master narrative" in which human beings are seen not only as the product of social ties but also of their relations with non-human tools/technology. From the first use of social tools that we call Machiavellian intelligence (our basic tool kit) we invented material tools that made possible social complexity (the division of labour); we went on to invent intellectual tools (writing/counting) that made it possible to organize human society into a mega-machine (civilization) via chains of command and deliberate planning, to assemblies of machines in the industrial era ruled by laws that had a sort of "social life." Sociology, insists Latour, should be about the science of associations and not the science of the social. It would follow that our social world is not an objective reality with fixed boundaries, but an open space in which boundaries are being pushed ever further. The social, in short, is always being "reassembled," not merely "redefined" (Latour 1999).

This is an area of research that has hardly touched IR theory. Both Human Machine Interaction (HMI) and Actor Network Theory (ANT)—the former being the academic study of the interaction between humans and computers, the latter the way in which machines form part of our social networks—largely remain off-field. ANT theorists reject the idea that either machines or human beings are the dominant actor; instead, they insist that both are inextricably interlinked in each other's function and fate (Law 1992: 381–2). It is a radical theory because it suggests that non-animate machines are not quite the inanimate objects that we like to suppose.

The third and most popular way of understanding what is happening to our humanity is that we are about to devolve more and more responsibility for our actions to robots. From supervised or managed autonomy, we will progress to complete autonomy. Will the machines, in other words, eventually divest us of our responsibility and uproot us in the process from the centre of things? Perhaps one day the machines will no longer need the scripts we write for them. Science fiction tells us what might happen next. Our best hope is that will have coded into robots some form of human values so that they will still (p. 251) make decisions in our interests. If we don't, we may find ourselves so wired in that they could probably take over without a shot being fired, and not a Terminator in sight.

Given such a radical change in our understanding of what the "human" is, it may be time to redefine what we understand by terms such as "human control," "human responsibility," and "human dignity," some of the concepts that are to be found at the heart of JWT itself.

# Human Control

The phrase "Meaningful Human Control" (MHC) has been taken up by civil society and some states as a useful framing concept for discussing autonomy in weapons systems. The International Committee for the Red Cross and the Campaign to Stop Killer Robots point to the problems of relying on the concept once war goes autonomous (Article 36, 2013). Human control is in itself a contested concept, however, and its loss has been a permanent feature of history. We find it in revenge attacks for high friendly losses; in the dehumanization of the enemy; in the deployment of inexperienced or poorly trained troops; in the issuing of unclear orders; in the youth or immaturity of soldiers in the field; even, regrettably, in pleasure in killing. To quote Ronald Arkin, "simply being human is the weakest point in the kill chain—our biology works against us in complying with IHL" (Arkin 2014: 4). In fact, adds Arkin, Autonomous Weapons Systems are likely to outperform humans with respect to adherence to IHL (international humanitarian law) in situations where *bounded* (i.e. situation-specific) action applies (see Wallach and Allen 2010). For it is the *situation* that usually encourages immoral actions. Robots, by comparison, would act consistently because they are not situationists. They would not shoot first and ask questions later because they would not have to wrestle with the fight-or-flight dynamic hard-wired into the rest of us. Robot sensors would allow a machine to "see" more of a battlespace than a human ever could aspire to. And ongoing technological advances in electro-optics, synthetic aperture, acoustics, and seismic sensing will make them more resilient still: giving them broader oversight (and possibly even greater insight) into what is actually happening on the ground. Unmanned systems would not suffer from any of the human prejudices that predispose us to see our enemies as "towel heads" or "gooks." They would not be prone to another psychological problem, that of "scenario fulfilment"—the way in which cognitive dissonance and confirmation bias reinforce pre-existing belief patterns. They will be able to process information far faster than humans can; indeed,

given the increasing speed and tempo of war, humans are liable to information overload, with all its consequent permutations including premature cognitive closure.

The problem with all technophiles, of course, is that they tend to downplay the loss of *mechanical* control. A 2012 US Department of Defence directive identified a long list of possible causes of failure in autonomous weapons such as human–machine interaction failure; critical malfunction; communications degradation; software coding (p. 252) errors; enemy cyber hacking and jamming/spoofing/other counter-measures yet to come on stream. In their book *Moral Machines*, Wendell Wallach and Colin Allen argue that robotic intelligence need not be "super" or even particularly "smart" in order to be extremely dangerous. It needs only to have authority—autonomy if you will—to make important life or death decisions. The real danger may lie in outsourcing more and more key decisions to machines that are not nearly as intelligent as we are.

For the IR theorist the main charge against technophiliacs is that they tend to ignore the philosophical challenges. Would a robot that made the right judgement call in the relevant situation have *moral standing* (as opposed to moral agency)? And what would its moral standing be: consistency (Anderson 2009: 266)? If that is true, it would be a change of the first order, because for us, living ethically has never been about optimizing the good—it has been much more about the precept of right conduct, for example towards prisoners of war. It has involved cultivating virtues and refusing to perform actions we cannot reconcile with our conscience, or sense of self. Living ethically is rational, not logical: it involves balancing the claims of a variety of goods (winning/ acting correctly), and calculating how different values should be applied in circumstances where there is often no single right or wrong.

Surely, however, it is best not to exaggerate either the extent of human control of war or the extent to which we can replace it with mechanical means, but instead to recognize that we will probably always need each other. Machines are still dumb; computers cannot think for themselves; but we might be able to upgrade our moral range by employing technologies that are coming on stream quite soon. What we are giving ourselves, writes Ray Kurzweil, is a moral upgrade (*The Times*, 2015). It would be a quite different matter if, following my third understanding of human–machine interaction, we were one day to surrender all human agency, replacing the moral heuristics with which we are wired with the logical codes of artificial intelligence.

> The human organism evolved from a biochemical platform. The capacity to reason emerged from the emotional brain. In contrast, AI is currently being developed on a logical platform [ . . . ] this suggests some advantages that computers may have over human brains for responding to moral challenges.
>
> (Allen and Wallach 2010: 71)

But I don't think we will be introducing logic into war any time soon. And the reason why is that war is not logical (any more than is life).

At a conference in Pasadena on artificial intelligence in 2009, several speakers called for Asimov's famous Three Laws of Robotics to be immediately adopted (*Sunday Times*, 2009). What is interesting about Asimov's laws is that they are not very different from the everyday rules of thumb that we apply to moral questions. In the tale "Evidence" (1946), in which Asimov explored the ethical implications of his laws, he put these words into the mouth of a robot designer:

> If you stop to think of it, the Three Rules of Robotics are the essential guiding principles of a good many of the world's ethical systems. Of course, every human being (p. 253) is supposed to have the instinct of self-preservation. That's Rule 3 to a robot. Also every good human being with a social conscience and a sense of responsibility is supposed to defer to proper authority, to listen to his doctor, his boss, his government, his psychologist, his fellow man, to obey laws, to follow rules, to conform to custom—even when they interfere with his comfort and his safety. That's Rule 2 to a robot. Also, every good human being is supposed to love others as himself, protect his fellow man, and risk his life to save another.That's Rule 1 to a robot.
>
> To put it simply, to follow all the rules of robotics you may not be a robot, but simply a very good man.
>
> (Warrick 1982: 66)

On that reading, too, of course, you can also be a good soldier.

But the difference, of course, between a robot and a human being is that the laws governing the first cannot be broken, unlike the moral heuristics which we employ every day and which we constantly transgress. Asimov's three laws are not moral heuristics at all, of course. They are part of the engineering; they are intrinsic to its design; they are central to the positronic–brain circuitry of the robots themselves. It would never enter their mind to break the laws.

But could they ever *apply* them? Asimov spent the rest of his life debating that possibility. Life is inconsistent and contradiction central to it. In his later tales, as robots evolve their own intelligence, they find that exercising laws grounded in un-human logical structures of thought is almost impossible in a human-built world. By far the most intelligent exploration of this theme was by a computer scientist called Roger Clarke who published two articles in *Computer* magazine in 1993, a year before Asimov's death. Clarke set out a series of challenges that Asimov had to grapple with as his robots evolved in his own imagination, as they became more complex and sophisticated—in other words as they became more intelligent over time (Clarke 1993; 1994). Clarke found in the end that the laws simply could not be applied logically, and that this was due to no inherent fault of design in the algorithms but to the fact that moral life itself is not algorithmic.

# Responsibility

At the centre of JWT is the concept of responsibility. An example of what is at stake has been put most famously perhaps by Rob Sparrow:

> Imagine that an airborne AWS directed by a sophisticated Artificial Intelligence, deliberately bombs a column of enemy soldiers who have clearly indicated their desire to surrender. These soldiers have laid down their weapons and pose no immediate threat to friendly forces or non-combatants. Let us also stipulate that this bombing was not a mistake; there was no targeting error, no confusion in the machine's order, etc. The AWS had reasons for what it did [. . . but] they were not the sort to morally justify the action. Had a human being committed the act, they would (p. 254) immediately be charged with a war crime. Who should we try for a war crime in such a case?
>
> (Sparrow 2007: 66–7)

Who would we hold accountable: the programmer, the company that designed the machine, or the commander who dispatched it into battle? The question of responsibility (see Chapter 10) revolves around another theme in just war thinking: the least we owe our enemies is allowing their lives to be of sufficient worth that we accept responsibility for their death. And even if it is just a nice just-so story, we tell ourselves there is a good reason for telling it. You can only espouse JWT if you hold to the concept of ultimate responsibility, and you wouldn't be able to put a robot on trial for making the wrong judgement call, would you?

But the world is changing fast. Take what Andreas Matthias calls "the responsibility gap" which arises when a technological system is designed to adapt its behaviour to its environment (Matthias 2004: 175–83). His argument is that if "control" is a necessary condition of responsibility, how can you exercise it when you do not know how it is going to act in future? How can you hold a machine to account if you deliberately programme in genetic algorithms that imitate the principle of evolution through variation, genetic recombination, and selection (i.e. when the genetic programmes act themselves as the programmers)? Matthias has in mind adaptive systems that are already in use, such as elevators which are able to analyse human traffic patterns, typically using artificial neural networks and reinforcement-learning algorithms to minimize transportation and waiting time. If you allow machines to learn, how can you hold a designer responsible for any lethal decisions that they may take? This was the theme of an article which appeared in June 2012 in *The Economist* which was entitled "Morals and the Machine." "As robots become more autonomous, the notion of computer-controlled machines taking ethical decisions is moving out of the realm of science fiction and into the real world." Its authors urged us to take a leap into the dark; they assumed that we could no longer be fully "in control," or for that matter that we should even aspire to. Indeed, what was really radical about the piece was that instead of calling upon us to devise ethical rules in advance, it

asked the reader to take a leap of faith in the expectation that one day quite soon we would see the *emergence* of human/machine decision making systems.

“Emergence” is the buzzword of the day. Physicists, for example no longer talk of the basic stuff of life in terms of inert particles; instead they talk of fields and forces—words that describe their constant interaction rather than their nature. From a biologist’s point of view, living organisms are no longer thought of as composites put together out of separate software and hardware; instead they are seen as working together, capable of generating patterns spontaneously without any specific instructions. There is no plan, or blueprint. They emerge through self-organization (Goodwin 1994: 49). First-order emergence is defined as a property not programmed in. Second-order emergence is a system which uses its own emergent properties to evolve in ways that cannot always be anticipated by the programmer. And this is one of the first-order challenges for ethics in the future as emergent behaviour becomes as unpredictable as our own. We need to start (p. 255) thinking about it now. Scientists are actually doing so. I suggest the IR community needs to wake up.

# Human Dignity

Three decades and three full-scale wars separate the movie *Top Gun* (1987) from *Good Kill* (2015), and it shows. Where Tom Cruise duelled with enemy pilots in an F-14, the hero of *Good Kill* is a drone pilot operating 7,000 miles away, firing missiles at the behest of a CIA Agent in the field. Whereas Maverick in *Top Gun* spends his spare time playing volleyball and riding horses, Major Thomas Egan in *Good Kill* goes home and drinks vodka in the bathroom to forget the things he has done. It is a pretty accurate depiction of how we wage war today. It is also a far cry from the past, where pilots saw themselves as knights of the air (like the pilots in James Salter’s seminal Korean War novel, *The Hunters*). Today they are seen as risk-free joystick pushers who are liable to find themselves in breach of the additional Protocol 1 to the Geneva Conventions, the “Martens Clause,” that talks about not violating “the dictates of the public conscience” when engaged in killing another human being. Nowhere is the public conscience defined, though it almost undoubtedly exists; it could be said to be a general distaste for “disrespectful killings.”

Surely, however, the point is that for those in the firing line one missile is as bad as another, and the idea that the person pulling the trigger may lose sleep at night is the ultimate in First World self-referentiality. Yes, our first duty is ontological, to recognize that human responsibility matters because the idea of humanity matters and that it is only by relating to others that we remain moral beings at all. But there is nothing inside “humanity” in the abstract, no built-in human solidarity, no moral core, writes Richard Rorty, which provides any other absolute moral reference point. What is common to us all is our ability to feel pain—everything else is socialized into us by education (Rorty 1999). Is it any more “disrespectful” to be killed by a drone than by an Apache helicopter? In his account of his experience as an embedded journalist with an infantry unit in the Korengal valley in

Afghanistan, Sebastian Junger remarks that seeing a Taliban literally “disintegrated” by the machine gun of an Apache was the most disturbing sight he experienced in a highly disturbing campaign. In this case, the helicopter pilot came up close. With one 30mm round the Taliban fighter literally “exploded.” There was nothing “fair” about his killing, Junger adds, but in modern war, soldiers gravitate towards whatever works best at the least risk to themselves (Junger 2010: 140). We also might ask if it is any more “dehumanizing” to kill a person over the horizon. In what sense do you affirm the humanity of your victim in the first case, but not the second?

But unfairness inheres in a second objection to killing by drones or AWS: and that is the belief that such killings are in some way “unfair” (just as in 1909 the idea of dropping a bomb from a biplane was considered by many to be “unsporting”). Metaphors change with the times. The argument has been propounded most eloquently by Paul Kahn in (p. 256) his discussion of the “moral paradox of war.” On the one hand, we have an obligation to minimize our own casualties by placing soldiers out of harm’s way if we can, and to create thereby what he calls an “asymmetrical situation” in which we have a selective advantage (we could invoke the George Moore defence of the machine gun—we can kill the natives faster than they can kill us) (Midgley 2007 [1979]: 246). On the other hand, Kahn contends, beyond such a threshold such asymmetry undermines the licence to kill which must be granted in mutual self-defence. Without a *reciprocal* imposition of risk, he writes, there is no moral basis for injuring the morally innocent (cited in Statman 2014: 44).

It is an interesting argument, but not I think an ultimately compelling one. Historically, there is an explanation for our seeming aversion (for it is indeed apparently widely held) to being killed by a robot. There is a reason why the *Terminator* franchise does so well at the box office. The right to be killed only by a fellow human being may be the oldest and most basic of human rights that we still insist upon (long before human wrongs such as slavery were discovered). Barbara Ehrenreich speculates that what turned us into predators against each other was escaping from the fate of being prey. The transformation from prey to predator, she writes, is the central story in the early human narrative, as Darwin was amongst the first to suspect, and the transformation may have been more or less complete only as recently as 25,000 years ago. For thousands of years we were terrorized by the big game that today we have almost hunted to extinction. Finding ourselves hunted left us with another Darwinian algorithm: in the face of danger we had to cleave together, becoming a many-headed creature larger than our individual selves. We can observe this behaviour in the higher primates, still. Unlike them, however, we have learned to hunt and kill big game using weapons, and we have achieved the speed and lethality of a leopard or lion (Ehrenreich 2011: 83). Now, we are threatened by another non-human adversary: robots.

# Conclusion

What really is at issue was enunciated by the philosopher Alfred Whitehead, who saw the authors of Greek tragedy as the “Pilgrim Fathers” of the scientific imagination. The essence of life, he wrote, is not, as it was for the Greeks, unhappiness, but “the remorseless working of things”; the tragic—for us, but not them—arises from the unhappy relationship between knowledge and our unawareness of its consequences (Lawrence 1996: 146)

A pragmatist might argue that there is a good case for breaking with the Greeks who still in so many ways have a stranglehold on IR theory. The word “humanity” has two meanings, one ontological and the other axiological. The first refers to the essence of humanity, the other to norms of conduct. As we have seen, many of the norms of conduct are now being automated or programmed into machines in the hope of making (p. 257) us better moral agents. But when it comes to defining the essence of humanity, we are a long way behind the curve. We may have escaped some of the rigid distinctions the Greeks drew, such as that between men and women, but we still seem to be in thrall to the distinction they also encouraged us to draw between humans and the tools they use, even though they had no idea of the way in which we would eventually re-engineer ourselves through technology.

So let me give the last word to a Pragmatist, the late Richard Rorty.

> [T]he Greek description of our situation presupposes that humanity itself has an intrinsic nature—that there is something unchangeable called “the human” [ . . . ] Pragmatism sets aside this presupposition and urges that humanity is an open-ended notion, that the word “human” names a fuzzy but promising project rather than an essence.
>
> (Rorty 1999: 52)

## References

Adams, T. (2001). Future Warfare and the Decline of Human Decision-Making. *Parameters* 31(4): 57–71.

Allen, C., and W. Wallach (2010). *Moral Machines: Teaching Robots Right from Wrong* (New York: Oxford University Press).

Anderson, S. (2009). Asimov’s Three Laws of Robotics. In S. Schneider (ed.), *Science Fiction and Philosophy* (Oxford: Blackwell).

Arkin, R. (2014). Lethal Autonomous Systems and the Plight of the Non-combatant. *Ethics and Armed Forces* 1: 3–10.

Bauman, Z. (2012). *Liquid Surveillance* (Cambridge: Polity).

Bauman, Z. (2013). *Moral Blindness* (Cambridge: Polity).

Chamayou, G. (2015). *Drone Theory* (London: Penguin).

Clarke, R. (1993). Asimov's Laws of Robotics Part 1. *IEEE Computer* 26(12): 53–61.

Clarke, R. (1994). Asimov's Laws of Robotics Part 2. *IEEE Computer* 27(1): 57–66.

Ehrenreich, B. (2011). *Blood Rites* (London: Virago).

Goodwin, B. (1994). *How the Leopard Changed its Spots* (London: Phoenix).

Junger, S. (2010). *War* (London: HarperCollins).

Latour, B. (1999). *Pandora's Hope: Essays in the Reality of the Social Sciences* (Cambridge, Mass.: Harvard University Press).

Law, J. (1992). Notes on the Theory of the Actor-Network. *Systems Practice* 5(4): 379–93.

Lawrence, W. W. (1996). *Modern Science and Human Value* (New York: Oxford University Press).

Lewontin, R. (1982). Organism and Environment. In H. Plotkin (ed.), *Learning, Development and Culture: Essays in Evolutionary Epistemology* (New York: Wiley), 151–70.

Markoff, J. (2010). War Machines: Recruiting Robots for Combat. *New York Times*, 27 Nov. [Accessed 17 June 2013.] **http://www.nytimes.com/2010/11/28/science/28robot.html?_r=1andem=etal**

Matthias, A. (2004). The Responsibility Gap: Ascribing Responsibility for the Actions of Learning Automata. *Ethics and Information Technology* 6(3): 175–83.

Midgley, M. (2007 [1979]). *Beast and Man* (London: Routledge).

(p. 258) Moreno, J. (2006). *Mind Wars: Brain Science in the Military in the 21st Century* (New York: Bellevue).

Rorty, R. (1999). *Philosophy and Social Hope* (London: Penguin).

Sparrow, R. (2007). Killer Robots. *Journal of Applied Philosophy* 24(1): 62–77.

Statman, D. (2014). Drones, Robots and the Ethics of War. *Ethics and Armed Forces* 1: 41–5.

Taylor, T. (2012). Internet Thinking. In J. Brockman (ed.), *Is the Internet Changing the Way You Think?* (New York: Atlantic).

Thucydides (1994). *Peloponnesian Wars* (London: Penguin).

van der Linden, H. (2015). Drone Warfare and Just War Theory. In M. Cohn (ed.), *Drones and Targeted Killing* (Northampton, Mass.: Olive Branch Press), 169–94.

Warrick, P. (1982) *The Cyber Imagination* (Cambridge, Mass.: MIT Press).

**Christopher Coker**

Christopher Coker is Professor of International Relations in the Department of International Relations at the London School of Economics.