TATuP Zeitschrift für Technikfolgenabschätzung in Theorie und Praxis
Journal for Technology Assessment in Theory and Practice

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RESEARCH ARTICLE

Human dignity and lethal autonomous weapon systems: A Christian ethical positioning from a Catholic point of view

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Abstract • This article analyses the ethical debate over the use of lethal autonomous weapon systems (LAWS) by exploring, from a Catholic perspective, how Christian ethics can position itself in this discussion. Since humanity will not be able to avoid wars in the future, ideas of justified use of armed force (in self-defense), but also of appropriateness of defensive weapon systems, remain important issues. Based on the so-called 'protection rationale,' proponents hold that autonomous weapon systems (AWS) can shield one's own forces while reducing the damage inflicted upon the enemy. Opponents seek to ban AWS categorically, especially LAWS. The moral dilemmas and ethical dimensions involved make LAWS a genuine subject for technology assessment in terms of the technology's consequences for humanity, dignity, and coexistence.

Menschenwürde und tödliche autonome Waffensysteme:
Eine christlich-ethische Positionierung aus katholischer Sicht

Zusammenfassung • *Dieser Artikel analysiert die ethische Debatte um den Einsatz tödlicher autonomer Waffensysteme (LAWS), indem er aus einer katholischen Perspektive der Frage untersucht, wie sich eine christliche Ethik in dieser Diskussion positionieren kann. Da sich Kriege auch in Zukunft nicht vermeiden lassen werden, bleiben Vorstellungen über den gerechtfertigten Einsatz von Waffengewalt (zur Selbstverteidigung), aber auch über die Angemessenheit defensiver Waffensysteme wichtige Themen. Basierend auf der sogenannten ‚Schutzbegründung' vertreten die Befürworter die Auffassung, dass autonome Waffensysteme (AWS) die eigenen Streitkräfte schützen und gleichzeitig den Schaden beim Feind verringern können. Opponenten wollen AWS kategorisch verbieten, insbesondere LAWS. Die damit verbundenen moralischen Dilemmata und ethischen Dimensionen machen LAWS zu einem genuinen Gegenstand der Technikfolgenabschätzung im Hinblick auf die Folgen der Technik für Menschlichkeit, Würde und Zusammenleben.*

Keywords • *acceptability, meaningful human control, lethal autonomous weapon systems, human-machine relationship*

Ethical technology assessment

Questions surrounding the legitimate use of so-called lethal autonomous weapon systems (LAWS) are becoming increasingly topical due to new threat situations in Europe and must be the subject of in-depth ethical dialogue in light of numerous normative concerns. This article therefore explores a Christian position, not covered in this way until now, and compares it with some ethical arguments already discussed so far. For this the question of the justification of war (*jus ad bellum*) is less important than the question of the *'jus in bello'*: the ethical technology assessment on the use of LAWS for all those involved (users of the systems as well as affected combatants and non-combatants).

On the question of justified war, there is a wealth of discussion among Christians. From the Catholic vantage point, in this discussion it is possible to refer not only to the provisions of international law, which naturally must be observed, but also to the relevant doctrine of the so-called *'bellum iustum'*. According to this view, forcible defense (but never a war of aggression) is also ethically legitimate under strict conditions (Nass 2020, pp. 171–179). The Pontifical Council for Justice and Peace (2006, No. 2309) mentions these conditions: "the damage inflicted by the aggressor on the nation or community of nations must be lasting, grave, and certain; all other means of putting an end to it must have been shown to be impractical or ineffec-

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https://doi.org/10.14512/tatup.31.3.58
Recieved: Apr. 25, 2022; revised version accepted Sep. 26, 2022;
published online: Dec. 16, 2022 (peer review)

tive; there must be serious prospects of success; the use of arms must not produce evils and disorders graver than the evil to be eliminated". However, this doctrine is disputed among Christians, for example by the Anglican theologian N. Biggar (2013). In order not to adopt such divergent positions, this article is intended as an introductory Catholic perspective. When I speak in the following of profiling a Christian positioning, I am referring to the Catholic variant.

The article will focus on the *'jus in bello'*: Christian arguments on the question of the justified use of LAWS have not been profiled so far. This article aims to fill this gap with regard to the ethical consequences for the understanding of dignity, humanity and coexistence of all persons involved. Important to *'jus in bello'* is the distinction that combatants, as opposed to non-combatants, may be intentionally killed. Under the *Doctrine of Double Effect*, unintentional killings of the latter may also be legitimized. The ethical discussion here recognizes this distinction and now focuses on the question of LAWS as legitimate means, basing the thesis in that the "how" of killing affects human dignity, even beyond the question of who is killed. The Pontifical Council has expressly called for such a critical review of relevant weapon systems. Of course, certain lethal weapons, such as cluster bombs, chemical or biological weapons, are categorically banned. Should this also apply to the use of LAWS? To answer this question, it is first necessary to clarify what constitutes these systems and their use. This is followed by an overview of the ethical arguments put forward thus far. The article concludes by presenting a Christian position on the use of LAWS, thereby profiling it as a dialogue partner for the discussions surrounding this ethical technology assessment.

The nature and use of LAWS

The focus of the following discussion is not on a differentiation between supposedly good or evil technology, but on the normatively assessable consequences of their technical use for people, their decisions and their responsibility for the respective consequences. Here we see this discussion being assigned to the area of technology assessment. What is not discussed here is the use of autonomous weapon systems for defense against missiles ('Sense and React to Military Objects' – SARMO) for non-lethal strategic use under water or in terrain inaccessible to humans, etc. (Amoroso et al. 2018). The ethical evaluation of the use of such non-lethal systems is another topic.

So now to the question of what LAWS actually are. The concept of autonomy in the denomination allows many interpretations. In the deontological sense of a Kantian philosophy, autonomy means compliance with given duties that is freed from selfish interests. This interpretation suggests human or at least human-like reasoning processes. In the information technology sense, autonomy can be understood as independence from human intervention. As defined by the US Department of Defense, an autonomous weapon system (AWS) is "a weapon system that, once activated, can select and engage targets without further intervention by a human operator" (United States Department of Defense 2012, p. 13 cited in Koch 2019, p. 30). Such systems go far beyond what we are currently already seeing in the use of remotely piloted combat drones (Koch and Rinke 2018; Horowitz 2016). AWS are commonly understood as highly automated weapon systems that are independent of human decisions in terms of command and control (human out of the loop). This distinguishes them from non-autonomous or semi-autonomous systems, where humans have either full or partial command and control (human in/on the loop) (Franke 2016). LAWS thus belong to the realm of digital technology 4.0, which can control and correct itself without human influence. According to Noel Sharkey the degree of 'autonomy' can be distinguished in five different levels (L1 to L5). These levels represent a decreasing possibility of human intervention (Amoroso and Tamburrini 2020; Sharkey 2016). L1 to L4 denote semi-autonomous, L5 fully autonomous systems (human out of the loop):

- L1: A human engages with and selects targets and initiates any attack.
- L2: A program suggests alternative targets, and a human chooses which to attack.
- L3: A program selects targets, and a human must approve them before the attack.
- L4: A program selects and engages targets without any further confirmation, but a human can abort the attack.
- L5: A human merely programs the primary goal of the mission. The program then acts within this framework (box) without further human intervention. Boxing means the programmed definition of the subsequently autonomous weapon deployment of the LAWS.

When using the semi-autonomous systems from L1 to L4, in addition to the programmers, there are also soldiers as supervisors who can still intervene in an ongoing military operation. When

Highly automated weapon systems are independent of human decisions in terms of command and control (human out of the loop).

https://doi.org/10.14512/tatup.31.3.58

using the fully autonomous systems (L5), there is no supervision, only the programmer. I consider supervisors and programmers together as the immediate LAWS-using staff (LUS) in the following ethical discussions.

The following normative questions must now be answered as differentiations of the initial question: Should such weapon systems, considering their consequences for people, decision-making and responsibility, be categorically banned? If not, then: Which level of human supervision is ethically acceptable? (L1-L4). Can L5 (human out of the loop) also be justified from a Christian point of view? To answer these questions, some of the ethical arguments already discussed will now be presented before examining them from a Christian perspective.

The ethical debate on the deployment of LAWS: a survey

Some essential arguments for and against the use of LAWS will now be weighed. The so-called 'protection rationale' speaks in favor of the use of LAWS because the use of such systems spares human life in the ranks of one's own forces, which can now be replaced by fighting machines (Koch 2019, p. 22). But, of course, this does not spare the lives of the enemy. Strategic targets can be destroyed with pinpoint accuracy in the conduct of war, which could help reduce the overall scale of war-related destruction. At the same time, however, it is also possible to focus on additional targets such as these, which can quickly neutralize or even reverse the anticipated destructive impact (including the number of casualties) (Koch and Rinke 2018, p. 42). Nevertheless, it must be noted here that it is the inherent nature of war to strike one's opponent heavily enough to exact defeat. This is hardly achievable without some level of destruction.

The higher the degree of so-called 'autonomy', the more the LUS is spared from potentially traumatizing images of destruction and killing. This could also be seen as an advantage in favor of the use of LAWS. However, this method of sparing can reduce the LUS' awareness of the destructive consequences and thus lower the inhibition threshold for violence, with the danger of increasing cruelty and even mass destruction in warfare. This goes hand in hand with the expressed concern about an increasing anonymization of the act of killing and a reification of the casualties, as if the LUS is merely sitting in front of a computer game with virtual combatants (Koch 2019, p. 35). However, hand-to-hand combat on the battlefield, where combatants are directly confronted with the consequences of their own actions, has long been a thing of the past. Every torpedo or missile launched already carries an inherent risk of desensitization.

The increased risk of hacker attacks on LAWS cannot be dismissed and must therefore be taken very seriously (Koch 2019, p. 27). However, this also applies to other central defense systems, such as communications or radar systems. This argument calls for particular vigilance but is not sufficient to demand that such weapon systems be categorically banned.

Following deontological questions such as the consequences for humanity and responsibility, the use of LAWS means potential violations of human dignity. These potential violations of human dignity affect 1.) primarily the victims who lose their lives through the use of LAWS, but 2.) also the LUS:

1. As levels increase, but especially starting with a variant of L5, for example, the destruction of human life becomes a plaything of algorithms (Rosert and Sauer 2019, p. 373). People who are killed are no more than points in the crosshairs to be destroyed. This problem – as already shown – also exists with other systems. Now, however, lethal destruction is carried out by self-governing algorithms, whose actions can no longer be stopped. This degree of 'autonomy' places human life at the disposal of uncontrollable computational operations (Birnbacher 2016). The violation of human dignity (the killing of human beings) in dilemma situations made on the basis of a human 'ultima ratio' decision is now removed from human decision-making. However, violating inviolability can only be legitimized if the decision to do so itself consciously considers this inviolability and is aware of the evil involved (Heyns 2013, p. 17). But in the use of L5-LAWS now such reflection can no longer take place.
2. What's more, in this constellation programmers ultimately become slaves to the LAWS, because it is no longer possible to intervene in individual system operations (Amoroso and Tamburrini 2020, p. 188). The machine rules over the persons who programmed LAWS and who can no longer put a stop to the technology, e.g. in unforeseen situations that require reassessment. LAWS replace human agency with artificial agency in their lethal use (Leveringhaus 2016). Part of the dignity of free individuals is making decisions for which they take responsibility. But if precisely this freedom is taken away and they may only stand idly by and watch what the autonomous system does, they are its slaves. Contrary to Immanuel Kant's categorical imperative on human dignity, we now also see an instrumentalization of the system's programmers alongside the (already egregious) instrumentalization of its victims. And not by people, but by technical arrangement, which makes it even more serious. Here one might conclude that the use of such systems is intrinsically bad (an *intrinsece malum*), which would justify a categorical ban.

This demand is supported by the question of who takes responsibility in case of mistakes (which come at the cost of human lives, inflict excessive damage and could even constitute war crimes) (Koch 2019, p. 33). It cannot be the supervisor. He has no influence on the autonomous areas of the LAWS on L1 to L4. It can hardly be the system's manufacturer. Perhaps the programmer must certainly have reckoned with any associated mistakes or crimes. But, as we have just seen, these LAWS-programming persons are deprived of their freedom to intervene after the initial activation. It seems quite unreasonable to hold the programmer accountable for unforeseeable errors or sudden changes in

the combat situation that would have required initial boxing at a different level. Or should it then simply be the system itself that must be held accountable and bear the consequences – akin to some humanoid being (Matsuzaki and Lindemann 2016)? Following Sparrow (2007), it is impossible to find a satisfactory answer to the question of who should bear the responsibility. So, when no responsible human can be found for the war crimes of robots, with Sparrow this also speaks in favor of a categorical ban of LAWS. Leveringhaus (2016), unlike Sparrow, denies this responsibility gap and sees the programmer of L5 as responsible because, after all, he should be able to anticipate the corresponding consequences. In the end, however, he also calls for a ban on L5 based on this insight.

Furthermore, consequences of the use of LAWS for the nature of warfare are considered ethically questionable. International law, for instance, is easily violated when borders are breached, and human emotions such as compassion or humanitarian aid for wounded opponents could be reduced or eliminated altogether (Amoroso and Tamburrini 2020, p. 188). The same applies to the life-saving alternative of capturing opponents instead of killing them. Such consequences violate the so-called Martens Clause, which states that civilian and combatant lives in war are subject to respect for principles of conscience and humanity that a self-directed weapon system cannot fulfill (United Nations 2001, Preamble). Arkin (2008) counters by pointing out that negative human emotions (anger, hatred, etc.) are responsible for many war crimes that could have been prevented by using AWS. He proposes the integration of a moral algorithm (as an 'ethical governor'), which is integrated as a 'conscience' into the AWS. This governor should be programmed on the basis of experience through the participation of seasoned ethicists. It should contain elements of utilitarian and deontological ethics with the deliberative equilibrium of John Rawls as a pragmatic ethics mix of case-based reasoning, which does not consistently follow the rationale of one particular ethical logic (Arkin et al. 2009). This self-learning ethical algorithm should be continually advanced by feeding in proven decisions in concrete combat situations. The ethical governor is thus intended to provide quasi-evidence-based, ethically responsible control of the LAWS. Arkin (2015) suggests such an arrangement to make particularly humanitarian decisions based on ethical deliberation. So, in the end, with the programmed conscience, are LAWS (even on L5) the more humane killing machines? Then, of course, they would not only have to be permitted, but their use would have to be encouraged.

Based on some available ethical arguments, the main concerns surrounding the use of LAWS come into focus: Legitimizing the greatest possible autonomy forces a relativization of human dignity, leaves the question of legal and moral responsibility largely unanswered and accelerates a virtue-ethical desensitization that could have an effect not only in war but also quite fundamentally in the culture of human coexistence (brutalization). This suggests a ban. Besides the 'protection rationale', Arkin's arguments in particular, on the other hand, argue in favor of using LAWS as a weapon system worthy of preference over alternative ones, provided that ethics are programmed into LAWS.

A Christian-based assessment

Value compass

This article now explores the main ethical challenges from a Christian perspective. First, we must briefly outline the essential content of a suitable Christian value compass as a test criterion for the ethical acceptability of the use of LAWS.

The essential basis of Christian ethics is the foundation of inviolable human dignity in the image of God in every human being (Nass 2020, pp. 25–73). Killing another human being is therefore always evil, even if it can be justified as an 'ultima ratio'. Being made in God's image, this elevated dignity belongs to humankind alone. Technology is always merely an instrument designed to serve humanity and its fulfillment in responsibility before the creator and before itself. It is meant to serve humankind to live a life that can ultimately be considered good (i. e. in life after earthly death) before a merciful God. The instrumentalization of human beings by technology is categorically illegitimate, as is the dilution of human dignity by assigning quasi moral and other human attributes to technical artifacts.

The instrumentalization of human beings by technology is categorically illegitimate.

Human freedom is always conceived in love for and in responsibility before the Creator God, before oneself in His image and before one's fellow human beings. The assumption of responsibility is an expression of human freedom and a moral compass for a good life in this threefold orientation. This applies to one's individual way of life (including the necessary virtues of faith, hope and love) as well as to the culture of an irenic-inclusive coexistence of people. After all, from the Christian perspective, all humans are made in God's image – including strangers or enemies – but not technical artifacts. This is why Christian ethics also forbids an exclusive hybrid of race, class, nationality, religion or the like that seeks to divide society. A society is good and thus ethically legitimate when it enables as many people as possible to develop and grow in freedom and responsibility in accordance with their abilities.

https://doi.org/10.14512/tatup.31.3.58

We can now in view of the essential arguments use this compass to make some specific distinctions regarding the question of whether to categorically ban LAWS, so that we may explore a Christian positioning.

A justified examination

A corresponding position on the question of a legitimate use or prohibition of LAWS will now be outlined on the basis of the Christian understanding of human dignity, coexistence and just war. This is not to claim that the Christian position represented here itself generates entirely new arguments. Rather, the main aim is to identify a calibrated compass from a Christian perspective in the complex discussion and to bring it as a coherent position into further discussions.

1. The highest level of Meaningful Human Control (MHC) must be sought based on the Christian imperative of threefold responsibility. It should be noted that, from a Christian viewpoint, the killing of any human being and, by extension, death caused by the corresponding use of weapons, is considered evil. As a result, there are no good weapons and there is no good way to use weapons. Violations of dignity must be justified (on equal footing) at the level of the argument of dignity. Such conditions for a legitimate use of force with weapons are, after all, formulated by Catholic social teaching with the principles outlined at the beginning of this article, which correspond to the theory of just war. Only in compliance with these conditions can violence and war be excused or justified in the first place.
2. Following 1.) the Christian idea of an ethics that is not relativistic, but based on unconditional values, 2.) the ethical narratives of Michael Sandel (2012), according to which there are values that money cannot buy (e.g. friendship, the Nobel Prize) or replace with technology (e.g. human feelings such as love), and 3.) the warnings against an idolization of market and technology (Pope Francis 2015), we must seek to uncover slippery slopes and red lines and define what we would want to do with technical systems – bearing in mind responsibility for human dignity and social culture – and what we would not want to do, even if we could. Even taking into account Arkin's own concerns about the ethical consistency of his 'ethical governor' in LAWS on L5, I consider the use of such a 'governor' may produce ethically sound results. But a Christian position cannot follow Arkin's interpretation here. On the one hand, Arkin, Ulam and Duncam (2009) emphasize with McLaren (2006) that ultimate moral responsibility in the use of LAWS always attaches to humans after all. On the other hand, the supposed humanoid ethical evidence is still far too indeterminate in content. Arkin, Ulam and Duncam (2009) also acknowledge this ethically relevant research desideratum. Christian ethics cannot share the view that computational operations based on algorithms have anything to do with ethical deliberation. This hypothesis undermines the content of human dignity by making a moral distinction between humans and machines impossible (Nida-Rümelin and Weidenfeld 2018).
3. The intentional killing of a human being is always a violation of dignity. Accordingly, the *'jus in bello'* only combatants may be intentionally killed. If all these conditions are fulfilled, the further question arises whether the means used for this violation of dignity nullify this justification. Such an abrogation of justification is present on L 5. The reason for this is another dignity violation. This violation consists mainly in the fact that human life becomes a plaything of algorithms (see the common dignity arguments above).
4. The concerns regarding human dignity extend to other areas of society as well. Comparable questions arise, for example, in discussions concerning the use of (humanoid) robotics 4.0 in production and healthcare (Nass and Schneider 2022). In these areas, humans (e.g., doctors or nurses) will likewise soon be replaced by robots with supposed artificial intelligence and artificial morality, and possibly subordinated to them and their commands. We have thus reached an entirely new stage based on the fact that with LAWS such subordination of humans is also connected to the violent killing of other human beings, which is hardly an issue, if at all, when it comes to the use of robots in healthcare. Beyond the arguments of Arkin et al. it could even be the top rung on a ladder leading to dehumanization.
5. Simply banning all LAWS is inappropriate. The Christian value compass requires a differentiated view: Thus, because of the already mentioned violations of the human dignity of the enemy (as God's likeness), the enslavement of the LUS and the curtailment of the threefold human responsibility, LAWS should be outlawed at L5. The semi-autonomous systems at levels below L5, however, still allow responsible human intervention (human on/in the loop). They can avoid a categorical ban based on Christian thinking if LUS are entrusted with decisions on the use of LAWS, receive education and training not only in law, but also in morality and virtue, these soldiers are made aware of the inviolable dignity of their counterparts (while respecting the command to love one's enemy) and they are conscious of their responsibility before humanitarian principles. The risk of desensitization

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 https://doi.org/10.14512/tatup.31.3.58

must be countered through appropriate ethical training. This is a possible way to make users conscious of guilt, which from a Christian perspective is indispensable even when the use of weapons is justified. Curricula of such ethical education should include e.g. content on the ethics of responsibility and ethics of mind, on the formation of conscience and judgment, on images of man and their consequences for the understanding of human dignity and on the concrete lethal effects of the use of LAWS, based on specific case studies (Vohs 2021). Professional training departments of the military chaplaincy or comparable institutes of different ideological or religious persuasions could be involved in the development of teaching content. Defining the specifics of such curricula would then be a next important step for an ethically acceptable use of LAWS on L1-L4.

6. The UN Human Rights Council could formulate international educational standards. These guidelines would then need to be concretized in the respective countries, but should undergo appropriate reviews. This would allow us to counteract the brutalization of agents and societies, which would go against everything we consider conducive to the development of humankind before God and the inclusive idea of coexistence. If it is impossible to ensure this education and training in morality and virtue (in totalitarian states, for instance), then the use of LAWS should ethically be prohibited in these countries. Such an ethical ban could be imposed by the UN Council on Human Rights. However, this critical distinction hardly seems practicable in the real world. If countries such as China in an effort to create threatening scenarios or attackers in a war of aggression refuse to acknowledge such educational standards, they will likely still deploy such weapon systems in an immoral and unvirtuous fashion. Thus, realistically, the UN reaction would admittedly be no more than a moral rebuke. But from a Christian point of view even this stigmatization would at least be an important step towards the protection of human dignity.

Conclusion

The arguments in the ethical debate on the possible use of LAWS address central concerns about our view of humanity, humankind, the human-machine relationship and human responsibility. Christian explorations indicate red lines with sound reasoning and follow the arguments for a partial ban on such systems (L5), along with strict provisions for conditional approval. Above all, the Christian position insists on the awareness that even any justified defense with these systems ultimately always has devastating consequences. It is therefore never good in itself, but can at best be tolerated as *'minus malum'*. Christian ethics includes in the discussion of human dignity not only the victims of LAWS, but also the LUS. It also advocates a virtue ethics offensive for the ethical education of soldiers who are directly involved with such weapons systems. For morality understood in Christian terms is not found in machines, nor in rules alone. It is ultimately rooted in the consciences of bona fide humans.

The Christian position presented here has one more semantic consequence: From a Christian point of view it is wise not to ascribe a quasi-artificial morality to weapon systems with a 'decision-making capability' attributed to them. I propose to avoid the common attribution 'autonomous' in the context of technology in general and LAWS in particular, and replace it, for example with: 'self-directed weapon systems'.

The Christian ethical positioning presented here from a Catholic perspective is no more than a brief sketch. It is aimed at offering initial arguments in favor of Christian-based participation in the ethical discourse on LAWS. This requires further development of these arguments along with enrichment through alternative Christian positions, which are welcome to engage in further constructive dialogue.

Funding • This work received no external funding.
Competing interests • The author declares no competing interests.

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