

A Weapon is No Subordinate

Autonomous Weapon Systems and the Scope of Superior Responsibility

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Abstract

The doctrine of superior responsibility is occasionally presented as a potential solution to the ‘responsibility gap’ allegedly created when the employment of autonomous weapon systems (AWS) results in violations of international humanitarian law, which would amount to war crimes. This article analyses several challenges to the applicability of the doctrine of superior responsibility in these circumstances. In fact, superior responsibility is premised on the existence of a superior–subordinate relationship between individuals. The type of control required for this relationship to exist is different from the kind of control exercised over weapons, including AWS. Additionally, the doctrine requires the commission of an underlying crime in all its elements by a punishable subordinate. Nonetheless, superior responsibility remains a useful framework to demarcate the scope of the supervisory duties of the superior in relation to the prevention of war crimes. Understanding the limitations of this doctrine will be important in guiding the discussions concerning the level of human control that should be retained over AWS.

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1. Introduction

In recent years, a variety of stakeholders, including states, their military and defence industries, private companies, civil society, humanitarian and human rights organizations, and scholars, have been involved in debates surrounding the development and regulation of autonomous weapon systems (AWS). These debates have focused on technological aspects of autonomy,¹ as well as on their implications for compliance and non-compliance with applicable rules of international humanitarian law (IHL). From a legal perspective, debates have, at times, highlighted the difficulty or impossibility of ascribing criminal responsibility to an individual for breaches of IHL committed by employing weapons having a high level of autonomy.² The doctrine of superior responsibility has been put forward as a solution to this problem, becoming a panacea proposed to cure the anxieties related to this perceived ‘responsibility gap’. This has been done either through creative interpretations, suggesting that the doctrine could be taken to concern the ‘crimes’ committed by the AWS directly and thus entail the responsibility of their superior who did not prevent or repress them,³ or by proposing new configurations of the doctrine to accommodate some forms of machine criminality within its framework.⁴ To a certain extent, this comes as no surprise. Superior responsibility, which has been described as ‘a form of *sui generis* liability’,⁵ has often provided a ‘fall-back’ option to prosecutors when charges under other modes of liability (such as direct perpetration, ordering or aiding and abetting) would fail to stick in cases regarding

- 1 International Committee of the Red Cross (ICRC), *Autonomy, Artificial Intelligence and Robotics: Technical Aspects of Human Control* (2019), at 7, defines autonomy as ‘the ability of the system to act without direct human intervention, although it is a continuum with various levels and many grey areas’.
- 2 See e.g., Human Rights Watch, *Mind the Gap: The Lack of Accountability for Killer Robots* (2015), available online at <https://www.hrw.org/report/2015/04/09/mind-gap/lack-accountability-killer-robots> (visited 5 April 2023). See, however, K.J. Heller, ‘The Concept of ‘The Human’ in the Critique of Autonomous Weapons’, 14 *Harvard National Security Journal* (2023), available online at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4342529 (visited 5 April 2023), arguing that the accountability gap problem is overstated.
- 3 See e.g. R. Buchan and N. Tsagourias, ‘Autonomous Cyber Weapons and Command Responsibility’, 96 *International Law Studies* (2020) 645.
- 4 See e.g. P. Margulies, ‘Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts’, in J. Ohlin (ed.), *Research Handbook on Remote Warfare* (Edward Elgar Publishing, 2017) 405; N. Jain, ‘Autonomous Weapons Systems: New Frameworks for Individual Responsibility’, in N. Bhuta et al. (eds), *Autonomous Weapons Systems: Law, Ethics, Policy* (Cambridge University Press, 2016) 303, at 314–315; see also J. Kraska, ‘Command Accountability for AI Weapons Systems in the Law of Armed Conflict’, 97 *International Law Studies* (2021) 407, focusing instead on a broader concept of command accountability, meant to reflect the culture and functioning of the military and encompassing criminal responsibility as well as administrative and non-judicial measures.
- 5 Judgment pursuant to Art. 74 of the Statute, *Bemba Gombo* (ICC-01/05-01/08), Trial Chamber III, 21 March 2016 (‘*Bemba Gombo*’), § 174; for a critical interrogation of this term see D. Robinson, ‘How Command Responsibility Got So Complicated: A Culpability Contradiction, Its Obfuscation, and a Simple Solution’, 13 *Melbourne Journal of International Law* (2012) 1, at 36–39.

individuals in leadership positions whose direct involvement in international crimes is difficult to prove.⁶ In this sense, superior responsibility accords with widely held moral preferences dictating that those who fail to use their position to ensure that subordinates under their control comply with certain standards of conduct should be held to account.⁷ At the same time, the doctrine of superior responsibility has attracted criticism for creating a gap between, on the one hand, the culpability of superiors who merely omitted to act, and on the other hand, their criminal responsibility, which arises for the crimes of their subordinates.⁸

This article challenges the suggestion that superior responsibility could ‘cure’ alleged gaps of criminal responsibility arising out of the use of AWS in warfare. Before examining why superior responsibility is ill-suited to fill potential gaps of criminal responsibility relating to the use of AWS, it is worth recalling the main tenets of the doctrine. Superior responsibility entails the criminal responsibility by omission of a military commander or civilian superior who has failed to prevent or repress the crimes of their subordinates. At the international level, this doctrine was first enshrined in Articles 86 and 87 of the First Additional Protocol to the 1949 Geneva Conventions (AP I). Similar iterations of the doctrine can be found, among others, in the Statutes of the ad hoc tribunals for the former Yugoslavia and Rwanda (ICTY and ICTR)⁹ and of the International Criminal Court (ICC).¹⁰ The various definitions found in treaty law differ slightly from one another, essentially because AP I refers to obligations under IHL, which imply the responsibility of state parties in cases of non-compliance, while the provisions of the statutes of international courts and tribunals concern the criminal responsibility of individuals.¹¹ The basic elements of the doctrine are, however, common to all definitions: (i) a superior–subordinate relationship; (ii) the superior’s knowledge or constructive

6 M. Damaška, ‘The Shadow Side of Command Responsibility’, 49 *The American Journal of Comparative Law* (2001) 455, at 481.

7 *Ibid.*, at 480; A.M. Danner and J.S. Martinez, ‘Guilty Associations: Joint Criminal Enterprise, Command Responsibility, and the Development of International Criminal Law’, 93 *California Law Review* (2005) 75, at 148.

8 Damaška, *supra* note 6, at 470; Danner and Martinez, *Ibid.*, at 147; D.L. Nersessian, ‘Whoops, I Committed Genocide! The Anomaly of Constructive Liability for Serious International Crimes’, 30 *The Fletcher Forum of World Affairs* (2006) 81, at 94; see generally K. Ambos, *Treatise on International Criminal Law* (2nd edn., Oxford University Press, 2021), at 257–261 on the supposed reduced culpability stemming from omission from a moral perspective; see also R. Arnold and M. Jackson, ‘Article 28, Responsibility of Commanders and Other Superiors’, in K. Ambos (ed.), *Rome Statute of the International Criminal Court. Article-by-Article Commentary* (4th edn., Hart/Nomos/Beck, 2022), at margin numbers (MN) 7-16, on the doctrinal debate as to whether superior responsibility is a mode of liability or a separate offence of dereliction of duty, and concluding that the prevailing view among scholars and judges is that a superior is held responsible for their subordinate’s crimes rather than for dereliction of duty, at least in the current configuration of the doctrine.

9 Art. 7(3) ICTYSt. and Art. 6(3) ICTRSt.

10 Art. 28 ICCSt.

11 D. Robinson, ‘The Identity Crisis of International Criminal Law’, 21 *Leiden Journal of International Law* (2008) 925, at 953–954.

knowledge¹² of the crimes that the subordinate committed or was about to commit; and (iii) the superior's failure to take necessary and reasonable measures to prevent and repress these crimes. Despite some structural similarities, superior responsibility is different from direct perpetration (or commission) by omission, which is an omissive form of principals' responsibility.¹³

This article tackles some of the challenges that arise from the application of the doctrine of superior responsibility as a mechanism to hold individuals responsible for war crimes as superiors in cases where military attacks involving AWS result in unintended or unexpected violations of IHL. It does so by discussing the required superior–subordinate relationship, distinguishing this element of the doctrine of superior responsibility from the type of control exercised by human soldiers over any type of weapon (autonomous or not). It then tackles another obstacle to the application of the superior responsibility doctrine to war crimes involving the use of AWS: the commission of an underlying crime. The article illustrates that, for the doctrine to apply, the subordinate needs to be punishable for an underlying crime that has been committed in all its elements. Even assuming that AWS are equal to subordinates, this poses challenges to the applicability of the doctrine since machines cannot fulfil the necessary mental element required for the commission of a complete crime, and thus are not punishable. It is further argued that similar challenges arise if one suggests ascribing a crime to the human operators of AWS. In light of, and in spite of, these arguments, the article highlights the continuing importance of superior responsibility for understanding the scope of a superior's duties to prevent war crimes when AWS are employed on the battlefield. The article concludes by explaining that an understanding of the scope of a superior's obligations is useful both for the correct application of the doctrine in its current configuration, and to inform debates on the regulation of AWS, which should take the limitations of the superior responsibility doctrine and of its availability into account.

2. A Superior–Subordinate Relationship

The first element required for the doctrine of superior responsibility to apply is the existence of a superior–subordinate relationship. This section aims to explain what this element entails, and who a commander and a subordinate, respectively, are. It also distinguishes the types of control required for the existence of this type of relationship for the purposes of superior responsibility from human control over AWS.

12 The constructive knowledge standard varies across different texts. The ICTYSt. and ICTRSt. required the superior to have reasons to know about the crimes. The ICCSt.'s constructive knowledge requirement for military commanders is that they 'should have known' about the crimes. As far as non-military superiors are concerned, the ICCSt. requires instead that they 'consciously disregarded information which clearly indicated' that crimes were committed or about to be committed.

13 On this matter, see the article by Marta Bo in this Special Issue of the *Journal*.

A. Effective Control and Its Anthropocentric Scope

Article 87 AP I makes clear that superior responsibility concerns 'military commanders, with respect to members of the armed forces under their command and other persons under their control'.¹⁴ The ICTY and ICTR Statutes refer to the crimes 'committed by a subordinate'¹⁵ and the Rome Statute of the ICC to 'forces' and 'subordinates' under the 'effective command and control' or the 'effective authority and control' of a military commander or of another superior.¹⁶ According to Arnold and Jackson, the term 'forces' in Article 28 of the Rome Statute must be interpreted in accordance with IHL, and thus refers to organized armed forces, groups and units under the responsible command of a party to the conflict.¹⁷ The superior-subordinate relationship required for the application of superior responsibility is generally understood as 'one between two individuals' and 'therefore, inter-personal in nature'.¹⁸

The existence of a superior-subordinate relationship is premised on the notion of effective control. The ICC Trial Chamber in *Bemba* confirmed that the notion of effective control refers to 'the material ability to prevent or repress the commission of the crimes or submit the matter to the competent authorities'.¹⁹ By referring to the case law of other international courts and tribunals on superior responsibility, the ICC Trial Chamber drew up a list of indicative factors that might point towards the existence of effective control. These include:

- (i) the official position of the commander within the military structure and the actual tasks that he carried out; (ii) his power to issue orders, including his capacity to order forces or units under his command, whether under his immediate command or at lower levels, to engage in hostilities; (iii) his capacity to ensure compliance with orders including consideration of whether the orders were actually followed; (iv) his capacity to re-subordinate units or make changes to command structure; (v) his power to promote, replace, remove or discipline any member of the forces, and to initiate investigations; (vi) his authority to send forces to locations where hostilities take place and withdraw them at any given moment; (vii) his independent access to, and control over, the means to wage war, such as communication equipment and weapons; (viii) his control over finances; (ix) the capacity to represent the forces in negotiations or interact with external bodies or individuals on behalf of the group and (x) whether he represents the ideology of the movement to which the subordinates adhere and has a certain level of profile, manifested through public appearances and statements.²⁰

In my view, these factors are largely anthropocentric. Indeed, matters of ideology, interactions with the exterior, promotion and discipline are only relevant with respect to humans. Nevertheless, some authors argue that these indicative

14 Art. 87(1) AP I. See also Art. 87(3) AP I.

15 Art. 7(3) ICTYSt.; Art. 6(3) ICTRSt.

16 Art. 28(a) and (b) ICCSt.

17 Arnold and Jackson, *supra* note 8, at MN 26.

18 G. Mettraux, *The Law of Command Responsibility* (Oxford University Press, 2009), at 139.

19 *Bemba Gombo*, *supra* note 5, § 183; Decision Pursuant to Art. 61(7)(a) and (b) of the Rome Statute on the Charges of the Prosecutor Against Jean-Pierre Bemba Gombo, *Bemba Gombo* (ICC-01/05-01/08), Pre-Trial Chamber II, 15 June 2009, §§ 414–415.

20 *Bemba Gombo*, *supra* note 5, § 188 (references omitted).

factors can be interpreted to refer to the relationship of control of a human over an AWS, which ‘resembles and replicates’ the superior–subordinate relationship between commanders and their soldiers.²¹ They point to the fact that AWS can be replaced or withdrawn from the battlefield, and their operations directed, modified or limited to a certain area, target or time period.²² However, these types of decisions are taken with respect to all kinds of weapons in a military’s arsenal. Yet, it is only with respect to AWS that it is suggested that the weapons themselves should be considered as subordinates under the effective control of a superior for the purposes of superior responsibility. It is submitted here that this interpretation is at odds with the doctrine of superior responsibility in its current formulation. Most evidently, if a superior–subordinate relationship is considered to entail a form of hierarchy typical of the armed forces,²³ this can hardly be said to exist between humans and the weapons they employ.

Additionally, although the doctrine of superior responsibility is now deemed applicable also to civilian superiors, the doctrine originates from the military sphere and continues to be applicable to military commanders, being also known as command responsibility. Command responsibility is the criminal law corollary to the operational principle of responsible command,²⁴ which aims at ‘[e]nsuring that a military unit employs collective violence only for lawfully permissible purposes’.²⁵ Responsible command implies that commanders have a responsibility to continue training soldiers and to foster a command culture in line with IHL obligations.²⁶ Trainings assume that soldiers have ‘common sense, the flexibility to apply general rules to new situations, and a basic morality’.²⁷ In this sense, AWS — which have neither common sense nor a basic morality — cannot be properly trained like soldiers. Additionally, commanders might retain a limited ability to influence the behaviour of AWS and can only trust that they have been developed to be able to comply with IHL.²⁸ Furthermore, while punishment can deter violations when training alone does not suffice, AWS — unlike soldiers — cannot be threatened with punishment.²⁹

Responsible command and responsible command structures also involve the delegation of authority ‘from the commander-in-chief down to the private, but

21 Buchan and Tsagourias, *supra* note 3, at 649.

22 *Ibid.*, at 657.

23 Judgment, *Delalić, Mucić, Delić and Landžo (Čelebići Case)* (IT-96-21-A), Appeals Chamber, 20 February 2011, § 303; N. Karsten, ‘Distinguishing Military and Non-Military Superiors: Reflections on the Bemba Case at the ICC’, 7 *Journal of International Criminal Justice* (2009) 983, at 993–994; Arnold and Jackson, *supra* note 8, at MN 20.

24 Decision on Interlocutory Appeal Challenging Jurisdiction in Relation to Command Responsibility, *Hadžihasanović, Alagić and Kubura* (IT-01-47-AR72), Appeals Chamber, 16 July 2003, § 14.

25 G.S. Corn, ‘Autonomous Weapons Systems: Managing the Inevitability of “Taking the Man out of the Loop”’, in Bhuta et al. (eds), *Autonomous Weapons Systems: Law, Ethics, Policy* (Cambridge University Press, 2016), 209, at 222.

26 *Ibid.*, at 222–223.

27 R. Crotoof, ‘Autonomous Weapon Systems and the Limits of Analogy’, 9 *Harvard National Security Journal* (2018) 51, at 70.

28 Corn, *supra* note 25, at 224.

29 Crotoof, *supra* note 27, at 70. I elaborate on the impossibility of punishing AWS in Section 3.

at each layer, there is a responsible human to bear both the authority and responsibility for the use of force'.³⁰ Delegation of authority within the chain of command, however, does not result in a complete abdication of responsibility. As explained by Asaro, '[o]ne might transfer this obligation to another responsible human agent, but one then has a duty to oversee the conduct of that subordinate agent. Insofar as autonomous weapon systems are not responsible human agents, one cannot delegate this authority to them.'³¹ Although AWS are sometimes said to transcend the legal categories of 'weapons' and 'combatants', being somewhere in between the two,³² autonomous weapons remain weapons. As Sassòli clarifies, '[t]he difference between a weapon system and a human being is not quantitative but qualitative; the two are not situated on a sliding scale, but on different levels—subjects and objects. A combatant is a human being, only he or she is an addressee of legal obligations'.³³ It is therefore inaccurate to refer to the person developing, programming or operating an AWS as a superior in the sense of someone who has effective control over their subordinate forces for the purposes of superior responsibility.³⁴

A recent study found that military and civilian personnel working at the Dutch Ministry of Defence tend to attribute more agency to an AWS than they do to a human-operated drone.³⁵ Nevertheless, this does not mean that legally AWS are equal to moral agents or human soldiers. On the contrary, McFarland convincingly showed that AWS do not differ in any legally relevant way from any other weapon on the basis of their physical properties or functional aspects that they (can be expected to) possess.³⁶ He argues that the anthropomorphizing of AWS is both technically and legally incorrect.³⁷ The Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems also warned that AWS should not be anthropomorphized.³⁸

30 P. Asaro, 'On Banning Autonomous Weapon Systems: Human Rights, Automation, and the Dehumanization of Lethal Decision-Making', 94 *International Review of the Red Cross (IRRC)* (2012) 687, at 701. See also ICRC, *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949* (1987), §§ 3553–3554.

31 Asaro, *Ibid.*, at 701.

32 H. Liu, 'Categorization and Legality of Autonomous and Remote Weapons Systems', 94 *International Review of the Red Cross* (2012) 627, at 629.

33 M. Sassòli, 'Autonomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified', 90 *International Law Studies* (2014) 308, at 323; similarly T. McFarland, *Autonomous Weapon Systems and the Law of Armed Conflict: Compatibility with International Humanitarian Law* (Cambridge University Press, 2020), at 76; and T. McFarland and T. McCormack, 'Mind the Gap: Can Developers of Autonomous Weapons Systems Be Liable for War Crimes?' 90 *International Law Studies* (2014) 361, at 366.

34 T. Chengeta, 'Accountability Gap: Autonomous Weapon Systems and Modes of Responsibility in International Law', 45 *Denver Journal of International Law & Policy* (2016) 1, at 3.

35 I. Verdiesen, 'Agency Perception and Moral Values Related to Autonomous Weapons: An Empirical Study Using the Value-Sensitive Design Approach' (EuroISME, 2020), at 137.

36 McFarland, *supra* note 33, at 73–74.

37 *Ibid.*, at 75–76.

38 'Guiding Principles Affirmed by the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems' (2019) CCW/MP/2019/9, Annex III, § (i).

B. Distinguishing Effective Control from Human Control over AWS

Even though the notion of effective control for the purposes of superior responsibility does not apply to AWS directly, this does not mean that they are outside human control. The meaning of control generally, and in the context of AWS specifically, is ambiguous, confusing and can be used in many different connotations.³⁹ Autonomy in weapons systems can be understood as the ‘capability to operate without human intervention’, yet autonomy so understood does not exclude human control.⁴⁰ An AWS can operate without human intervention and still be under human control before, during and after its deployment.⁴¹ In fact, autonomy ‘in a technical sense, is simply the ability of a system to behave in a desired manner or achieve the goals previously imparted to it by its operator, without needing to receive the necessary instructions from outside itself on an ongoing basis’.⁴²

While some actors in the debate concerning the regulation of AWS have used the notion of ‘meaningful human control’, this concept, although appealing, is neither clearly defined nor consistently used.⁴³ In relation to control over the behaviour of weapon systems, McFarland distinguishes between a narrow set of ‘control measures traditionally associated with operating a weapon (aiming, pulling a trigger and so on)’ and a ‘much broader set of measures that States and armed forces take to ensure that lethal force is applied in accordance with legal obligations (formulation of strategic goals, rules of engagement and so on . . .)’.⁴⁴ In either of these broad and narrow senses, control over AWS is not dissimilar from the control exercised over other types of weapons.⁴⁵

Human control over AWS is not only relevant during the targeting process. Instead, it should and can be ensured across the life cycle of the AWS, including during initial planning, research and development, certification and deployment.⁴⁶ Admittedly, some technology makes it particularly difficult for humans

39 B. Walker Smith, ‘Controlling Humans and Machines’, 30 *Temple International & Comparative Law Journal* (2016) 167, at 167–171. See also Guido Acquaviva’s contribution to this Special Issue of the *Journal*.

40 A. Seixas-Nunes, *The Legality and Accountability of Autonomous Weapon Systems: A Humanitarian Law Perspective* (Cambridge University Press, 2022), at 138; see also McFarland, *supra* note 33, at 49.

41 Seixas-Nunes, *Ibid.*, at 126, 138; see also McFarland, *supra* note 33, at 40.

42 McFarland, *supra* note 33, at 35.

43 T. McFarland, ‘Minimum Levels of Human Intervention in Autonomous Attacks’, 27 *Journal of Conflict and Security Law* (2022) 387, at 393; M. Ekelhof, ‘Moving Beyond Semantics on Autonomous Weapons: Meaningful Human Control in Operation’, 10 *Global Policy* (2019) 343. See also Guido Acquaviva’s contribution to this Special Issue of the *Journal*.

44 McFarland, *supra* note 43, at 392.

45 *Ibid.*, at 7; see also McFarland, *supra* note 33, at 40: ‘Despite the complexity of existing and proposed AWS and their behaviour, they are not fundamentally distinct from simpler types of automated or manually operated weapon systems. The notion of control essentially means shaping the way in which a machine behaves in order to achieve some human-defined goal.’

46 M. Verbruggen, ‘The Question of Swarms Control: Challenges to Ensuring Human Control over Military Swarms’, *Non Proliferation and Disarmament Papers* (EU Non-Proliferation and Disarmament Consortium, 2019), at 6.

to retain control over AWS in some circumstances. Challenges for human control arise, for example, with respect to the use of swarms, which are groups 'of individual systems that interact and operate as a collective with a common goal'.⁴⁷ The complexity of operating a swarm increases with its size and swarm operators cannot 'control the swarm as such', but can only change how the different nodes act or respond to other nodes or the environment.⁴⁸ The difficulty of controlling swarms also raises concerns about the cognitive load placed on operators.⁴⁹ Although proposals to enhance human cognitive performance through pharmaceuticals and brain stimulation treatments have been advanced, they are ethically dubious.⁵⁰

While the notion of control in the context of AWS and its legal implications remain subject to debate, what is clear is that control over a weapon — whether autonomous or not — is qualitatively different from the notion of effective control for the purposes of the application of the doctrine of superior responsibility. One concerns control over a tool, the other control over individuals.⁵¹ On the basis of this qualitative difference, the relationship between a weapon system and a human cannot be analogized to the relationship between two humans, thus precluding the applicability of the doctrine of superior responsibility in its current form to the relationship between an individual and an AWS.⁵²

Even though AWS are not akin to subordinates and thus individuals who develop, programme or operate them do not qualify as superiors for the purposes of superior responsibility, the application of the doctrine is not completely precluded when AWS are employed. The doctrine remains applicable with respect to crimes that can be directly ascribed to developers, programmers and operators of AWS and that their superiors failed to prevent or repress.⁵³ Leaving aside the exact level of human control that developers, programmers or operators need to exercise for their individual criminal responsibility to

47 *Ibid.*, at 1. See Guido Acquaviva's contribution to this Special Issue of the *Journal*.

48 Verbruggen, *supra* note 46, at 7.

49 P. Scharre, 'Robotics on the Battlefield Part II. The Coming Swarm' (Center for a New American Security, 2014), at 36.

50 *Ibid.*, at 34.

51 Superior responsibility must be distinguished from indirect perpetration, a mode of liability entailing the responsibility of an individual who uses another as a 'tool' for the commission of the crime: see Art. 25(3)(a) ICCSt. as interpreted in Decision on the confirmation of charges, *Katanga and Ngudjolo Chui* (ICC-01/04-01/07), Pre-Trial Chamber I, 30 September 2008, § 495.

52 R. Geiß and H. Lahmann, 'Autonomous Weapons Systems: A Paradigm Shift for the Law of Armed Conflict?' in Ohlin (ed.), *Research Handbook on Remote Warfare* (Edward Elgar Publishing, 2017), 371, at 343; D. Amoroso, *Autonomous Weapons Systems and International Law: A Study on Human-Machine Interactions in Ethically and Legally Sensitive Domains* (Edizioni Scientifiche Italiane, 2020), at 141; G. Acquaviva, 'Autonomous Weapons Systems Controlled by Artificial Intelligence: A Conceptual Roadmap for International Criminal Responsibility', 60 *The Military Law and the Law of War Review* (2022) 89, 112; G. Noll, 'Weaponising Neurotechnology: International Humanitarian Law and the Loss of Language', 2 *London Review of International Law* (2014) 201, at 213.

53 Chengeta, *supra* note 34, at 3; see also Sassòli, *supra* note 30, at 324.

arise,⁵⁴ for the present purposes, it suffices to say that the difficulties of ascribing a crime to an individual have repercussions on the possibility of holding their superiors responsible, as explained in the following section.

3. The Underlying Crime

In addition to the fact that superior responsibility is predicated upon the existence of a superior–subordinate relationship between two individuals, a further challenge arises to the applicability of this doctrine when AWS are employed. In fact, the responsibility of the superior arises for failure to prevent or repress crimes that their subordinate forces committed or were about to commit.⁵⁵ This formulation includes not only the direct perpetration of the underlying crime but also other modes of liability that could implicate the individual criminal responsibility of the subordinates.⁵⁶ Superior responsibility has derivative nature, meaning that it arises only if the subordinates committed a crime.⁵⁷ Leaving aside the issue of whether AWS can be held criminally responsible,⁵⁸ the question then arises of whether, for the purposes of superior responsibility, a subordinate needs to be blameworthy and susceptible to being punished by the superior and, relatedly, whether the underlying offence needs to be a crime in all its constitutive elements. An affirmative answer to these questions would often preclude the applicability of the doctrine of superior responsibility when AWS are employed.

A. Blameworthiness and the Superior's Duty to Punish

Weapons, including AWS, are not currently considered to enjoy legal personality under international law. This means that they are not bound by the rules of IHL, cannot violate them and cannot be held responsible under international criminal law.⁵⁹ In no uncertain terms, the military manual of the USA affirms: '[t]he law of war rules on conducting attacks (such as the rules relating to discrimination and proportionality) impose obligations on persons. These rules do not impose obligations on the weapons themselves; of course, an inanimate object could not assume an "obligation" in any

54 See Guido Acquaviva's paper in this Special Issue of the *Journal*. In relation to developers and programmers, see also M. Bo, 'Are Programmers In or 'Out of' Control? The Individual Criminal Responsibility of Programmers of Autonomous Weapons and Self-Driving Cars', *ASSER Research Paper 2022-08*, forthcoming in S. Gless, and H. Whalen-Bridge (eds), *Human-Robot Interaction in Law and its Narratives: Legal Blame, Criminal Law, and Procedure* (Cambridge University Press, 2023).

55 Art. 28(a)(i) and (b)(i) ICCSt.; Art. 7(3) ICTYSt.; Art. 6(3) ICTRSt.; Art. 86(2) AP I.

56 Arnold and Jackson, *supra* note 8, at MN 34–37; Ambos, *supra* note 8, at 299–301.

57 Mettraux, *supra* note 18, at 80–81; Amoroso, *supra* note 52, at 141.

58 On this matter, see Thomas Weigend's article in this Special Issue of the *Journal*.

59 Sassòli, *supra* note 33, at 323–325.

event.⁶⁰ The Rome Statute also clearly indicates that the ICC has jurisdiction only over natural persons.⁶¹

It is possible that AWS will acquire legal personality in the future. After all, in some jurisdictions, legal persons such as corporations are granted legal personality.⁶² For instance, in the USA, the doctrine of *respondet superior* 'permits the imposition of criminal liability on corporations for acts committed by their agents on behalf of the corporation, for the benefit of the corporation, and within the scope of the agent's authority'.⁶³ Under this doctrine, as a consequence of the acts of natural persons, corporations can be prosecuted under criminal law and can be punished, e.g. with a pecuniary sanction or by incapacitating them from committing further crimes, such as by suspending or revoking the company's license to operate.⁶⁴ The latter forms of punishment notably have repercussions on human managers and stakeholders of the corporation. This is important because the ability to be punished has been described as 'the most visceral' quality of legal personality,⁶⁵ and punishment is commonly intended to pursue retribution, incapacitation, deterrence and rehabilitation.⁶⁶ Reprogramming or deactivating an autonomous weapon can hardly be considered to pursue any of these goals.⁶⁷

Additionally, in other jurisdictions, such as in Germany, criminal law is rooted in the principle of blameworthiness, which excludes the possibility of holding legal entities responsible and would also exclude the criminal responsibility of machines, no matter how 'intelligent' they may be.⁶⁸ Blameworthiness 'presupposes the actor's ability to decide between doing right and doing wrong or, in other words, presupposes the actor's ability to avoid committing a wrongful act'.⁶⁹ This excludes not only the possibility of holding AWS directly accountable but also of holding the human operating the weapon responsible if it was not possible for them to intervene to stop the weapon, either because the human was 'out of the loop'⁷⁰ or because the technology employed by the weapon makes its workings inexplicable to

60 *Department of Defense Law of War Manual* (United States Department of Defense, 2015), § 6.5.9.3; see also 'Directive Number 3000.09, Autonomy in Weapon Systems' (United States Department of Defense 2012), at 3: 'Persons who authorize the use of, direct the use of, or operate autonomous and semi-autonomous weapon systems must do so with appropriate care and in accordance with the law of war, applicable treaties, weapon system safety rules, and applicable rules of engagement' (emphasis added).

61 Art. 25(1) ICCSt.

62 See Thomas Weigend's contribution to this Special Issue of the *Journal*.

63 S. Gless, E. Silverman, and T. Weigend, 'If Robots Cause Harm, Who Is to Blame? Self-Driving Cars and Criminal Liability', 19 *New Criminal Law Review* (2016) 412, at 417–418.

64 S. Chesterman, 'Artificial Intelligence and the Limits of Legal Personality', 69 *International and Comparative Law Quarterly* (2020) 819, at 828.

65 *Ibid.*, at 827.

66 *Ibid.*, at 828–829.

67 *Contra* Buchan and Tsagourias, *supra* note 3, at 666.

68 Gless, Silverman and Weigend, *supra* note 63, at 420–421.

69 *Ibid.*, at 420.

70 For a definition, see V. Boulanin and M. Verbruggen, *Mapping the Development of Autonomy in Weapon Systems* (Stockholm International Peace Research Institute, 2017), at 46.

the operator. The latter is a problem that arises in particular when AWS employ machine learning algorithms, which ‘are not transparent in the way they function and provide no explanation for why they produce a given output’.⁷¹

In these circumstances, holding the weapon operator responsible ‘stretches individual blameworthiness to the outer limits of no-fault criminal responsibility’⁷² and would undermine the moral legitimacy of (international) criminal law.⁷³ Holding a superior responsible for crimes that are ascribed to the subordinate on the basis of a standard akin to negligence or strict liability raises questions of fairness and exacerbates the issue of the superior’s reduced culpability already affecting the doctrine of superior responsibility mentioned in Section 1. In Crootof’s words, ‘[i]t would be unjust to hold commanders criminally liable for the unpredictable actions of an autonomous weapon system that they can neither predict nor punish’.⁷⁴

The doctrine of superior responsibility requires that the crimes of the subordinates be repressed or punished.⁷⁵ According to the ICC Trial Chamber, Article 28 of the Rome Statute imposes three distinct duties upon superiors — the duty to prevent the commission of the crimes; the duty to repress the commission of the crimes; the duty to submit the matter to the competent authorities for investigation and prosecution — and ‘failure to discharge *any* of these duties may attract criminal liability’.⁷⁶ The commander must exercise disciplinary power if they hold it, or otherwise propose a sanction to a superior who does hold disciplinary power, or remit the case to the judicial authorities.⁷⁷

Even if AWS were deemed subordinates for the purposes of applying the doctrine of superior responsibility, their superior would not hold any disciplinary power over them, would be unable to punish them and would also be unable to remit the case to the judicial authorities, given that machines cannot be prosecuted. As such, applying the doctrine by considering AWS as subordinates requires *tout court* discarding the possibility for the superior to discharge the duty to repress and the duty to submit the crimes to the competent authorities. These duties are integral to the doctrine itself, yet the superior would not be able to perform them in any circumstance with respect to AWS. Because effective control over the subordinates is premised on the ‘material ability’ to discharge the superior’s duties,⁷⁸ the impossibility to fulfil any of these obligations would negate the existence of a superior-subordinate

71 ICRC, *Autonomy*, *supra* note 1, at 18.

72 Amoroso, *supra* note 52, at 143.

73 R. Crootof, ‘War Torts: Accountability for Autonomous Weapons’, 164 *University of Pennsylvania Law Review* (2016) 1347, at 1384; similarly, Seixas-Nunes, *supra* note 40, at 206.

74 Crootof, *supra* note 27, at 72.

75 Different texts use different wordings. The ICTYSt. and ICTRSt. read ‘to punish the perpetrators’, the ICCSt. asks for crimes to be repressed, including by having the matter submitted to the competent authorities for investigation and prosecution.

76 *Bemba Gombo*, *supra* note 5, § 201 (emphasis added).

77 *Ibid.*, at § 207.

78 *Ibid.*, at § 183.

relationship between the autonomous weapon and the human, thus precluding the applicability of the doctrine of superior responsibility to begin with.

B. The Fulfilment of All the Elements of the Underlying Crime

The doctrine of superior responsibility raises the issue of whether the underlying crime of the subordinate for which the superior is held responsible must be punishable as a proper crime, i.e. must have been properly committed in all its elements. This issue is particularly relevant when the doctrine is applied in relation to offences committed by employing AWS. In fact, if a crime needs to have been properly committed, the doctrine is inapplicable in so far as AWS, being machines, cannot form the required *mens rea*. Similarly, the human operator of an AWS might also lack the necessary mental element.

According to Mettraux, for the doctrine of superior responsibility to apply, the subordinate must commit an underlying offence meeting all the constitutive elements of the crime.⁷⁹ He explains that the commission of a criminal offence by the subordinate is a condition of the applicability of the doctrine, on which the jurisdiction of international courts and tribunals also depends.⁸⁰ Nonetheless, the question arises of whether the availability of grounds for excluding the subordinate's criminal responsibility affects the responsibility of the superior. In some legal traditions, grounds for excluding criminal responsibility (also known as defences), can be divided into justifications and excuses. Justifications exclude the criminal responsibility of the agent in cases where they have fulfilled all the elements of a crime (*actus reus* and *mens rea*) but the circumstances were such that the *actus reus* is considered 'justified' by law, e.g. when an individual kills another in self-defence. Excuses rather affect the blameworthiness of the actor, resulting in the actor not being culpable and therefore punishable, e.g. due to diminished mental capacity. In such instances, however, the *actus reus* remains unlawful.

Meloni argues that, when the responsibility of the subordinate is excluded on the basis of a justification, superior responsibility cannot be established either. On the contrary, even if the subordinate can avail themselves of an excuse, the superior would still be responsible for having failed to prevent the crime or for failing to submit the matter to the competent authorities (who are ultimately competent to decide whether the plea of an excuse by the subordinate is valid), although not for failure to punish, given that the subordinate is not culpable and thus not punishable.⁸¹ According to Buchan and Tsagourias it follows that, for superior responsibility to apply when AWS are employed, the underlying crime does not need to have been committed in all its constitutive elements, being sufficient for the *actus reus* to materialize, even if no culpability

79 Mettraux, *supra* note 18, at 131.

80 *Ibid.*, at 132.

81 C. Meloni, *Command Responsibility in International Criminal Law* (TMC Asser Press, 2010), at 153–154, footnote 62 and accompanying text; see also Ambos, *supra* note 8, at 281–282; and Buchan and Tsagourias, *supra* note 3, at 672.

for this wrongful act can be ascribed to a moral agent.⁸² They reason that AWS can fulfil the objective element of a crime — e.g. targeting civilians — and that this will be sufficient for the purposes of establishing the responsibility of the superior, even if the autonomous weapon cannot fulfil the required *mens rea* for this war crime.⁸³

However, the availability of an excuse as a ground for excluding the responsibility of a subordinate occurs in exceptional circumstances. This can hardly be equated with the inability of AWS to form the necessary mental element in any circumstance, which is an intrinsic feature of machines. Indeed, an interpretation of the operational capabilities of an autonomous weapon as fulfilling the requisite mental element of intent and knowledge⁸⁴ is at odds with conceiving of the *mens rea* as implying the blameworthiness or culpability of an actor,⁸⁵ which are qualities that pertain to or can be traced back to humans.

In my view, there is no convincing reason to depart from the interpretation that the application of superior responsibility requires that an underlying crime be (or about to be) ‘committed’ in all its elements, including the objective, subjective and contextual elements. This has consequences not only in terms of excluding the responsibility of the superior for the wrongful acts of a machine that lacks the required *mens rea* (provided that the machine is considered a subordinate to start with) but also creates an obstacle to the applicability of the doctrine when human subordinates operate AWS. In fact, if the level of autonomy of the weapon prevents the operator from forming the required *mens rea* for the crime to be ascribed to them, the operator’s superior is also not responsible for that act. Similarly, the doctrine of superior responsibility could apply to the superior (whether military or civilian) of a developer or programmer only if a war crime eventually committed by employing the AWS they developed or programmed can be ascribed to the developer or programmer. This is not only a matter of establishing the subjective element of the war crime, but also, among other things, the temporal applicability of IHL, the existence of a nexus with the armed conflict,⁸⁶ and a causal link between the developer’s or programmer’s conduct and the crime.⁸⁷ When these conditions are fulfilled, a commander would be responsible if they ‘later became aware that the system had been employed in a manner constituting a war crime and did nothing to hold the individuals concerned accountable’.⁸⁸

82 Buchan and Tsagourias, *supra* note 3, at 671–672.

83 *Ibid.* For example, under Art. 8(2)(b)(i) ICCSt., the war crime of ‘directing attacks against the civilian population as such or against individual civilians not taking direct part in hostilities’ must be committed ‘intentionally’.

84 Buchan and Tsagourias, *supra* note 3, at 670–671.

85 A. Cassese and P. Gaeta, *Cassese’s International Criminal Law* (3rd edn., Oxford University Press, 2013), at 39; Ambos, *supra* note 8, at 150–152, 365–366.

86 McFarland and McCormack, *supra* note 33, at 372–381.

87 Bo, *supra* note 54, at 11–12.

88 M.N. Schmitt, ‘Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics’, 4 *Harvard National Security Journal* (2013) 1, at 33.

4. Supervisory Duties *vis-à-vis* Subordinates

Even if several obstacles prevent the applicability of the doctrine of superior responsibility when AWS are employed, the doctrine remains applicable when a superior–subordinate relationship among individuals is established and the superior’s failure to prevent or repress the crimes of the subordinates materializes. With respect to this relationship between individuals, focusing on the preventive limb of superior responsibility allows the advancement of proposals that will not only clarify how this criminal doctrine applies when AWS are used but also more generally what parameters should inform their use so that they are kept ‘within a responsible chain of command and control’.⁸⁹

The superior’s duty to prevent the crimes of their subordinates concerns crimes that are about to be committed or that are being committed.⁹⁰ Superiors are not required to take all measures theoretically available, but only measures that are necessary and reasonable in the specific circumstances and at the relevant time.⁹¹ Necessary measures are those appropriate for the superior to discharge their obligations, and reasonable measures are those that reasonably fall within the superior’s material power.⁹² The case law of international criminal courts and tribunals indicates some examples of measures that can be taken to discharge the superior’s duty to prevent. They include ‘ensuring that the forces are adequately trained in international humanitarian law’, ‘securing reports that military actions were carried out in accordance with international law’, ‘issuing orders aiming at bringing the relevant practice into accord’ with IHL and ‘conducting military operations in such a way as to lower the risk of specific crimes or to remove opportunities for their commission.’⁹³ These examples of measures that could be taken are useful for conceiving what could generally be required of a superior when AWS are employed, provided that the availability of measures in specific circumstances must be assessed on a case-by-case basis.⁹⁴

For instance, adequate training in IHL should include not only ensuring that subordinate forces are informed about the applicable rules, but also that they are given specialized training on the use of the means and methods of warfare at their disposal in a way that is compliant with IHL. If AWS are employed, then this would extend to requiring that operators be trained to understand how the system works and how to operate it, risks of malfunctioning, and how to deactivate the system if needed.⁹⁵ In turn, the commander should have a

89 ‘Guiding Principles Affirmed by the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems’, *supra* note 38, Annex III, § (d).

90 *Bemba Gombo*, *supra* note 5, § 202.

91 *Ibid.*, at § 197.

92 *Ibid.*, at § 198.

93 *Ibid.*, at §§ 203–204, making reference to the case law of other international criminal courts and tribunals.

94 *Ibid.*, at § 197.

95 See e.g. ‘Directive Number 3000.09, Autonomy in Weapon Systems’, *supra* note 55, at 2–3; see also B. Boutin et al. ‘DILEMA Statement on the Global Governance of Artificial Intelligence in the Military’ (January 2023), available online at <https://www.asser.nl/dilema/research/dilema-statement> (visited 3 March 2023), at § 10.

sufficient understanding of how the technology works to be able to discern whether it can be and is being employed in accordance with IHL in the given circumstances.⁹⁶ This would clearly include the duty of the superior who has the requisite knowledge to prevent the use of a weapon that has been programmed so as to result in IHL violations.⁹⁷ While IHL does not explicitly mandate that soldiers and commanders understand how weapons in their arsenal work, this requirement can be considered implicit in the duty to take constant care to spare civilians and civilian objects enshrined in Article 57(1) AP I⁹⁸ as well as a necessary precondition for compliance with all rules on the conduct of hostilities.⁹⁹

Preventive measures at the commander's disposal can also include the issuing of orders aimed at bringing the relevant practice into accordance with IHL. This can be done in different ways. For instance, commanders can decide which levels of automation should be employed in a specific mission, and they can instruct operators as to the geographic and temporal use of the weapon.¹⁰⁰

Additionally, superiors have a duty to prevent further or recurrent crimes. When AWS are employed, securing reports on attacks carried out through the use of specific technology becomes paramount so that, if necessary, the commander can require the reprogramming of a weapon for future operations to be conducted in compliance with IHL. Depending on the criminal law rule violated, different levels of *mens rea* are required for a war crime to be committed. Generally, the required mental element under the Rome Statute is 'intent and knowledge' unless provided otherwise.¹⁰¹ According to the ICC Appeals Chamber, virtual certainty that future events will occur is required in order for this *mens rea* standard to be met.¹⁰² Other war crime provisions may require a lower mental element.¹⁰³ Based on these standards, the first malfunction of an AWS leading to

96 Margulies, *supra* note 4, at 433; M.T. Miller, 'Command Responsibility: A Model for Defining Meaningful Human Control', 11 *Journal of National Security Law & Policy* (2021) 533, at 539.

97 Schmitt, *supra* note 88, at 33.

98 G. Corn and J.A. Schoettler Jr, 'Targeting and Civilian Risk Mitigation: The Essential Role of Precautionary Measures', 223 *Military Law Review* (2015) 785, at 794; see also, with respect to a different type of weapon, ICRC, *Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas* (2022), at 102 and 146, section 2.1: 'Provide training for all those involved in the planning, decision-making and execution of attacks, including the targeting process, to ensure that the effects of explosive weapons in populated areas, including their area effects, and the limitations applicable to their use, are fully known and understood.'

99 Miller, *supra* note 96, at 540.

100 Verbruggen, *supra* note 46, at 6.

101 Art. 30 ICCSt.

102 Public redacted version of the Judgment on the appeal of Mr Thomas Lubanga Dyilo against his conviction, *Lubanga Dyilo* (ICC-01/04-01/06 A 5), Appeals Chamber, 1 December 2014, § 477. But see the analysis of *mens rea* standards for war crimes of unlawful attacks by M. Bo, 'Autonomous Weapons and the Responsibility Gap in light of the Mens Rea of the War Crime of Attacking Civilians in the ICC Statute', 19 *Journal of International Criminal Justice* (2021) 275–299.

103 E.g. the grave breaches listed in Art. 85(3) AP I, which include 'making the civilian population or individual civilians the object of attack', must be committed 'wilfully'. According to ICRC, Commentary, *supra* note 30, § 3474, 'wilfully' includes wrongful intent and recklessness.

a violation of IHL might not amount to a war crime attributable to the operator who does not meet the requisite level of *mens rea*. As a consequence of the absence of responsibility of the operator, the derivative responsibility of their superior would fail to be established. However, at that point, both the superior and the subordinate will be on notice regarding future uses of the AWS that might not be in line with IHL. Once they are on notice that further violations of IHL might be caused, the superior would be responsible for not preventing the war crimes that they know (or should know) will be committed, with the required mental state, by a subordinate operating, designing or programming a faulty AWS.¹⁰⁴ In order to avoid responsibility, the superior might have to go as far as 'ordering the standing down of the system pending reprogramming or adjustment to prevent recurrent offences'.¹⁰⁵

Superior responsibility for failure to prevent subordinates from committing crimes should be distinguished, on a conceptual level, from the responsibility that 'those who plan or decide upon an attack' may incur for failing to comply with the obligation to take precautions.¹⁰⁶ The latter obligation includes taking feasible precautions in the choice of means and methods of warfare in order to avoid or minimize civilian collateral damage, and refraining from deciding to launch an attack that can be expected to cause excessive collateral damage in relation to the concrete and direct military advantage anticipated.¹⁰⁷ Although the two sets of obligations apply concurrently and require similar action to be taken, they are distinct in so far as, on the one hand, the duties stemming from superior responsibility must be fulfilled in order for an individual to avoid a derivative form of criminal liability by omission and, on the other hand, the duties concerning precautionary measures stem from a primary rule whose breach is not criminalized under international law but can instead entail state responsibility.

5. Conclusion

Superior responsibility has been presented as a potential solution to the alleged 'responsibility gap' concerning violations of IHL amounting to war crimes committed when AWS are employed on the battlefield. This article, however, has shown that several challenges arise to the applicability of superior responsibility.

There have been proposals for the modification of the doctrine of superior responsibility to extend it to AWS.¹⁰⁸ It has been suggested that this could be done by amending the Rome Statute, by way of a new international treaty, or through changes to state practice (e.g. army manuals and military penal

104 Similarly, Seixas-Nunes, *supra* note 40, at 232, 235.

105 McFarland, *supra* note 33, at 164; see also McFarland and McCormack, *supra* note 33, at 384–385.

106 Art. 57(2)(a) AP I.

107 Art. 57(2)(a)(ii) and (iii) AP I.

108 See e.g. Margulies, *supra* note 4.

codes) that would then result in changes to the doctrine under customary law.¹⁰⁹ Even if change could be so achieved, I doubt that it is either necessary or useful. Changes that would make superior responsibility applicable when underlying crimes cannot be ascribed to a human subordinate would imply introducing a criminal negligence standard making a person ‘in putative control’ always liable as a superior, which is at odds with the *nulla poena sine culpa* principle.¹¹⁰ This would enlarge the gap between the superior’s culpability and their responsibility which is already deemed to plague the doctrine.

Rather than considering superior responsibility as a solution to close the ‘responsibility gap’ allegedly resulting from the development and use of AWS, the focus should be on making sure that a human is in sufficient control of an autonomous weapon and directly responsible for the wrongdoings it causes. In turn, the responsibility of their superiors could be established. Indeed, maintaining human control over AWS is important for both compliance with IHL and accountability purposes under international criminal law.¹¹¹ Although states have not agreed on the levels and forms that human control over AWS should take, from their contributions to the work of the Group of Governmental Experts it appears that they agree on the necessity of keeping AWS within a human chain of command and control.¹¹² Thus, in moving forward with discussions in that and other fora about the necessary level of human control over AWS, it will be useful to keep in mind the challenges to the applicability of the doctrine of superior responsibility.

109 Amoroso, *supra* note 52, at 142.

110 Crootof, *supra* note 27, at 72.

111 See Marta Bo’s contribution to this Special Issue of the *Journal*.

112 ‘Elements for a Legally Binding Instrument to Address the Challenges Posed by Autonomy in Weapon Systems. Submitted by Chile and Mexico to the Group of Governmental Experts of the High Contracting Parties to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects’ (2022), available online at <https://documents.unoda.org/wp-content/uploads/2022/08/WP-Chile-and-Mexico.pdf> (visited 3 March 2023), at 5; ‘Written Contribution of France and Germany to the Convention on Certain Conventional Weapons Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems. Outline for a Normative and Operational Framework on Emerging Technologies in the Area of LAWS’ (2021), available online at <https://documents.unoda.org/wp-content/uploads/2021/06/France-and-Germany.pdf> (visited 3 March 2023), at 2; ‘Working Paper of the People’s Republic of China on Lethal Autonomous Weapons Systems (Unofficial Translation)’ (July 2022), available online at <https://documents.unoda.org/wp-content/uploads/2022/07/Working-Paper-of-the-Peoples-Republic-of-China-on-Lethal-Autonomous-Weapons-Systems%EF%BC%88English%EF%BC%89.pdf> (visited 3 March 2023), section III.