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Editorial

Editorial for the Special Issue on Meaningful Human Control and Autonomous Weapons Systems

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Global discussions on the legality and ethics of using Artificial intelligence (AI) technology in warfare, particularly the use of autonomous weapons (AWS), continue to be hotly debated. Despite the push for a ban on these types of systems, unilateral agreement remains out of reach. Much of the disaccord comes from a privation of common understandings of fundamental notions of what it means for these types of systems to be autonomous. Similarly, there is a dispute as to what, if at all possible, it means for humans to have meaningful control over these systems.

The attention garnered has not relented, and recent developments at the 2021 Sixth Review Conference of the Convention on Certain Conventional Weapons (CCW or CCWC) betray the need for further sober debate. Likewise, we see interest in this topic continued to be disseminated by full-length books being recently published like *Should we Ban Killer Robots?* [1] and *Lethal Autonomous Weapons: Re-examining the Law and Ethics of Robotic Warfare* [2], as well as forthcoming monographs like *Designed for Death: Controlling Killer Robots* [3]. This interest is not unwarranted, with global geopolitical instability becoming a clear and present danger, the employment of these types of systems is likewise becoming a reality that we must confront.

This special issue aims to take a slightly different approach to the issue, not looking only at the legal nature of these systems per se, but taking a look at how to design these systems *for* human values, like those of international law.

- Umbrello and Wood [4] argue that as AWS become more sophisticated and increasingly more capable than flesh-and-blood soldiers, it will increasingly be the case that such soldiers are "in the power" of those AWS which fight against them. This implies that such soldiers ought to be considered *hors de combat*, and not targeted. In arguing for this point, they draw out a broader conclusion regarding *hors de combat* status, namely that it must be viewed contextually, with close reference to the capabilities of combatants on both sides of any discreet engagement. Given this point, and the fact that AWS may come in many shapes and sizes, and can be made for many different missions, the authors argue that each particular AWS will likely need its own standard for when enemy soldiers are deemed *hors de combat*. They conclude by examining how these nuanced views of *hors de combat* status might impact on meaningful human control of AWS.
- Ilse Verdiesen, Andrea Aler Tubella and Virginia Dignum [5] make the case that accountability is a value often mentioned in the debate on intelligent systems and their increased pervasiveness in our society, but when focusing specifically on autonomous systems, a critical gap emerges. Although there is much work on governance and attribution of accountability, they argue that there is a significant lack of methods for the operationalisation of accountability within the socio-technical layer of autonomous systems. In the case of autonomous unmanned aerial vehicles or drones—the critical question of how to maintain accountability as they undertake fully autonomous flights becomes increasingly important as their uses multiply in both the commercial and

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military fields. In their paper, they aim to fill the operationalisation gap by proposing a socio-technical framework to guarantee human oversight and accountability in drone deployments, showing its enforceability in the real case of military surveillance drones. By keeping a focus on accountability and human oversight as values, they align with the emphasis placed on human responsibility, while requiring a concretisation of what these principles mean for each specific application, connecting them with concrete socio-technical requirements. In addition, by constraining the framework to observable elements of pre- and post-deployment, they do not rely on assumptions made on the internal workings of the drone nor the technical fluency of the operator

- Finally, Austin Wyatt and Jai Galliott [6] discuss how the removal of direct human involvement from the decision to apply lethal force is at the core of the controversy surrounding autonomous weapon systems, as well as broader applications of artificial intelligence and related technologies to warfare. Far from purely a technical question of whether it is possible to remove soldiers from the 'pointy end' of combat, the emergence of autonomous weapon systems raises a range of serious ethical, legal, and practical challenges that remain largely unresolved by the international community. The international community has seized on the concept of 'meaningful human control'. Meeting this standard will require doctrinal and operational, as well as technical, responses at the design stage. Their paper focuses on the latter, considering how value sensitive design could assist in ensuring that autonomous systems remain under the meaningful control of humans. However, their article also challenges the tendency to assume a universalist perspective when discussing value sensitive design. By drawing on previously unpublished quantitative data, they critically examine how perspectives of key ethical considerations, including conceptions of meaningful human control, differ among policymakers and scholars in the Asia Pacific. Based on this analysis, their article calls for the development of a more culturally inclusive form of value sensitive design and puts forward the basis of an empirically-based normative framework for guiding designers of autonomous systems.

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