New Technologies Symposium: How Law and Autonomy (Should) Interact in War and Peace

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The question of how law relates to technological innovation is far from new. For the most part, law has played catchup to technological developments – both in the civilian and military realm. While digital technologies are not exactly new, we are in the midst of a qualitative leap in how computational decision-making will shape our lives. Whether law merely follows technological developments or has an active role in shaping such developments is one of the most salient topics in this context.

Bill Boothby's *New Technologies and the Law in War and Peace* sheds light on this question by compiling important articles by both the editor and eminent authors on a range of topics of interest, such as cyber technology (Chapter 5), human enhancement technologies (Chapter 7 and 8), human degradation (Chapter 9), nanotechnology (Chapter 10), naval warfare (Chapter 11), outer space (Chapter 12), synthetic brain technologies (Chapter 13), and biometrics (Chapter 14). The book sets out an ambitious agenda – covering the role of new technologies not only in times of armed conflict, but also in civilian contexts. The underlying idea is explained in the book's preface, namely to provide an inquiry into whether lessons can be learned in either realm for the other by examining modern technologies in these two quite different contexts.

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contexts" is too ambitious, but strives to nevertheless provide readers with "the relevant facts, rules and information (…) to draw their own conclusions", realizing that there are limits to what the "law can and cannot do". Part of the reasons for a discussion of both civilian and military contexts and the potential learning aspects is laid out in the Introduction. While in previous times, technology was often developed for military purposes and subsequently adapted for civilian use, the rise in consumer spending and the increasing monies being spent for civilian R & D has led to civilian technologies being transferred to the military context.

This development is acutely applicable in the context of technology dealing with autonomous decision-making, be it in the military or the private context. Boothby himself is the author of Chapter 6, titled "Highly Automated and Autonomous Technologies". His starting point is – in my view correctly – that "that it is by reference to the existing weapons-law rules that the lawfulness of new technology weapons must be determined" (137). The chapter starts with a definitional section, describing in detail the terms highly automated ("systems so designated apply automation specifically to both target selection and engagement" (143)) and autonomous weapon systems (AWS). With regard to the latter, Boothby thankfully eschews definitions that make reference to higher-level intent and adopts an understanding of AWS "programmed to apply reasoning […] to determine whether an object or person is a target and whether it should be attacked", based on pre-programmed parameters and making decisions over both the military / civilian nature of the target and the lawfulness of an attack (144).

Even before turning to a long and thorough exposition of how the existing international humanitarian law (IHL) rules apply to AWS, Boothby nails his colors to the mast when he states that offensive AWS are – at least at this point in time – "unlikely to be capable of applying the customary distinction and discrimination principles and the rules as to proportionality and precautions in attack" (145). Boothby's position is a centrist one: he is neither (a) a cheerleader for the deployment of AWS based on a strong belief in technology being able to deliver capabilities that at least so far have not been proven to be attainable, nor (b) falls into the category of those who think that AWS will never be able to fulfil the requirements that IHL rules demand, namely the principle of distinction, and the rules of proportionality and precautions in attack. This is a sensible position to take, as it neither forecloses the possibility of future technological developments being able to provide a solution to what seems today to be an intractable problem nor ignores the serious legal (as well as political and ethical) hurdles that AWS face in order to be deployable in situations for which they are desirable to both civilian and military leadership.

The next important point of analysis pertains to the question of human responsibility, widely discussed under the auspices of the Conventional Weapons Convention over the last years, which – somewhat unfortunately – uses the term

Lethal Autonomous Weapon Systems (LAWS). This discussion is somewhat shorter than would have been desirable, split into two sections (Chapter 6.7 and 6.9). While Boothby rightly points out that military hierarchies are predicated on individuals having responsibility for their actions, the chapter could have discussed further the inherent difficulty in assigning responsibility in complex decision-making systems. Such decisional structures could easily become what I have previously called systems of organized irresponsibility.

The lines of responsibility between those who program the software, those that decide on the deployment of an AWS and those who program mission parameters into systems with autonomous capabilities are likely to be difficult to discern. This is especially the case when the underlying technology – as is the case with AWS – makes it virtually impossible for each part of the chain in the decision-making process to understand the technology or how it interacts with the physical world. Front line technicians will almost certainly be unable to understand the code (even if they had access to it) upon which decisions are made by an AWS. One could argue that such analysis should have taken place in the weapons review stage under Article 36 AP I, but readers may well be aware that the legal obligations for weapons reviews have long been regarded as less than efficacious. A more in-depth analysis would have been helpful in the otherwise very detailed discussion of the legality of AWS.

The chapter then turns to how autonomous systems may find application in the civilian realm by analysing three distinct fields: civil aviation, surgical practice, and driverless cars. Apart from some parallels Boothby draws between the military and these civilian contexts, a more sociological observation stands out when he states that the "employment of automation in surgery, in commercial aviation and on the public roads may well render its employment in warfare, and in particular in relation to weapon systems, potentially less controversial than is the case at the moment" (179).

Returning to the question posed earlier – whether technological development should drive legal rules or for legal rules to provide the framework within which technological developments can take place – Boothby advocates for the approach taken by the California legislature concerning the use of driverless cars. This consists of an examination of what the technology can do, with a subsequent assessment of whether the technology is acceptable or not. Boothby hastens to point out that his is a "somewhat cold application of rather legalistic logic" (181). It would have been useful – and desirable – to provide a closer analysis of the potential implications of this approach. This is nowhere truer than in the context of AWS where decisions over whether and how to carry out an attack routinely entail the taking of human lives. It may prove difficult to put the genie back in the bottle, especially when the political costs of engaging in or continuing armed conflicts are decreased through the use of AWS. While the focus of this review was on Chapter 6 dealing with AWS, the other chapters of this edited collection – as well as its concluding Chapter 15 – make for

rewarding reading. *New Technologies and the Law in War and Peace* is essential for anyone interested in how modern technologies interact with society and how they impact law as well as how legal frameworks impact modern technologies.

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