

A CYBORG SOLDIER IS A SOLDIER LIKE ANY OTHER REGARDING THE *HORS DE COMBAT* PROTECTION

BY

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ABSTRACT

This article deals with the question of “enhanced” soldiers, that is to say soldiers whose physical and mental abilities are pushed beyond the statistically normal abilities of any human being. More specifically, this article analyses the case of a soldier able to pilot a drone remotely thanks to an electronic implant placed in the soldier’s brain. The technology needed to achieve this exists on the theoretical level. This article does not deal with the lawfulness or not of the implantation of the device regarding IHL. It postulates this legality and it focuses on the question of the applicability or not, to such a soldier, of the “*hors de combat*” protection. This article concludes that the “*hors de combat*” status is applicable to such a soldier if he or she can be identified as such by the enemy armed forces.

RÉSUMÉ

Cet article traite de la question des soldats « augmentés », c’est-à-dire de soldats dont les capacités physiques et mentales sont poussées au-delà des capacités statistiquement normales de tout être humain. Plus particulièrement, cet article analyse le cas d’un soldat en mesure de piloter un drone à distance grâce à un implant électronique placé dans son cerveau. La technologie nécessaire pour réaliser cette prouesse existe sur le plan théorique. Cet article ne traite pas de la licéité de l’implantation du dispositif au regard du DIH. Celui-ci postule cette licéité et s’intéresse plutôt à la question de l’applicabilité à un tel soldat de la protection offerte par le statut « hors de combat ». Cet article conclut à l’applicabilité du statut « hors de combat » à pareil soldat à condition que celui-ci puisse être identifié comme tel par les forces armées ennemies.

Technologies have been evolving and developing, particularly in military forces. Nowadays, armies have been developing biological or technological devices to boost the physical and/or mental abilities of their soldiers beyond the species-typical level or statistically-normal range military abilities for an

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individual. (1) Scholars refer to those technologies as ‘human enhancement’. For example, military forces are working on a form of helmet which has the capacity to directly communicate and exchange information with the soldier’s brain thanks to an implant (2) that can communicate with a soldier’s brain and identify the enemy target more quickly and accurately than a “standard soldier”. (3) Military forces are also working on biological modifications to stop the bleeding instantly (4) and to allow their soldiers to digest plants and roots to avoid feeding them. Nevertheless, some of those military evolutions question the applicability of International Humanitarian Law – IHL – to some types of military enhancements. In her article, “Cybernetic Enhancement of Soldiers: Conserving hors de combat protections for Combatants Under the Third Geneva Convention”, Amanda McAllister stands that the existing legal framework is outdated and that we need a new Geneva Convention to rule some of these new technologies. (5) She points out this necessity concerning especially what she calls ‘cyborg soldiers’ or ‘telepath pilots’. (6) This type of soldier would be one able to use a weapon or to pilot a drone, remotely, with their thoughts, thanks to an implant in the soldiers’ brain. (7) We will see below that this enhancement is technically possible. She supports the idea that the application of the *hors de combat* protection to a soldier with this ‘chip enhancement’ is impossible. But is that so? The purpose of this paper is to stand that the emergence of a new technology does not automatically imply the necessity of new regulation instruments. To achieve it we will take the example of a telepath pilot given by Amanda McAllister and we will show that it is possible to apply the *hors de combat* protection to such a soldier. To do that, we will, firstly, describe the functioning of the brain implant, analyse the state of the legal doctrine on the categorization of such enhancement and show how, on this basis, McAllister justifies the impossibility to apply the *hors de combat* protection to a telepath pilot (I). Secondly, we will demonstrate that, despite McAllister’s arguments, it is possible to grant the existing *hors de combat* protection to such a soldier due to the very functioning of the brain implant (II). Thirdly, as a conclusion,

(1) F. ALLHOFF *et al.*, “Ethics of Human Enhancement: 25 Questions & Answers”, *Studies in Ethics, Law, and Technology*, January 2010, Vol. 4, No. 1, p. 3; H.A. HARRISON DINNISS et J.K. KLEFFNER, “Soldier 2.0: Military Human Enhancement and International Law”, *International Law Studies, U.S. Naval War College*, 2016, Vol. 92, p. 434; P. LIN, “Ethical Blowback from Emerging Technologies”, *Journal of Military Ethics*, December 2010, Vol. 9, No. 4, p. 317.

(2) I. PUSCAS, “La quête du soldat augmenté”, *Le Monde diplomatique*, September 2017, available on <https://www.monde-diplomatique.fr/2017/09/PUSCAS/57875> (Accessed 22 March 2019).

(3) I. PUSCAS, “Military Human Enhancement”, in W. BOOTHBY (ed.), *New Technologies and the Law in War and Peace*, Cambridge, Cambridge University Press, 2018, p. 199.

(4) *Ibid.*, pp. 192-194.

(5) A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving hors de combat Protections for Combatants Under the Third Geneva Convention”, *Journal of Law & Cyber Warfare*, 2019, Vol. 7, No. 2, pp. 67-100.

(6) *Ibid.*

(7) *Ibid.*, p. 70.

we will support the idea that the problem is not the application of the *hors de combat* protection to a telepath pilot but the ability to identify a soldier as such to allow all the parties to a conflict to take all the necessary measures to apply this protection (III).

I. — THE TELEPATH PILOT: A SOLDIER
WITH AN ARMED BRAIN

Before addressing the way the legal doctrine considers a telepath pilot, let us explain what this consists in. A soldier will be able to pilot a drone or an aircraft with their thoughts thanks to a device implanted in their brain without touching the drone commands. (8) This system of brain implant engaging movement already exists. (9) This technology is in use today with exoskeletons to allow paraplegic people to walk. (10) For these people, like everyone else, the brain sends orders to move thanks to electric signals but the spinal cord does not pass the orders to the rest of the body. (11) Thus, a brain implant has been created to catch those signals and send them to a computer by radio waves. (12) Thanks to that system, the exoskeleton follows the inside will of the individual and allows this individual to move in all spatial dimensions. (13) The implantation of an electronic device in the brain is necessary to ensure the communication between the brain and the exoskeleton. (14) In the past we tried to reach the same goal with electrodes put on the head of the individual but the signal was too weak. (15) This device will

(8) J. MORENO, “Mind Wars: Brain Research and National Defense”, *University of California Television (UCTV)*, 16 May 2008, from 48,33 min to 49,55 min, available on https://www.youtube.com/watch?v=0QC_Qz1I6jo (Accessed 30 March 2019); T. REQUARTH, “This Is Your Brain. This Is Your Brain as a Weapon”, *Foreign Policy.com*, 14 September 2015, available on <http://foreign-policy.com/2015/09/14/this-is-your-brain-this-is-your-brain-as-a-weapon-darpa-dual-use-neuroscience/> (Accessed 18 October 2019); I. PUSCAS, “La quête du soldat augmenté”, *op. cit.*; H.A. HARRISON DINNISS et J.K. KLEFFNER, “Soldier 2.0”, *op. cit.*, pp. 435 and 438-439.

(9) C. GUILLAUME *et al.*, “A wireless fully implantable ECoG recording medical device WIMAGINE for human Brain Computer Interface applications: toward a clinical trial”, *Frontiers in Human Neuroscience*, 2015, Vol. 9, available on https://www.frontiersin.org/10.3389/conf.fnhum.2015.218.00028/event_abstract (Accessed 9 April 2020); E. LÓPEZ-LARRAZ *et al.*, “Control of an Ambulatory Exoskeleton with a Brain-Machine Interface for Spinal Cord Injury Gait Rehabilitation”, *Frontiers in Neuroscience*, August 2016, Vol. 10, Article 359; A.L. BENABID *et al.*, “An exoskeleton controlled by an epidural wireless brain-machine interface in a tetraplegic patient: a proof-of-concept demonstration”, *The Lancet Neurology*, December 2019, Vol. 18, No. 12, pp. 1112–1122; L’ESPRIT SORCIER, “Exosquelette : comment réparer l’humain ? – Dossier #37”, L’Esprit Sorcier Officiel – Youtube channel, 3 March 2019, from 5 min, 52 sec to 9 min, 47 sec, available on <https://www.youtube.com/watch?v=e8Or5vFBM1s> (Accessed 18 March 2020).

(10) L’ESPRIT SORCIER, “Exosquelette : comment réparer l’humain ? – Dossier #37”, *op. cit.*

(11) *Ibid.*

(12) *Ibid.*

(13) *Ibid.*

(14) *Ibid.*

(15) *Ibid.*

work thanks to a brain implant connected to a drone by wireless waves. (16) We can already reasonably assume that a telepath pilot is likely to exist in a few years. In any case, McAllister defends this idea. (17)

Confronted with the integration of this electronic device inside the soldier's brain, the legal doctrine still disagrees on the categorization of the telepath pilot within the scope of IHL. A few authors categorize the enhanced soldiers as weapons – objects (18) – and some others say that they must be categorized as soldiers – humans. (19) In general, they do not explain their choice. As a first argument, McAllister says that because of this uncertainty a new Geneva Convention is needed to establish once and for all if a telepath pilot is a human or not since there are only humans who are entitled to the *hors de combat* protection. (20) Those humans are either combatants, or other people who have taken part in hostilities but who are not entitled to POW status, or civilians who have taken part in hostilities. (21) But most authors – even the authors categorizing an enhanced soldier as a soldier (22) or as a weapon (23) – are more cautious and simply say that the soldier must be categorized as a soldier and the brain device as a means of warfare within the scope of IHL. (24) Thus, on this basis we may consider that the telepath pilot is a soldier like any other and as such is entitled to the *hors de combat* protection. Nevertheless, McAllister states that even if we consider that a

(16) *Ibid.*; I. PUSCAS, “Military Human Enhancement”, *op. cit.*, p. 199; A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving hors de combat Protections for Combatants Under the Third Geneva Convention”, *op. cit.*, p. 86.

(17) A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving hors de combat Protections for Combatants Under the Third Geneva Convention”, *op. cit.*, pp. 87, 96.

(18) M. MEHLMAN, P. LIN et K. ABNEY, “Enhanced Warfighters: Risk, Ethics, and Policy”, *SSRN Electronic Journal*, 2013, pp. 28-31, disponible sur <http://www.ssrn.com/abstract=2202982> (Accessed 21 March 2019); J. SAVIRIMUTHU, “Singularity and the Art of Warfighters: The Geneva Convention on Trial”, in J. GALLIOTT et M. LOTZ (eds), *Super soldiers: the ethical, legal and social implications*, London, Routledge, 2015, p. 167.

(19) I. PUSCAS, “La quête du soldat augmenté”, *op. cit.*

(20) Art. 41 API; Rules 1, 3 and 47, CIHL, pp. 3, 11 and 164; Israel, *Rules of Warfare on the Battlefield*, Military Advocate-General's Corps Command, IDF School of Military Law, Second Edition, 2006, p. 29, available on https://ihl-databases.icrc.org/customary-ihl/eng/docs/v2_cou_il_rule47 (Accessed 10 February 2020); US, *Law of War Manual*, Office of General Counsel, Department of Defense, 2016, pp. 236-240, available on <https://dod.defense.gov/Portals/1/Documents/pubs/DoD%20Law%20of%20War%20Manual%20-%20June%202015%20Updated%20Dec%202016.pdf?ver=2016-12-13-172036-190> (Accessed 10 February 2020); A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving hors de combat Protections for Combatants Under the Third Geneva Convention”, *op. cit.*, pp. 77, 90-100.

(21) S. BORELLI et H. LAUFER, “Protection of Individuals Hors de Combat Convergence of International Humanitarian Law and International Human Rights Law”, in D. ROGERS (ed.), *Human Rights in War*, Auckland, Springer, 2022, pp. 310-317.

(22) I. PUSCAS, “La quête du soldat augmenté”, *op. cit.*; I. PUSCAS, “Military Human Enhancement”, *op. cit.*, p. 204.

(23) M. MEHLMAN, P. LIN et K. ABNEY, “Enhanced Warfighters”, *op. cit.*, pp. 28-31; J. SAVIRIMUTHU, “Singularity and the Art of Warfighters: The Geneva Convention on Trial”, *op. cit.*, p. 167.

(24) H.A. HARRISON DINNISS et J.K. KLEFFNER, “Soldier 2.0”, *op. cit.*, pp. 437-439; I. PUSCAS, “Military Human Enhancement”, *op. cit.*, p. 204.

telepath pilot is a soldier within the scope of IHL, the application of the *hors de combat* protection is impossible. To justify her position, she draws the following argumentation. The *hors de combat* protection is granted, notably, to a soldier who is unable or unwilling to fight anymore on the condition that such a soldier abstains from any hostile act. (25) In a regular situation this condition is easily fulfilled. Indeed, if a “regular” soldier tries to resume the fight by searching a gun, after claiming that he or she was unable or unwilling to fight, the enemy can see it and react. Nonetheless, McAllister points out that it is not the case with a telepath pilot. She notes that “If we do consider enhanced soldiers human, the actual neurological fusion of the biological body and the technological device could call into question whether soldiers are ever truly *hors de combat* when the [implant] permits permanent and remote access to military functions. If a soldier’s technological device is a weapon, and they are fused to that weapon, then it is unlikely he or she can believably surrender unless the [implant] has a visible and verifiable ‘of’ mechanism readily apparent to the capturing power.” (26) Indeed, the telepath pilot’s means of warfare is in his or her brain and he or she uses it with thoughts. Unlike today’s weapons or means of warfare, this means of warfare is undetectable for a reasonable man. (27) At this stage, it is impossible for the enemy to know that a soldier is a telepath pilot and when such a soldier is *hors de combat*. More importantly, it is impossible for the enemy to make sure that such a soldier abstains from any hostile act. So, at first sight, it is impossible to apply the *hors de combat* protection to a telepath pilot. However, in the next section, we will show that such a “switch off” mechanism exists. Then, we will demonstrate that that the current *hors de combat* protection is applicable to a telepath pilot.

II. — THE BRAIN IMPLANT CAN BE SWITCHED OFF

We share the view, with other authors, that IHL constitutes a set of flexible rules which adapt to new situations. (28) Indeed, we think that IHL is a dynamic set of rules which evolve through time to be applied to new situations. (29) As Professor Eric David said: “A rule is ‘suitable’ [*adaptée*] when

(25) Art. 41, §§ 1 and 2, al. 3, API; Rule 47, al. 2, CIHL, p. 164.

(26) A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving *hors de combat* Protections for Combatants Under the Third Geneva Convention”, *op. cit.*, p. 93.

(27) I. PUSCAS, “Military Human Enhancement”, *op. cit.*, p. 204.

(28) E. DAVID, “Le droit international humanitaire face à ces évolutions : un droit adapté ou adaptable ?”, in *La pertinence du Droit international humanitaire pour les acteurs non étatiques. Actes du colloque de Bruges du 25-26 octobre 2002*, Bruges, CICR et Collège d’Europe, n° 27, 2003, pp. 41-60; A. PELLET, “L’adaptation du droit international aux besoins changeants de la société internationale”, *Collected Courses of the Hague Academy of International Law*, 2007, Vol. 329, pp. 9-48.

(29) A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving *hors de combat* Protections for Combatants Under the Third Geneva Convention”, *op. cit.*, p. 94.

it can be applied directly to a factual situation, without raising any particular difficulty of interpretation. If this is not the case, but if we nevertheless succeed in applying the rule, we will say that it is ‘adaptable’.” (30) On this basis, we consider that, within the scope of IHL, a new convention or a new rule is required only if the existing IHL rules are not adaptable to the new factual situation. Now, we will demonstrate that if McAllister shows us that the *hors de combat* protection rules are not “suitable” to the telepath pilot case, they are, nonetheless, adaptable to such a soldier.

Remember that the brain implant works with WIFI waves. By the way, McAllister also indicates that such device works thanks to WIFI waves. (31) So, as Professor Lewis says: “Remotely-piloted aircrafts are dependent upon a continuous signal from their operators to keep them flying and this signal is vulnerable to disruption and jamming. If drones were perceived to be a serious threat to an advanced military, a serious investment in signal jamming or disruption technology could severely degrade drone operations if it did not defeat them entirely.” (32) In other words, if the WIFI connexion is blocked, the pilot is no longer a telepath pilot but just a “regular” soldier since the enhancement device is inoperant. So, the existing IHL rules apply. To ensure that a telepath pilot is *hors de combat*, the enemy forces could adapt existing devices which block WIFI waves like radio jammers or electromagnetic pulses. (33) For example, they could put a specific helmet on the telepath pilot’s head which contains a device to block the WIFI waves sent by the implant, an “anti-wave helmet”. Enemy forces could also use remotely jamming devices to disable the brain implant remotely. In that way, we ensure that a telepath pilot is in the power of the enemy, all along, as any “regular” soldier would be. Then, as long as the WIFI waves from the brain implant to the drone are blocked, the *hors de combat* protection is applicable to a cyborg soldier or a telepath pilot. Thus, using Eric David’s terminology, McAllister is right to say that, when the brain implant technologies will really come up to existence, the *hors the combat* protection rules will no longer be “suitable”. However, we saw that these rules can be adapted to a cyborg or telepath pilot thanks to devices that are already in use in the armed forces today. (34) Consequently, we do not need a new convention to rule the case of the telepath pilot who is *hors de combat*. Nonetheless, keep

(30) Free translation of E. DAVID, “Le droit international humanitaire face à ces évolutions : un droit adapté ou adaptable ?”, *op. cit.*, p. 41.

(31) A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving hors de combat Protections for Combatants Under the Third Geneva Convention”, *op. cit.*, p. 86.

(32) M.W. LEWIS, “Drones and the Boundaries of the Battlefield”, *Texas International Law Journal*, 2012, Vol. 47, No. 2, pp. 298-299.

(33) A. KRISHNAN, *Killer Robots: Legality and Ethicality of Autonomous Weapons*, Farnham, Ashgate Publishing Limited, 2009, pp. 38-39.

(34) K. PÄRLIN, M. M. ALAM and Y. LE MOULLEC, “Jamming of UAV remote control systems using software defined radio”, *2018 International Conference on Military Communications and Information Systems (ICMCIS)*, 2018, pp. 1-6, DOI: 10.1109/ICMCIS.2018.8398711.

in mind that this conclusion is based on the fact that, as a compromise, the current legal doctrine considers that telepath pilot is a soldier whose means of warfare is the brain implant. However, do not forget that the debate on the categorization of a telepath pilot within the scope of IHL is still open in the legal doctrine. Then, this conclusion could be invalidated by the future developments in the legal doctrine in a few years. We could stop here but there is still a point to discuss. In her article, McAllister is ready to apply the *hors de combat* protection to a telepath pilot if the switch off mechanism of the brain implant is visible. (35) However, we see that a switch off mechanism is not necessary since we could use a jamming device to unable the brain implant. Moreover, the use of a jamming device instead of a switch off mechanism has the advantage of disabling the implant remotely without being forced to touch the soldier allegedly *hors de combat*. Thus, thanks to such a device, the enemy armed forces could deactivate the implant from a safe place protected from a drone strike.

III. — TO MAKE AN ARMED BRAIN “VISIBLE” COULD BE NOT NECESSARY

We saw that the use of jamming devices by the enemy forces is required to apply the *hors de combat* protection to a telepath pilot. Nevertheless, if the enemy forces do not know that a particular soldier is a telepath pilot, they will never think of using such devices to “disactivate” the communication between the implant and the drone ensuring that the telepath pilot abstains from any hostile act. In that case, they expose themselves to a risk of perfidy from the telepath pilot. (36) Then, it follows from above that the application of the *hors the combat* protection is technically applicable to a telepath pilot but only if the enemy forces know that a particular soldier is a telepath pilot. This knowledge allows them to take all the necessary measures to make sure that a telepath pilot abstains from any hostile act, in the same conditions as any other “regular” soldier. This knowledge could take the form of a visible distinctive sign on the soldier’s body or uniform as McAllister seems to suggest (37) but we think that the visibility of the enhancement is not compulsory. Be careful, the following conclusions of this section are mainly founded on hypotheses which will be confirmed or rejected in the future depending on technological evolutions. Indeed, we could imagine that the armed forces equip all their soldiers with jamming devices which automatically block the

(35) A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving hors de combat Protections for Combatants Under the Third Geneva Convention”, *op. cit.*, p. 93.

(36) Art. 37, § 1, a), b), c), API, *op. cit.*; Art. 85, § 3, f), API, *op. cit.* Rule 65, 156 CIHL, pp. 221, 575 and 597.

(37) A. McALLISTER, “Cybernetic Enhancement of Soldiers: Conserving hors de combat Protections for Combatants Under the Third Geneva Convention”, *op. cit.*, p. 93.

WIFI waves within a certain area. We could also imagine that the armed forces develop tools to detect which soldier of the enemy armed forces is a telepath pilot. We can also reasonably think the existing tools used by the armed forces to capture and intercept waves and the telecommunications of the enemy could be used to know if a specific soldier is a telepath pilot. Nevertheless, it is also possible that the armed forces try to hide the fact that some of their soldiers are telepath pilots. In the future, depending on the evolution of all the technological devices, if it turns out that it is impossible – technically or because of the actions of the parties in the conflict – for the armed forces to know whether a soldier is a telepath pilot or not, we will have to think on which legal basis IHL can impose to the armed forces to identify their telepath pilots as such. But only the further technological developments will tell us if such obligation is required.