

WAR ALGORITHMS IN MODERN DELIBERATIVE DEMOCRACIES: PARLIAMENTARY TECHNOLOGY ASSESSMENT AS A PUBLIC CONSCIENCE DISCOVERY TOOL?

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Algoritmos de Guerra nas
Democracias Deliberativas Modernas:
Avaliação de Tecnologia Parlamentar
como Ferramenta de Descoberta
da Consciência Pública?

ABSTRACT

This paper is focused on the intersection of public international law and parliamentary assessment of technologies in the context of discussions on the lethal applications of artificial intelligence. The authors discuss the ‘public conscience requirements’ of the Martens Clause as an opportunity to increase the legitimacy of international law by including qualified public opinion in the international law-making process. This is particularly important in the case of controversial technologies such as lethal autonomous weapons systems, which have a fundamental impact on warfare and the application of which comes with both unprecedented benefits and as well as risks for humankind. The authors advocate the actual use of the Parliamentary Technology Assessment (PTA) mechanism as a method based on democratic deliberation and participation, which – especially in times of disinformation and fake news – can provide a reliable source of information and sights for both policy makers as well as the general public. PTA can be also seen as an institutionalised channel allowing civil society to exercise oversight over disruptive military technologies.

Keywords: lethal autonomous weapon systems, requirements of public conscience, qualified public opinion, parliamentary technology assessment, civil control of armaments.



Resumo

Este artigo está focado na intersecção do direito internacional público e da avaliação de tecnologia parlamentar no contexto das discussões sobre as aplicações letais da inteligência artificial. Os autores discutem os “requisitos de consciência pública” da cláusula Martens como uma oportunidade para aumentar a legitimidade do direito internacional ao incluir a opinião pública qualificada no processo de elaboração do direito internacional. Isso é particularmente importante no caso de tecnologias controversas, como sistemas letais de armas autônomas, que têm um impacto fundamental na guerra e cuja aplicação traz benefícios sem precedentes e também riscos para a humanidade. Os autores defendem o uso efetivo do mecanismo de Avaliação de Tecnologia Parlamentar (PTA) como um método baseado na deliberação e participação democrática, que – principalmente em tempos de desinformação e fake news – pode fornecer uma fonte confiável de informações e pontos de vista tanto para os formuladores de políticas quanto bem como o público em geral. O PTA também pode ser visto como um canal institucionalizado que permite à sociedade civil exercer supervisão sobre tecnologias militares disruptivas.

Palavras-chave: sistemas de armas autônomos letais, requisitos de consciência pública, opinião pública qualificada, avaliação de tecnologia parlamentar, controle civil de armamentos.

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INTRODUCTION

The international legal provisions relating directly to various types of weapons have crystallized alongside the technological developments that have allowed states to pursue military objectives more effectively. One such technology is artificial intelligence (AI) and programmed agents, which have the potential to revolutionize the concept of decision-making. When transferred to modern battlefields these agents – also known as, *inter alia*, lethal autonomous weapons system (LAWS) – provoke a number of legal and ethical questions which may incite a moral panic^{1, 2}.

This paper seeks to discuss an additional substantive source of international law in relation to two regulatory gaps that have been identified in the debate over LAWS: the role of the human factor and the permissibility of delegating life and death decisions to artificial intelligence war algorithms^{3, 4}. Despite the doctrinal positions of various representatives on the sufficiency of the existing customary and treaty law of armed conflict (LOAC) to accommodate LAWS in the targeting process^{5, 6, 7} this approach seems unconvincing when dealing with the amount of complicated and interconnected challenges^{8, 9, 10, 11, 12}. In particular, the principles of distinction, precautions in attack, and proportionality do not provide sufficient guidance to adequately govern the conduct of States with respect to LAWS and the identified gaps associated therewith¹³. Thus recourse to the Martens Clause is justified as it “applies in all cases of ambiguity, vagueness, incompleteness or inconsistency of existing treaty law in this field”¹⁴.

¹ JENKS, 2016, p. 25.

² EVANS, 2013, p. 697.

³ LEWIS, BLUM & MODIRZADEH, 2016.

⁴ KOWALCZEWSKA, 2021.

⁵ SCHMITT & THURNER, 2013, p. 231.

⁶ BOOTHBY, 2016, p. 249–252.

⁷ JENSEN, 2015, p. 625.

⁸ ARKIN, 2009.

⁹ MARCHANT et.al., 2011, p. 272–315.

¹⁰ ASARO, 2013, p. 687.

¹¹ LIU, 2013, p. 633–634.

¹² CROOTOFF, 2016, p. 1391–1393.

¹³ ICRC, 2021.

¹⁴ FLECK, 2020, p. 266.

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The methodological hypothesis of this article is that at the current stage of scientific development the level of AI algorithms does not match the level of human reasoning. Nevertheless, given the strategic, military, and geopolitical potential of LAWS, there is an urgent need to find a solution to this conundrum. To this end, this article offers proposals on the ‘public conscience requirements’ of the Martens Clause as a gateway to accommodate extra-legal norms into future international regulations, including taking into account moral norms and people’s voices¹⁵. Given the interdisciplinary nature of this approach, in order to identify the socio-legal dimensions and implications with respect to the regulation of LAWS, this article uses the dogmatic method (consideration of values and instruments for their realization) and systematic reviews¹⁶.

Nowadays scientists, policy makers, and expert communities are constantly engaged in public discussions on the state of technological development and the legal and ethical aspects and international policy issues related to AI. These discussions take place at the international¹⁷, regional, and national Regional^{18, 19, 20, 21, 22}. It is clear that in developed democratic societies the debate on the use of technology, and on the spending of public funds for this purpose, cannot be reduced to a mere measure of acceptance in public opinion polls²³. Therefore, the Parliamentary Technology Assessment (PTA) concept is presented herein as a way of including the public voice in the expert and political dialogues as part of the law-making process. However, it should be stated at the outset that the proposed instrument can only fully fulfil its role in democratic states. This means that by its very nature it has a limited impact on the activities of military and technological powers in authoritarian regimes, which operate on the basis of sovereign equality under international law.

¹⁵ HUMAN RIGHTS WATCH, 2018.

¹⁶ DACOMBE, 2018, p. 148.

¹⁷ UN, 2021.

¹⁸ EUROPEAN COMMISSION, 2019.

¹⁹ NATO, 2020.

²⁰ KPRM, 2020.

²¹ RUBNER, 2020.

²² FORD, 2020.

²³ SAUER, 2020, p. 235-259.

This paper starts with brief introduction describing the risks and benefits of LAWS. Next the Martens Clause is presented as a bridge for bringing moral issues and public opinion into international law in cases where treaty and customary law is not extant (as in the case of the regulation of LAWS). Consequently, we propose to consider the use of PTA as a method for introducing the ‘requirements of public conscience’ into democratic states.

1.1 Definition of LAWS

International discussions on LAWS have been held at the CCW Convention forum in Geneva since 2014. Nonetheless some key issues remain unsettled, i.e. the definition of LAWS, including an understanding of current one and defining the desired human–AI relationship (called operationally ‘meaningful human control’, or MHC). Autonomous combat systems can be diverse in nature, but those which raise the most controversies and are most often discussed in public are combat systems performing critical functions autonomously²⁴. Given the lack of a unanimous definition of AI, and thus of AI-based systems, it is important to provide a working definition for the sake of this paper. Therefore LAWS provide for systems designed in such a way (*the design-based approach*) that the decision-making process of selecting and engaging human targets (i.e. anti-personnel systems) is not subject to human control, but is made on the basis of war algorithms equipped with self-learning capabilities²⁵.

1.2 Threats and Opportunities of LAWS

Every new technological development generates a mixture of hope and fear that drives the public perception of science²⁶. LAWS are no exception, as they exhibit both opportunities and threats to international security and stability^{27,28}. Given the abundance of literature on these matters, here we mention briefly only the most important issues that are brought up in the debates.

²⁴ ICRC (n 13).

²⁵ CCW, 2018, p. 1-13.

²⁶ CRUZ-CASTRO & SANZ-MENÉNDEZ, 2005, p. 429.

²⁷ SCHARRE, 2016, p. 117-142.

²⁸ ALTMANN & SAUER, 2017, p. 117-142.

The introduction of LAWS into the established arsenals could lead to a lower threshold for the containment of armed violence and thus enhance the increasingly asymmetric nature of conflicts. The minimization (both real and/or perceived) of risks of death or bodily injury to individuals involved in a war could influence public opinion and policy in favour of war.

The risk of an uncontrolled proliferation of LAWS could result in an arms race^{29,30} and therefore in increased insecurity and massive spending. The ability of non-state actors to develop and acquire AI-based discrete technology³¹ can also seriously threaten security policy³². Due to the technological acceleration of conflicts, the space for de-escalation policy initiatives may shrink. The introduction of LAWS into the established arsenals could lead to a lower threshold for the containment of armed violence and thus enhance the increasingly asymmetric nature of conflicts. The minimization (both real and/or perceived) of risks of death or bodily injury to individuals involved in a war could influence public opinion and policy in favour of war. The use of LAWS could thus negatively affect respect for the LOAC principles of distinction and proportionality³³, as reflected in the case of drone warfare, which contrary to what was anticipated has resulted in increased collateral damage³⁴. And finally, the android fallacy on the one hand, and the lack of predictability (black box) and thus lack of trust in war algorithms on the other, dilute responsibility and distort decision-making^{35,36}.

At the same time however, in an ideal reality, i.e. assuming high efficiency and predictability, LAWS have many characteristics that speak in favour of their introduction into the battlefield, both for reasons of humanity as well as, military usefulness and precision. Compared to people, machines do not experience fear; do not forget orders; do not react emotionally (“robots don’t rape”); are suitable for 3D (dull, dirty and dangerous) work; do not need the same dimension of rest; and have a divisive/common intelligence and can calculate and operate at digital speed³⁷. Moreover, LAWS can enable better adherence to the LOAC and be morally justified as well if they contribute to reducing the number of errors in selecting military targets³⁸; will not expose the lives of civilians to hostile fire

²⁹ CNBC, 2017.

³⁰ REDING & EATON, 2020.

³¹ MAAS, 2019, p. 29.

³² CHERTOFF, 2018.

³³ ICRC (n 13).

³⁴ MÉGRET, 2013, p. 1284.

³⁵ MCFARLAND & MCCORMACK, 2014, p. 361.

³⁶ HUMAN RIGHTS WATCH, 2015.

³⁷ SINGER, 2011, p. 337–340.

³⁸ LEWIS, 2018, p. 4-8.

due to the lack of a need for self-defence; and will reduce their own losses and consequently contribute to reducing the negative effects of armed conflicts³⁹. Yet even the supporters of their development understand that autonomy implies certain compromises, especially regarding human control. Therefore, special attention should be paid to issues such as the type of decisions passed on to the software agent; the command relationship between humans and the algorithms; the operating environment; the type of risk caused by a wrong decision; and the military benefits resulting from the autonomy of certain functions⁴⁰.

It cannot be underestimated that the main argument against the use of LAWS is the state of the art of technology, which, when charged with the task of replacing the human soldier, has not yet developed the potential to match the abilities of the human brain. At the same time, the analysis of the legality of LAWS shows that if an appropriate level of technical development of AI is achieved, there will be no grounds for declaring such a measure illegal in the light of extant LOAC⁴¹. However, before this happens – and even the greatest techno optimists cannot agree whether this is a matter of years, decades, or even centuries⁴² – the world must deal with the task of regulating an imperfect technology – one which tempts some interest groups (both military and financial) with its potential, while causing the public at large to lose sleep over it. The latter have so far had very little say in the creation of a global inter-state order, although the Martens Clause could be considered as a vehicle for change in this matter.

2. PUBLIC CONSCIENCE AND THE LEGITIMACY OF LAWS

2.1 Normative Aspects of the Martens Clause

The Martens Clause, in addition to the principle of military necessity, is the basic mechanism in the classic LOAC to guide states in areas that are not regulated, as it prohibits the mechanical application

³⁹ CCW, 2018, p. 5.

⁴⁰ MAYER et al., 2014, p. 11–12.

⁴¹ HUMAN RIGHTS COMMITTEE, 2013.

⁴² DILMEGANI, 2017.

of the idea “that which is not prohibited is permitted”⁴³. Its strong deontological nature provides for a gap-filler, which in the context of the discussed subject can have considerable merit⁴⁴.

The normative basis of the Martens Clause, i.e. established customs, principles of humanity, and requirements of public conscience, can be considered as interpretative guidance of customary and treaty rules or as complementary sources of obligations on the part of belligerents^{45, 46}. Our aim is not to present the legal nature of this clause⁴⁷, but to present ways of understanding its element in order to try to answer the question of the admissibility of LAWS in light of the needs of mankind. For it is precisely the difficulty in ascribing meaning to the ‘requirements of public conscience’ that constitutes one of the core impediments to its full application^{48, 49, 50}.

Judge Shahabuddeen stressed that ‘the requirements of public conscience’, as an additional principle of LOAC, must be considered in the light of “changing conditions, inclusive of changes in the means and methods of warfare and the outlook and tolerance levels of the international community”⁵¹. Therefore, the Martens Clause should be regarded as a living instrument whose practical and concrete meaning changes throughout history, together with the changes in societies. This could mean, for example, that one method of combat is allowed in one era and prohibited in another (a good example here could be the ban on the use of chemical weapons, which nowadays could be considered too far-reaching in light of the development of nanotechnology). Shahabuddeen’s opinion combines a correct reading of the ontological basis of LOAC with a necessary dose of realism and pragmatism. Moreover, the requirement to update these concepts in the face of the development of new disruptive military technologies fits perfectly within the discussion on the regulatory

⁴³ ICRC, 2018.

⁴⁴ BIAZATTI & VASCONCELLOS, 2015, p. 1.

⁴⁵ ICJ, 1949, p. 22.

⁴⁶ ICJ, 1996, para 78 and 84.

⁴⁷ PEACE PALACE LIBRARY, 2017.

⁴⁸ CASSESE, 2000, p. 187.

⁴⁹ JØRGENSEN, 2012, p. 117.

⁵⁰ KAŁDUŃSKI, in: JASUDOWICZ, BALCERZAK & KAPELAŃSKA-PRĘGOWSKA, 2009, p. 302–311.

⁵¹ ICJ (n 46), p. 406.

difficulties associated with LAWS, including political, societal, and ethical issues – such as the admissibility of killing by war algorithms and the role of the human factor – which require reaching beyond the extant LOAC.

2.2 Requirements of Public Conscience: A catch-all phrase?

Conscience itself can be understood as an awareness and understanding that allows human beings to make their own judgments of evil and good, i.e. to shape their moral awareness. Public conscience, on the other hand, should rather be presented through the prism of values common to a given community – such as a family, tribe, nation, religious or professional group, region or group of states⁵². However, it should be noted that the ‘conscience of mankind’ can only be as universal as is international law, so in this sense the ‘conscience of mankind’ is a kind of a lowest common denominator, with all the consequences that entails⁵³.

The prominence of this lowest common denominator can be demonstrated not only in cases in which it was invoked together with the entire Martens Clause⁵⁴, but in instances when states referred to them as an independent standard in the preamble to pivotal instruments of international law: the Geneva Protocol of 1925 (‘general opinion of the civilized world’); the Universal Declaration of Human Rights of 1948 (‘the conscience of mankind’); the Convention on the Non-Applicability of Statutory Limitations to War Crimes and Crimes Against Humanity (‘world public opinion’); and the Rome Statute (‘the conscience of humanity’). The lack of elaboration of this concept in legal texts may well suggest however that the treaty-makers decided to use this loose language on the basis of their subconscious ‘gut feeling’ or simply for “the purpose merely of solving a diplomatic problem”⁵⁵). Out of the many approaches to the establishment of ‘public conscience’ in state submissions, treaty interpretation, international jurisprudence, and the doctrine, two main ones should be highlighted.

⁵² VEUTHEY in: HORST et al., 2004, p. 608.

⁵³ JØRGENSEN (n 49).

⁵⁴ FLECK (n 14).

⁵⁵ 55 CASSESE (n 48), p. 202.

2.2.1 *The Human Rights Approach*

This approach was presented by Australia in a written statement during the ICJ proceedings on the legality of the threat and use of nuclear weapons in 1996. Australia postulated that international human rights standards play a special role in shaping the requirements of public conscience. It is undeniable that human rights permeate every area of international law and therefore constitute the ethos of our times. However, reducing the importance of ‘the requirements of public conscience’ to a simple reference to human rights norms would deprive the Martens Clause of its self-sustaining and independent standard. Therefore, human rights law should be perceived as a separate set of benchmarks, and we consider this approach too narrow and will not focus on it in this paper.

2.2.2 *The Qualified Public Opinion Approach*

The second approach is much more interesting and offers a greater potential for progress, as it assumes that the Martens Clause leaves the door open to the inclusion of the public voice. It generally compares the public conscience with the public opinion that influences the conduct of conflicting parties and promotes the development of international law, including customary law. At the same time, the role of public opinion in supporting humanitarianism should not be overestimated, as public attitudes can be uncritical, under-informed, or simply unethical; a good example of which is the support for policies based on racism or sexism, which has been prominent in history⁵⁶.

Since the public conscience is a kind of opening of international legal norms to non-legal factors, it should not be subject to the monopoly of legal voices, but rather should give an impulse for further consideration in the fields of science and the humanities⁵⁷. This is particularly relevant in the context of the criticism of certain instruments of international law as being products of the imposed

⁵⁶ ASARO in: RYAN, FROMKIN & KERR, 2016, p. 373-375.

⁵⁷ VEUTHEY (n 52).

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will of the military, political, and Western world powers^{58, 59, 60}. A referral to local spiritual values and a sense of rightness, which represent the public conscience and legitimize the law in sociological terms⁶¹, can be seen as a way forward. The fight for peace in a strongly mediatized world, where developmental differences are evident, will not be supported by those communities that experience the effects of the conduct of hostilities⁶². Thus the role of the public voice in the creation of a new global social contract on common security cannot be overlooked⁶³.

In a world society, public opinion is expressed in many different ways: starting with the key interest groups (politicians, experts, business, academia, and civil society) and ending with the media, which nowadays includes the growing role of social media, and thus individuals^{64, 65}. At the same time, the important and still non-transparent role of big tech companies and governments, which can easily manipulate the masses of uninformed citizens through social media, must be taken into account and therefore the impact of social media should be approached with particular caution⁶⁶. Public reflections are also displayed in diverse forms of public deliberation⁶⁷, e.g. in debates initiated and carried out in parliaments, opinion polls, and other more or less institutionalized forms of gaining knowledge of the public's views on a particular issue.

While this approach remains attractive – as it makes it possible to bring together the people's opinions by appealing to values such as democracy and participation, it raises a number of questions specific to the their reliability and the democratic rule of international law, or lack thereof⁶⁸. Without delving into this issue, it should be emphasised that – given the difference between the subjects and creators of international law and domestic law – some caution

⁵⁸ CARTY, 1991, p. 1.

⁵⁹ CAI, 2013, p. 755.

⁶⁰ KEJIAKU, 2014, p. 337.

⁶¹ KWIECIEŃ, 2011, p. 104.

⁶² SCHROEDER, 2018, p. 149-169.

⁶³ UNITED NATIONS, 2020.

⁶⁴ RATTO & BOLER, 2014.

⁶⁵ SANDER, 2021, p. 159.

⁶⁶ LUCERI at al., 2019.

⁶⁷ SPARROW, 2017.

⁶⁸ WOUTERS, DE MEESTER & RYNGAERT, 2003, p. 139-197.

We understand ‘qualified public opinion’ as voices coming from civil society organizations, experts, and scientists engaged in deliberative democracy.

should be exercised as to *whose* voices should be included and *how* they should be collected and presented.

For instance, a straightforward alignment of the results of public opinion polls with the ‘requirements of public conscience’ creates the risk of taking into account opinions that are characterized by a high lability and susceptibility to manipulation and misinformation, especially during election periods and in post-politics^{69,70}. At the same time, notwithstanding the aforementioned this approach should be abandoned altogether. Thanks to modern technological developments in communication⁷¹, collecting large amounts of feedback from societies can be a starting point for a discussion on the state of public morality⁷². This possibility was used by the Campaign to Stop Killer Robots, which ordered IPSOS surveys in 2017, 2018 and 2020 to reinforce its arguments and strong opposition to those weapons^{73,74,75}. Also, in some technologically and democratically-advanced countries, with the help of IT a kind of public opinion poll has already been undertaken in order to get to know the public’s views on LAWS^{76,77}.

In the absence of a unified methodology and globally available technology to collect the voices of the world directly, as well as the lack of transparency and legitimacy of individual voices, it seems advisable to rely on the so-called ‘qualified public opinion’ channelled through national and institutionalized strands. We understand ‘qualified public opinion’ as voices coming from civil society organizations, experts, and scientists engaged in deliberative democracy. However, only a few of them act on the international level and are able to directly participate in debates and diplomatic activities, while the vast majority act on the domestic level, influencing national regulations or running campaigns to raise awareness in the local populations.

⁶⁹ BOLDYREVA et al., 2018.

⁷⁰ NEUDERT & MARCHAL, 2019.

⁷¹ JIA, 2019.

⁷² ROFF, 2017.

⁷³ IPSOS, 2017.

⁷⁴ HUMAN RIGHTS WATCH, 2019.

⁷⁵ HUMAN RIGHTS WATCH, 2021.

⁷⁶ HOROWITZ, 2016, p. 1-8.

⁷⁷ VERDIESEN, DE SIO & DIGNUM, 2019, p. 34.

And while the Stop Killer Robots action is wide-reaching, it does not change the fact that the LAWS, due to their geopolitical potential, certainly belong in the category of regulation-resistant weapons.

An outstanding example of a civil society actor committed to participatory democracy on the international level is the ICRC, which is the only institution conducting “humanitarian diplomacy” on such a large scale at both the international and national levels⁷⁸, ⁷⁹, ⁸⁰. Nevertheless, the history of arms regulation demonstrates that other individual NGOs or their coalitions have also played a large and incrementally-advancing role in stimulating and supporting the regulatory process, like the activities of International Campaign to Ban Landmines, which led to the adoption of the Ottawa Convention. International criminal law and international environmental law also owe a lot to the NGOs which participated in the negotiations in the Rio Process or the elaboration and adoption of the Rome Statute⁸¹. In the case of LAWS, the Campaign to Stop Killer Robots (recently rebranded to just ‘Stop Killer Robots’) could be classified as the key representative of civil society, and thus the epitome of public opinion on the admissibility of delegating life and death decisions to algorithms⁸². Yet, it is important to stress that every anti-weapons campaign is different and its chances of success depend primarily on the characteristics of the weapons it focuses on. In his excellent article S. Watts details the history of the regulation of armaments depending on whether a weapon is classified as regulation-tolerant or regulation-resistant⁸³. And while the Stop Killer Robots action is wide-reaching, it does not change the fact that the LAWS, due to their geopolitical potential, certainly belong in the category of regulation-resistant weapons. This is evidenced by the many years of talks in Geneva, which continue without the successful negotiation of any concrete instrument of international law, and by the advanced development and testing programmes, which are kept out of public and civilian oversight. Therefore civil society, even in liberal democracies, is unable to effectively implement its plans without state support; not to mention authoritarian regimes that are at the forefront of this arms race.

⁷⁸ ICRC (n 42), p. 6-7.

⁷⁹ MERON, 2000, p. 78-89.

⁸⁰ UNSG, 1999.

⁸¹ CHARNOVITZ, 2006, p. 348.

⁸² STOP KILLER ROBOTS, ‘Stop Killer Robots’ (2021).

⁸³ WATTS, 2015, p. 540.

Nevertheless, civil society actions are occasionally endorsed by citizens' representative institutions from different states^{84, 85} as well as intergovernmental bodies, as took place in the European Parliament in 2018 and in the OSCE Parliamentary Assembly in 2019 (despite the fact that the member states themselves do not call for the exact same actions). Likewise, the voices of experts from different fields (science, business, academia) very often influence debates within formal institutions. In the case of LAWS, this is evidenced by the 2014-2016 rounds of informal expert meetings in Geneva and the growing number of open letters from various sectors: AI & robotics researchers, military personnel, and veterans or health professionals⁸⁶, and the impressive amount of soft law in AI governance⁸⁷.

3. PTA AS A TOOL TO APPRAISE A NEW NORM ON LAWS

Taking into account the arguments cited above, we would like to go a step further and propose a complementary method of including public opinion in policy-making; one which stems from national practice and combines public opinion with institutional supervision. Since from the international law perspective statements of public authorities equal those of a State, while directly transferring mechanisms that work well in domestic processes may not always be effective at the international level, it is still worth reaching out to some of them, especially if they empower voices otherwise overlooked.

Some of the existing domestic methods are tested and mature enough to amplify the democratic legitimacy of the interstate system, as they allow people to have their say in an informed manner. And since there is no language barrier the mechanisms are more familiar and closer to those affected (in compliance with principle of subsidiarity), and the forms developed so far allow for genuine consultation and debate (unlike in the case of public surveys or opinion polls).

⁸⁴ NWS, 2018.

⁸⁵ TWEDE KAMER DER STATEN-GENERAAL, 2019.

⁸⁶ TAKE ACTION, 'Take Action' (2021).

⁸⁷ BROOKINGS, 2021.

In particular, there is one procedure which, albeit somewhat overlooked, fits perfectly into our purpose to examine the dictates of public conscience: the aforementioned PTA. It is being called by many a democratic form of populism that is well-positioned to counteract the anti-scientism, anti-intellectualism and anti-democratic forms of populism that are gaining ever more attention nowadays.

We argue that the legal recognition of LAWS-related demands of public conscience⁸⁸ may fill the regulatory gap, especially taking into account the absence of conclusive international norms and the existence of a need to establish common standards⁸⁹. Under the provisions of Art. 36 API⁹⁰ states are obliged to examine whether new weapons would be prohibited by any norm of international law. This examination includes the Martens Clause, i.e. new weapons should be tested taking into account the ‘requirements of public conscience’ as a benchmark, which may be validated through referral to the executive or parliamentary mechanism that approves or rejects the development of such a weapon based on ethical or political constraints, such as a lack of trust and/or acceptance by the public⁹¹.

In particular, there is one procedure which, albeit somewhat overlooked, fits perfectly into our purpose to examine the dictates of public conscience: the aforementioned PTA. It is being called by many a democratic form of populism that is well-positioned to counteract the anti-scientism, anti-intellectualism and anti-democratic forms of populism that are gaining ever more attention nowadays⁹². The PTA mechanism combines lay and expert voices on the basis of the principles of both democracy and participation⁹³, i.e. on the basis of the very principles which resonate today in the Martens Clause.

Gaining knowledge on the conscience of mankind on a global scale is difficult, if not impossible, but it probably wouldn’t be so challenging if all members of the international community (which are still fewer in number than a middle-size country population) could collect feedback from their citizens on how they approach, what they expect, and what are they worried about when it comes to a given new technology. PTA could be a method that could help to bring this information together while at the same time taking into account the differences in each country’s political system.

⁸⁸ SPERDUTI, 1958, p. 68-74.

⁸⁹ CCW, 2020.

⁹⁰ See: Protocol Additional, ‘Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I)’ 17512 UNTC 1125.

⁹¹ CCW, 2018.

⁹² VAN EST, 2019, p. 48-56.

⁹³ DELVENNE, FALLON & BRUNET, 2011, p. 36.

From a political science perspective, public conscience in the Martens Clause does not simply boil down to a measurement of the public's acceptance or attitude towards technology.

3.1 Public Conscience as a Governance Marker in Deliberative Democracies

From a political science perspective, public conscience in the Martens Clause does not simply boil down to a measurement of the public's acceptance or attitude towards technology. A public conscience objection to LAWS mainly refers to the lack of human control, which violates the principle of humanity. However, research shows that when political conditions change and the sense of threat increases, acceptance of the use of LAWS may increase as well⁹⁴, as the public is less concerned about military casualties than about the prospects for victory in the war⁹⁵.

In this sense, public opinion is the subject of a broad and multi-faceted debate on how much, in what way, and with what potential consequences public funds are invested into LAWS, and what risks and benefits they bring to society. According to the current understanding of the concept of governance⁹⁶ in modern deliberative democracies, the government is not seen as the sole guardian of the interests of the public, and control over the public goods takes place not just through formal instruments such as legislation and regulation. Government is a network and control partner in interaction with other parties. In addition to its traditional forms – command and control – it also stimulates public debate, negotiation, cooperation, a shared vision of development, and the formation of alliances.

Technologies that are socially perceived as risky, or even dangerous, can be (and often are) a source of major social conflicts that can lead to a trust deficit in government. Three days after the Fukushima disaster in 2011, in an election year Chancellor Merkel, under political pressure from an emotional public worried that such a nuclear catastrophe could happen in Germany, announced the closure of nuclear power plants by 2022 at the latest, which results in an increase in the share of coal in the power grid, in contradiction with the European Union's Green Deal⁹⁷. A more recent example of controversial technologies and related public policy issues materialized during the COVID-19 pandemic with respect to the

⁹⁴ D PRESS, SAGAN & VALENTINO, 2013, p. 188.

⁹⁵ HOROWITZ (n 76).

⁹⁶ KERSBERGEN & VAN WAARDEN, 2004, p. 143.

⁹⁷ LOHMANN, 2021.

need for restrictions and vaccinations that were compulsory for some population groups⁹⁸.

In this regard, the concept of technology assessment (TA), designed to better understand the societal consequences of the development of existing or the introduction of new technologies – with its emphasis on effects that are typically unplanned and unpredictable – plays an important role⁹⁹. Yet it is the lack of transparency in the operation and predictability of AI (black box) that poses one of the greatest challenges to its development and regulation^{100, 101}.

3.2 The Objectives of the PTA

The idea of TA was developed in the 1970s in the United States, and the concept itself has been clarified by the Office of Technology Assessment (OTA). The activities encompassed in TA were defined as policy studies designed to better understand the social implications of the development of existing, or the introduction of new, technologies, with an emphasis on effects that are typically unplanned and unpredictable¹⁰². TA is now a theoretically well-established concept with a large collection of evaluation methods, techniques, and procedures^{103, 104}.

At the heart of TA is the belief that technology and its dissemination in society can lead to a variety of consequences. These, in turn, must be anticipated, adequately described, and consequently evaluated¹⁰⁵. TA also seeks to promote debate and public understanding or acceptance of the implications of science and technology from an expert point of view, using scientific information.

In Europe, TA exists in an institutionalized form for advising parliament (PTA) in the European Parliamentary Technology Assessment (EPTA) network. EPTA was formally established in 1990 under the auspices of the President of the European Parliament. Today, EPTA

⁹⁸ GRUSZCZYŃSKI, 2021, p. 12.

⁹⁹ BÜTSCHI & ALMEIDA, 2016, p. 64–76.

¹⁰⁰ CASSAUWERS, 2020.

¹⁰¹ GÓMEZ DE ÁGREDA, 2020.

¹⁰² COATES, 2016, p. 126.

¹⁰³ TRAN & DAIM, 2008, p. 1396.

¹⁰⁴ MICHALSKI, 2015, p. 55.

¹⁰⁵ DELVENNE, FALLON & BRUNET (n 93).

Due to the intersection of scientific-technological and socio-economic issues, more space for public and political debate is needed. A parliamentary space with expert advice on technology, where the normative and ethical dimensions of the relationship between technology and society can be scrutinized and openly discussed, must be a place dedicated to such a debate.

brings together 23 national institutions with varying degrees of institutionalization (i.e. relationships with national parliaments and the European Parliament, funding models, scopes of influence, and relationships with the executive) in order to support a political and social process that also involves citizens^{106, 107}.

PTA was originally conceived as an analytical activity to provide decision-makers with an objective analysis of the impact of technology on the political agenda, decision-making processes, and society as a whole. It now legitimizes government decisions by democratizing the scrutiny of technological development and ensuring bottom-up involvement in decision-making. A bottom-up form of TA that takes into account the social perspective by involving lay persons and those affected by decision-making processes is known as participatory Technology Assessment (pTA).

Due to the intersection of scientific-technological and socio-economic issues, more space for public and political debate is needed. A parliamentary space with expert advice on technology, where the normative and ethical dimensions of the relationship between technology and society can be scrutinized and openly discussed, must be a place dedicated to such a debate. Without going into the specifics of national PTAs, one has to agree that they are instrumental in promoting public debate and raising public awareness of both technological issues as well as technological acceptability, and thus form part of the fount of knowledge on which public conscience is based.

3.3 EPTA and LAWS

In our research we reviewed the official websites of the PTA institutions that are either a Full Member (FM) or Associate Member (AM) of the EPTA network for LAWS-related statements (Table 1). Our review was based on a keyword search: ‘lethal autonomous weapon systems’, and ‘AI military robots’. LAWS-related statements are defined as all types of activities, including projects, position papers, scientific reports, seminars, meetings, workshops, etc. in which LAWS was a topic. The aim of the study was to determine whether LAWS issues are addressed, if so to what extent.

¹⁰⁶ CRUZ-CASTRO & SANZ-MENÉNDEZ (n 26).

¹⁰⁷ VAN EST (n 92).

Table 1. Institutions and offices providing scientific advice and PTA

no.	Name	English translation	Acronym	Country/ institution	Status	Issue
1	Scientific and Technological Options Assessment at European Parliament	Scientific and Technological Options Assessment	STOA	European Union	FM	0
2	Tulevaisuusvaliokunta	Committee for the Future		Finland	FM	0
3	Office Parlementaire d'Evaluation des Choix Scientifiques et Technologiques	Parliamentary Office for Evaluation of Scientific and Technological Options	OPECST	France	FM	0
4	Büro für Technikfolgen-Abschätzung beim Deutschen Bundestag	Office of Technology Assessment at the German Parliament	TAB	Germany	FM	1
5	Ειδική Μόνιμη Επιτροπή Έρευνας και Τεχνολογίας	Greek Permanent Committee on Research and Technology	GPCRT	Greece	FM	0
6	Rathenau Instituut	The Dutch Rathenau Institute	RI	Netherlands	FM	1
7	Teknologirådet	Norwegian Board of Technology	NBT	Norway	FM	0
8	Zentrum für Technologiefolgen-Abschätzung	Centre for Technology Assessment	TA-SWISS	Switzerland	FM	0
9	Parliamentary Office of Science and Technology	Parliamentary Office of Science and Technology	POST	Great Britain	FM	1
10	Consell Assessor del Parlament sobre Ciència i Tecnologia	The Advisory Board of the Parliament of Catalonia for Science and Technology	CAPCIT	Catalonia (Spain)	FM	0
11	Utvärderings-och forskningsfunktioner	Evaluation and Research Secretariat of the Swedish Riksdag	ERS	Sweden	FM	0
12	Institut für Technikfolgen-Abschätzung	Institute of Technology Assessment of the Austrian Academy of Sciences	ITA	Austria	FM	0
13	Teknologirådet	Danish Board of Technology	DBT	Denmark	AM	0
14	Sub-Committee on Science and Ethics of the Parliamentary Assembly of the Council of Europe	Sub-Committee on Science and Ethics of the Parliamentary Assembly		Council of Europe	AM	0
15	Spiral de l'Université de Liège	SPIRAL research center - Université de Liège	SPIRAL	Wallonia	AM	0
16	Biuro Analiz Sejmowych	Bureau of Research of the Polish Parliament	BAS	Poland	AM	0

no.	Name	English translation	Acronym	Country/ institution	Status	Issue
17	Government Accountability Office	Government Accountability Office of the US Congress	GAO	US	AM	0
18	National Assembly Futures Institute	National Assembly Futures Institute	NAFI	Korea	AM	0
19	Аналитический центр при Правительстве Российской Федерации	Analytical Department of the Council of the Russian Federation	AD	Russia	AM	0
20	Research and Legislative Reference Bureau, National Diet Library	Research and Legislative Reference Bureau (RLRB), National Diet Library (NDL)	RLRB-NDL	Japan	AM	0
21	Oficina de Información Científica y Tecnológica para el Congreso de la Unión	Office for Information of Science and Technology for the Mexican Congress	INCyTU	Mexico	AM	0
22	Observatório de Avaliação de Tecnologia	Observatory of Technology Assessment	OAT	Portugal	AM	0
23	Asesoría Técnica Parlamentaria Parliamentary Technical Advisory of the Library of the National Congress of Chile	Parliamentary Technical Advisory of the Library of the National Congress of Chile	ATP	Chile	AM	0

During the period under review (2011-2021), only three of the twenty-three parliamentary advice institutions addressed concerns over LAWS (i.e. from Germany, the Netherlands and the United Kingdom). The scopes of actions taken varied considerably.

3.3.1 Germany

As the result of a project carried out in 2017-19 on behalf of the Committee on Education, Research and Technology Assessment¹⁰⁸, TAB prepared a report on the technical, ethical, policy and legal aspects of the use of Autonomous Weapon Systems (AWS)¹⁰⁹. Subsequently, it undertook a public discussion on the state of technical development, ethical aspects, international law, and international policy issues associated with AWS, with the participation of experts, parliamentarians and citizens (lay people) at

¹⁰⁸ TAB, 2022.

¹⁰⁹ GRÜNWALD & KEHL, 2020, p. 24.

the parliamentary forum¹¹⁰. The experts' discussion was broadcasted live on parliamentary television, with the possibility of addressing questions to parliamentarians and experts¹¹¹.

In the area of interest in this article, TAB formulated recommendations with regard to AWS for implementation at the national level by the Bundestag, ministries, authorities, and the management of the Bundeswehr, stating the need to take the following measures: 1) intensify efforts for a detailed, expert public debate on the military, international law and security implications of the use of unmanned weapons systems (UWS) and future AWS through the implementation of public discussions, studies and workshops in which various stakeholders must be involved in addition to government and non-governmental organizations, the media, business and science (especially in the field of AI); and 2) analyse threats to the security of the Federal Republic of Germany and how best to counter them¹¹².

These activities could take place within the framework of a committee within the relevant ministries (Ministry of Foreign Affairs, Federal Ministry of the Interior, Construction and Home Affairs, Federal Ministry of Defence, etc.), authorities, research institutions, as well as NGOs and parliamentarians; launching a debate on issues related to handling the export of sensitive technologies in cooperation with stakeholders from science, business, and society. On this basis, non-proliferation and export control principles could be developed for UWS and AWS. In doing this, the problem of dual use should be particularly taken into account, and at the same time the importance and validity of autonomous systems in the field of civilian applications should also be examined. For example, for this purpose a relevant working group could be set up under the aegis of the Federal Office of Economics and Export Control, with representatives from business, science and NGOs; and in research policy and research funding a particular sensitivity to the problem of dual use would be appropriate with respect to AI and related fields. This would also include supporting efforts to formulate and establish ethical models in research and research-related applications.

¹¹⁰ DEUTSCHEN BUNDESTAG, 2020.

¹¹¹ See: Der Vorsitzende, Robotische Waffensysteme and Technologische Fortschritte, "Öffentliches Fachgespräch "Autonome Waffensysteme".

¹¹² GRÜNWALD & KEHL (n 109).

3.3.2 *The Netherlands*

In response to a Senate enquiry into the ethical and social implications of increasing digitization, the Dutch Rathenau Instituut (RI) produced a report entitled: ‘Urgent Upgrade: Protect public values in our digitized society’. This report recommends strengthening the governance landscape, thus ensuring that public values in the digital society will continue to be properly safeguarded¹¹³.

The RI report states that the major social and ethical challenges for government and administration are the issues of big data, robotization, e-government and autonomous weapon technology. Government policy and implementation activities regarding LAWS should be carried out by the Advisory Council on International Affairs (AIV), with the recommendation to assign human control over the design stage.

3.3.3 *The United Kingdom*

The Parliamentary Office of Science and Technology (POST) only addressed the subject of LAWS in the form of a memo entitled: ‘Automation in Military Operations’¹¹⁴. This memo outlined the current and future military applications of LAWS, including legal, ethical and social issues. The POST memo does not meet the criteria of a technology assessment that could contribute to a broad public discussion on assessing the significance and social and political implications of the use of LAWS.

3.3.4 *Review Results*

The EPTA database for the period 2011-21 contains 1331 reports relating to various aspects of the political, social, economic, and legal importance of technology. A large proportion of the papers relate to AI, biotechnology, and genetics (particularly in animal breeding and plant breeding), and the most current reports address COVID-19. It should therefore be considered unsatisfactory and insufficient that only the TAB, among all the EPTA member parliamentary advisory institutions, has undertaken a broad public discussion

¹¹³ KOOL et al., 2017 p. 194.

¹¹⁴ POST, 2015.

The outcome of the responsible innovation approach is to ensure that the research conducted is socially responsible and that its results are publicly available. Therefore, one cannot completely relinquish TA to responsible innovation, due to their different purposes, actors, and methods of providing standards for responsible technology development.

in a parliamentary forum with experts, parliamentarians and the general public regarding LAWS. The TAB explicitly points out that the window of opportunity (*Fenster von Möglichkeiten*) for the adoption of international regulations of AWS is closing. Therefore political and diplomatic initiatives and a broad discourse involving science and civil society are urgently needed to develop solutions¹¹⁵.

The belief that the ‘expert advice model’ was deficient was the basis for the development of TA in the 1970s. It was recognized then that rapid technological modernization required the inclusion of the public and the consideration of its voice/perspective. Therefore, institutionally PTA is a combination of expert and social models with a policy advice orientation. The review undertaken here indicates that although technology assessments are undertaken by EPTA, they are still rare in the field of military solutions like LAWS. In our view, only the actions taken by TAB meet the requirements for policy advice which takes into account public opinion, but at the same time they do not address the crucial question of LAWS admissibility in general.

Finally, one of the reasons for the shift away from the use of TA (reflected in the decrease in the number of analyses undertaken in PTA institutions), may be the greater emphasis, at least in European practice, on responsible innovation^{116,117}. However, it should be noted that responsible innovation standards are largely limited to the responsibility of research institutions towards society in the research they undertake. The outcome of the responsible innovation approach is to ensure that the research conducted is socially responsible and that its results are publicly available. Therefore, one cannot completely relinquish TA to responsible innovation, due to their different purposes, actors, and methods of providing standards for responsible technology development. It is TA that fulfils the conditions for deliberation taking into account multiple perspectives (thus building up public conscience’s fount of knowledge), whereas responsible innovation, despite its popularity, cannot be treated as an adequate substitute for debate on the development of controversial technologies and their public perception.

¹¹⁵ GRÜNWALD & KEHL (n 109).

¹¹⁶ BECHTOLD, FUCHS & GUDOWSKY, 2017, p. 85-99.

¹¹⁷ DELVENN & ROSSKAMP, 2021, p. 445.

This is especially relevant in the discussions on lethal AI, where the international community is demanding a construction that will provide answers to questions that go beyond mere legal analysis and safeguard the interests of humanity (and even its survival) against the whims of states and the weaknesses of people.

4. CONCLUSIONS

The Martens Clause, by referring to the conscience and opinion of the international community, highlights its dynamic and capacious nature and distinguishes it from other LOAC rules and principles. It seems that such a provision should allow the law to keep up with the rapid developments in technology and in warfare techniques, and thus constitute a constantly up-to-date and living system that responds, at least to some extent, to the latest challenges posed by modern armed conflicts, while taking into account the changing standards of civilization. Due to the incorporation of moral norms, which can be understood as qualified public opinion, the Martens Clause has the potential to more adequately adapt the norms of international law to the expectations of the contemporary international community.

This is especially relevant in the discussions on lethal AI, where the international community is demanding a construction that will provide answers to questions that go beyond mere legal analysis and safeguard the interests of humanity (and even its survival) against the whims of states and the weaknesses of people¹¹⁸. Unfortunately, the chances that the proposed solution will make a difference is limited to modern democracies, as in other states the whims and weaknesses of those in authority will be decisive.

In this paper we propose having recourse to the methods known from democratic processes, in particular PTA, in order to more efficiently address the challenges posed by LAWS. The tasks of PTA institutions in this respect are manifold, ranging from providing scientific knowledge that can be used by policy makers; reducing public controversies related to science, technology and innovation; to stimulating public debate on the importance of such innovations for society. Undoubtedly, PTA institutions provide reports that present policy options for a particular choice of technology, contributing to the formation of public and political opinion on the social aspects of technology, including, as we have tried to demonstrate, LAWS technology. Unfortunately its negligible presence in the institutional national PTA, as illustrated by our research, indicates the marginalization of public participation

¹¹⁸ VEUTHEY (n 52).

in decision-making processes regarding the military applications of LAWS technology. This state of affairs is detrimental to the democratic structures of modern societies (i.e. the principle of civil control over armed forces), whereby citizens should participate in nuanced (i.e. not 'black and white') debates about both civilian and military applications of AI, a potentially disruptive yet ubiquitous and versatile technology.

We realize that limiting the research to European institutions of parliamentary advice does not exhaust the issue. However, we hope that our findings will contribute to further research in non-European democracies.

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