

THE ROUTLEDGE HANDBOOK OF INTERNATIONAL LAW AND ANTHROPOCENTRISM

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ORDERING HUMAN- OTHER RELATIONSHIPS

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Introduction

Drawing on recent scholarship on (post)anthropocentrism, law, and the environment (e.g., Birrell and Dehm, 2021; Davis, 2017; Gillespie, 2014; Gear, 2015; Gear, 2020; Philippopoulos-Mihalopoulos, 2017), this chapter maps international humanitarian law (IHL) and its ‘legal ordering’ (Lindahl, 2019) of human and other relationships during armed conflict and disaster. Our chapter focuses on two examples of human–other legal ordering during armed conflict: first, human–environment ordering, and second, human–artificially intelligent (AI) swarming drone ordering.

Our first example is covered by a well-established field of international law and protection, yet one that has rarely been prioritised in IHL: in contrast to the many man-made objects of legal ordering in IHL – such as weapon systems for example – our first example concerns the ‘natural’ world. Our second example is an emerging technology embedded in both military and civilian environments, only to some degree recognised – and, as with our first example, as an *object* rather than as an intelligent *subject* with legal agency of its own – and made part of IHL’s legal ordering: it is an example of human–scientific ‘artificial’ construction.

Taking existing criticism against IHL’s excluding, binary, and hierarchical modes of legal order into account, we argue that IHL has some potential in developing in a post-anthropocentric direction, specifically in reorienting its focus from armed conflicts to violent outbursts. We make use of the Deleuze–Guattarian notion of ‘war-machines’ (Deleuze and Guattari, 2013; Bar-On Cohen, 2011; Robison, 2010) – for example, armed groups (including state armies, although with the caveat that this involves state appropriation of war-machines), volcanoes, packs of wolves, and viruses – to capture how we believe IHL could offer protection on a less anthropocentric and more inclusive and equal basis in a shared posthuman ecology, protecting environments – inclusive or not of humans – from violent war-machines, war-machines from state violence and appropriation, as well as protecting from state violence by war-machines.

The environment (our first example) emerged only as a specific reference and separate object of protection under IHL – as the ‘natural environment’ – in 1977, in the wake of the Vietnam War. The impact of war on the environment is regulated by Articles 35(3) and 55 in Additional

Protocol I to the 1949 Geneva Conventions (Additional Protocol I). The need to protect the environment in times of armed conflict has since then become more prevalent, in particular after the topic ‘Protection of the Environment in relation to Armed Conflict’ was put on the UN International Law Commission’s (ILC) work agenda in 2011 (ILC, 2011, para. 7), and the International Committee of the Red Cross (ICRC) updated Guidelines on the Protection of the Natural Environment in Armed Conflict.¹ IHL has, in recent years, been expanded to also partly apply to protect humans from the forces of the environment (and humans). In 2016, with regard to a different topic, the ILC adopted draft articles protecting persons (humans) in the event of a disaster, both natural and man-made. These draft articles largely reflect the legal ordering characteristic of core IHL principles applying to armed conflicts, with an emphasis on the protection of humans and an explicit reference to non-humans – e.g., animals, water, and machines – as ‘equipments and tools’ for human and humanitarian relief.²

The AI swarming drone (our second example) is an emerging technology used in warfare, intelligence surveillance, and disaster management, as well as in a range of civilian–commercial settings. Based on insect swarming technologies, such as that of the common mosquito, operating with distributive decision-making algorithms, and designed for human–swarm interaction, AI swarming drones have raised concerns regarding the ordering of human–technology–others relations in armed conflict. Although swarms exist as forceful phenomena in a range of planetary areas – both in and outside armed conflicts – there is no particular recognition or regulation of swarms in IHL. Almost by default, AI swarming drones are regarded by scholars as an emerging weapons system governed by Article 36 of *Additional Protocol I*, meaning that they must pass a review concerning their lawfulness as weapons before they are deployed in combat. Their use and relations as part of military operations at large, intelligence surveillance, and as part of human–swarm capacity during disaster has hitherto remained outside the scope of IHL debates.

Our analysis of IHL and its legal ordering of relations between humans and ‘others’ reflects, on the one hand, the state-of-the-art in contemporary IHL and environment scholarship (Hulme, 2004; Bothe *et al.*, 2010; Sjöstedt, 2020; Bruch, Payne, and Sjöstedt, 2021) as well as that of critical IHL scholarship on emerging technologies and AI (Arvidsson, 2020; Arvidsson, 2021; Kalpouzou, 2020; Johnson, 2020; Kallenborn and Bleek, 2018; Wilcox, 2017a). On the other hand, our analysis expands through posthumanist feminist and post-anthropocentric scholarship (Arvidsson and Jones, 2023; Braidotti, 2013; Braidotti, 2019; Braidotti and Bigall, 2019). The feminist question of who the human is or can be in a posthuman ecology is, in our chapter, translated into an analysis of the ecology of bodies, objects, technologies, life and death emerging through IHL’s ordering of the human and its other during armed conflict.

Dichotomies unpacked by posthumanist feminist scholarship, such as human/other, man/woman, nature/culture, and more, are integral to that which we describe as IHL’s anthropocentric ordering of relations in armed conflict–ecologies. Through Gilles Deleuze and Felix Guattari’s notion of ‘the war-machine’ we consider how contemporary IHL orders human–human, human–other, as well as other–human violent relations during armed conflicts. It is our ambition to suggest a reorientation of IHL and its scholarship towards a posthumanist and post-anthropocentric ethos. Rosi Braidotti summarises this as an ethical ‘rule’:

[I]t is important to be worthy of our times, the better to act upon them, in both critical and a creative manner. It follows that we should approach our historical contradictions not as some bothersome burden, but rather as building blocks of a sustainable present and an affirmative and hopeful future, even if this approach requires some drastic changes to our familiar mind-sets and established values.

(Braidotti, 2019, p. 3)

Flowing from such an ethical position and especially its ethos of creativity, hope, and responsibility, and in contrast to a conventional state-focused, ‘military necessity’ and ‘proportionality’-oriented legal ordering found in IHL, we suggest that the ordering of violent relations as such, between a non-exhaustive set of entities – humans, horses, gorillas, plants, viruses, cars, volcanos, AI, and more – would be a way forward for IHL and its scholarship: this would, in our analysis, be a post-anthropocentric IHL less considerate of the human, humanism, humanity, humanitarianism, or any such derivatives. Instead, it would recognise and protect the volcano’s or the wolf pack’s existence while seeking to protect human and other entities from its violent forces; it would recognise human existence while protecting marine life from human violent expansions and extractions from the sea; it would recognise swarms (precisely as swarms and not as ‘weapons systems’) of fish shoaling as potential lethal forces.

In short, while such an IHL would seem to claim an ordering of relations everywhere and at all times, we believe that a good start would be to emphasise the ordering function IHL (potentially) could have during disasters. IHL already has a bearing on and relations to disaster law and management, not the least through its connection with humanitarianism via the close relationship between the ICRC, which oversees the implementation of IHL internationally while simultaneously organising humanitarian relief during warfare, and the International Federation of Red Cross and the Red Crescent Societies (IFRC) and its national movement, which organises humanitarian relief during warfare but also in other humanitarian disasters at a national and local level. Our suggestion would be a move away from a human-centred ordering of violence during armed conflict, to instead focus on ordering violent outbursts of that which in a Deleuze–Guattarian mode would be called ‘war-machines’ in a posthuman ecology.

The chapter starts with a brief introduction to IHL’s main principles and norms. We then go on to offer another way – our own – of reading IHL. In doing so we explain how ‘the posthuman’ sits within contemporary armed conflicts, IHL, and the military–industry complex. We introduce the Deleuze–Guattarian idea of the ‘war-machine’ as a central tenet of our rethinking of IHL. In the section that follows, we go on to look at our two examples – first ‘the environment’ and then the swarm and ‘the AI swarming drone’ – after which we conclude with our main point on how IHL could offer protection on a less anthropocentric and more inclusive and equal basis in a shared posthuman ecology.

International Humanitarian Law and Its Ordering of Armed Conflicts

Like many other fields of international law, IHL operates on the basis of a set of central legal conventions, including the four Geneva Conventions (1949) and its two Additional Protocols (1977), as well as the Hague Regulations (1907) and the many weapons conventions.³ In addition, IHL includes a broad range of norms on targeting issues further specifying and to some degree expanding the scope of the law (Fleck, 2021). IHL also includes a broad set of customary international legal rules and principles (Henckaerts, 2005; Henckaerts and Doswald-Beck, 2005; Wilmshurst and Beau, 2011). Central principles include those of distinction, proportionality, military necessity, prohibition of superfluous (human) injury or unnecessary (human) suffering, and humanity. Decisions and evaluation of the legality of actions under IHL are to be measured against these fundamental principles as well as in relation to specific conventions guiding the field.

IHL operates with a ‘humanizing mission’ through which warfare is said to become more humane whilst still enabling successful human–military operations. Humanised deaths and the act of killing are integral to the principles of distinction, proportionality, military necessity, prohibition of superfluous injury or unnecessary suffering, humanity, as well as to IHL in general.

Successful military operations, while minimizing ‘collateral damage’ – the unproportional killing of civilians – as well as avoiding unnecessary (human) suffering and superfluous (human) damage, is often said to be the law’s main objective. Who will live, who will die a ‘humanised death’, and who will have certain privileges in captivity during armed conflict is a matter of how IHL orders relations between its subjects (humans) and objects (non-humans) through its treaties, customs, and principles.

The anthropocentrism at work in IHL is, on the one hand, obvious: *humanitarian laws humanise warfare*, making it more *humane* (Arvidsson, 2020). One cannot get around ‘the human’, taking the shape of a combatant with special privileges or as an innocent civilian, as the top predator of armed conflict as ordered by IHL. Additionally, once an individual human being becomes selected as a lawful target within a specific armed conflict, that individual human is turned into lawful prey. Military necessity, in this latter case, outweighs the value of the individual human’s life. IHL’s organizing rules and principles are, thus, at once celebrating humanity and infusing categories of difference between humans and other humans. IHL further orders these different humans in relations to their other non-human objects such as the environment or the AI swarming drone – the two examples we focus on in our chapter. IHL’s anthropocentrism comes with a logic of separation and difference on an inter- as well as an intra-species level. Without any further qualifications, ‘the human’ cannot be said to be IHL’s telos: there is no central logic of a ‘universal human’ in IHL.

While the specific anthropocentrism of IHL may seem ‘natural’ or outright ‘good’ – serving the ‘right’ purposes – to many IHL scholars trained in the logics of separation and hierarchisation of IHL, our contention is that IHL neither serves ‘humanity’, nor offers norms and guidance through which human–other relations are best arranged. IHL is, firstly, blind to armed conflicts being but one of many forms of violent eruptions. One effect of this is that armed conflicts are treated as separate events in which other fundamental legal and political principles – such as human rights and democratic governance – are largely put aside. IHL as *lex specialis* provides for derogations of several norms of human rights law (e.g., *Legal Consequences of the Construction of a Wall* [2004]; *Legality of the Threat or Use of Nuclear Weapons* [1966]; Hampson, 2008). In practice many or most laws are put aside during armed conflicts. Another effect, following on the first, is that IHL may order one part of a violent eruption – acts and actors recognised as part of an armed conflict – while other areas of international, transnational, and national law order other parts of the conflict. Examples of the latter are international environmental law protecting wildlife and national law and transnational agreements ordering disaster relief. This causes what is known as legal fragmentation, overlapping norms as well as conflict of norms: ultimately it becomes difficult for the various actors to navigate such a legal framework, as well as one in which fundamental issues and questions can be – and are – largely ignored (such as that of the environment).

Secondly, IHL focuses on humans as its subject of legal ordering, assuming that ‘the human’ is wholly other to, and distinctly separable from, ‘non-human’ aspects and entities. While this separation can be dismissed as simply incorrect on the bases of a range of different scientific evidence – including evidence from natural sciences such as medicine, biology, and ecology – as well as through a variety of theoretical and methodological considerations – including legal dogmatic and posthuman feminist theoretical considerations – the effect of the error is what should worry legal scholars the most: legal ordering becomes ineffective once it fails to describe its subjects and objects of ordering in a convincing manner (Orford, 2012). In a way, this is the same problem as that we described as our first. While a turn to a less anthropocentric IHL certainly does not solve all issues or disperse all concerns, the epistemological and ontological change involved in such a turn is crucial.

Feminist international legal scholarship has already shown how international law in its various forms speaks of a single universal human subject (Otto, 2009) while it, as Dianne Otto has put it, normalises:

a multitude of intra-human hierarchies – which work together to advantage the autonomous, white, able-bodied, middle class, heterosexual Man and marginalise all those who do not fit within this privileged category – rendering them not fully human – or ‘exiled’ within the law.

(Jones and Otto, 2020, p. 2)

IHL is, in this regard, no exception. Yet, it differs in that its categorisations and hierarchisation are explicit parts of its legal ordering with ‘humanity’ acting as its overarching principle: civilians are distinguished from combatants as part of the legal ordering of killing through the principle of distinction. In the operationalisation of that distinction, civilians (unlawful targets) are mainly conflated with women, while combatants (lawful targets) are essentially conflated with military age males (MAM) (Arvidsson, 2018; Wilcox, 2017b). ‘The woman’ becomes a model object of protection – as long as she performs her gender along certain performative and hetero-stereotypical norms. Moreover, wounded human combatants (unlawful targets) are distinguished from non-wounded human combatants (lawful targets); pregnant women (objects of special protection) from non-pregnant women (objects of protection if recognised as civilians); and children (child soldiers as well as those who are yet to be recognised as MAM) from adults (recognised as MAM, non-civilians, and non-women) (Dinstein, 2007, pp. 145–156). IHL further recognises a range of objects of protection beyond various human forms: livestock (private property or human food security assets) is distinguished from wild animals; essential food-growing resources (human food security assets) from simply living plants; human and livestock fresh-water supplies from simply water; cultural heritage objects from their cultures; and natural environments from just any given environment.⁴ In each pair, the object of greater protection gains its hierarchical status by its attachment to humankind.

It is noteworthy that, despite a strict categorisation between combatants and civilians, ‘lawful’ combatants and ‘other fighters’,⁵ military targets and ‘civilian objects’ (all more or less clearly defined in IHL), the reality of the battlefields is different: although the ‘humanitarian’ and ‘humanizing’ suggests that humans matter first and foremost, at times non-humans, once in captivity, receive better treatment than humans. The treatment is, however, not sanctioned by IHL. An illustrative example dates from February 2014, when a military dog was shown on a video released by Taliban warfighters in Afghanistan, claiming the dog to be a US prisoner of war (POW) – POW being a central category of special protection under the third Geneva Convention applicable to human combatants only – captured by them the previous year. The dog had been carrying weapons, a GPS, a camera and other equipment for military use and purposes. The individual dog was later confirmed to be a dog-warfighter working for the British Forces as part of the International Security Assistance Force Missions (ISAF) (BBC News, 2014).

Although military dogs – dog-warfighters – due to their inability to pass as human warfighters, lack protection under IHL since they would qualify as military targets, the dog was held under favourable conditions, allegedly fed with chicken and kebab meat, and guarded by a team of Taliban warfighters (Stilwell, 2020). Similarly, in the long and violent conflict taking place in the Democratic Republic of the Congo (DRC), international humanitarian attention seems to be directed towards the protection of the mountain gorillas, at times even more than to the civilian population suffering immensely due to the armed conflict.⁶ As a consequence, several armed groups known for their brutal warfare, especially directed at the civilian population, have issued

statements claiming to not have harmed the endangered mountain gorillas when operating in the gorilla sector located in the World Heritage site, Virunga National Park, DRC (e.g., Mars Daily, 2007). Yet, the better protection of non-human animals over human ones in warfare is an exception rather than a rule: many livestock and pet animals who depend on humans to care for them are abandoned or let loose during hostilities, unable to feed themselves and therefore starving to death as silent and unrecognised victims of war (Peters and de Heptinne, 2022, p. 3).⁷ The latter was seen, for instance, when Iraq occupied Kuwait in the 1990s, and more than 80 percent of Kuwait's cattle, sheep, and goats died (Peters and de Heptinne, 2022, p. 4).

Another Way of Thinking about International Humanitarian Law

As a matter of historical development, non-human technological entities have always been a major aspect of IHL ordering, especially when compared to other fields of international law. IHL is thus, due to how human warfare has developed over time, relatively open to emerging forms of technology and other non-human objects and aspects. The legal history of warfare is, as Joanna Bourke notes, closely intertwined with the emergence of trans- and posthumanist history and scholarship (Bourke, 2014, p. 29; Ferrando, 2018). Warfare has been the catalyst of new industrial-technological breakthroughs, and the extension of human warfighting capacity – ranging from an extension of range, precision, and force by the bow and arrow to enhancement of endurance of human warfighters through the use of exoskeletal battle uniforms (based on biological insect exoskeleton technology) (Heathcote, 2018). This has historically engendered a debate over where the human warfighter ends, where its technological extensions begin, and whether or not a human–technological distinction can ever be meaningfully made (Amoroso and Guglielmo, 2020; Arvidsson, 2018).

Moreover, non-human animals have served as an integral part of armed forces throughout history. For example, more than 10 million animals including horses, mules, donkeys, camels, dogs, and racing pigeons served during the First World War (Wishermann, 2021). Both Russia and the US military have trained beluga whales, dolphins, sea lions, and seals for military purposes. Ukraine has even established a military dolphin centre in Crimea. By combining technology with superior animal characteristics, enhanced versions of the animals can be used for combat to search for naval mines. For example, the beluga whale, thanks to strong echolocation capabilities, can dive up to 700 meters deep, which is deeper than most military submarines.⁸ Sharks, dolphins, mosquitos and other animals have, in turn, inspired technological advancements in the development of new weapon systems and other military technologies – as have plants.⁹ 'Human' warfare is thus best described as a multi-species and 'zoo/geo/techno-oriented' lethal affair (Braidotti and Bignall, 2019, p. 1).

Yet, even as both the natural environment (our first example) – including flora and fauna – and swarming technologies (our second example) have long since been part and parcel of warfare, IHL is far from treating non-human entities on an equal basis with humans. At best, IHL provides a framework through which to curb certain violence and 'unnecessary' human suffering in warfare, with an aim to make belligerent parties respect at least 'the principles of humanity and ... the dictates of public conscience', as the Martens Clause spells it out.¹⁰ The difference between a posthuman ecology and an armed conflict governed by IHL can best be illustrated as that between the 'war-machine', in the Deleuze–Guattarian sense, and a state appropriated war-machine: both are relationally organised by norms through which life and death become realised. The former is a mode of existence in contestation of – or pure ignorance of – the nation state and its modes of legal ordering. A state-appropriated war-machine is the military of a nation state operating within IHL's legal ordering of armed conflict ecologies.

The Deleuze–Guattarian term ‘war-machine’ denotes ‘social (nomadic) assemblages constituting a combination of forces or elements diffusing power and, in particular, breaking down concentrated power, having war not as its goal but as one of its possible consequences’ (Arvidsson, 2020, p. 123). A war-machine, in the Deleuze–Guattarian sense, can be almost anything: a pack of wolves, a cyclone, guerrilla fighters, or a fungus. Its distinct feature is that it is a grouping or assembly of many (more than one individual, thing, or element); that it functions according to an internal organisation of its collective force – a force that is usually not prone to becoming organised by a human-centred law of hierarchical orderings with a ‘human’ telos – that is, it is spontaneous or ephemeral; and that it moves across – rather than along – patterns and borders formed by law in its current form (including IHL).

The war-machine can be understood as a form of social assemblage ‘directed against the state, and against the coalescence of sovereignty’ (Robinson, 2010, p. 6). At least so in that a war-machine swarm of bees, a war-machine general strike, or a war-machine pandemic virus has the potential to unveil the weaknesses of sovereign law and power: if the unfathomable powers and violence of war-machines cannot be controlled and ordered by the state, the latter loses its monopoly on (the exercise of) violence – the foundation and continuous force of all law-making and law-preservation, in Walter Benjamin’s analysis (1978). When it comes to war, to *control*, rather than to render *illegal*, is a major concern of all states. Remember, warfare was never made illegal by international law, and killing innocent civilians may be considered lawful collateral damage. Hence, the goal of the state is not to eliminate or render illegal a war-machine, but to appropriate a war-machine with the purpose of consuming its powers and curbing its potential to institute its own power as a principle of ordering (wolf-pack ordering, swarming) within a given territory. It is, as we find it in this chapter, the main concern for IHL’s ordering of relations during armed conflicts and beyond.

When a state appropriates a war-machine, the state thwarts the machine’s force and its ‘anti-purpose’ (that which Deleuze and Guattari (2013, pp. 277–278) call the ‘involution’, and the emancipatory ‘becoming-pack’, swarm, and war-machine). Yet, despite this, a ‘war machine is always exterior to the State, even when the State uses it, appropriates it’ (Deleuze and Guattari, 2013, p. 283). ‘War-machines end up in conflict with states’, as Andrew Robinson explains, because their goal is the ‘deterritorialization’ of the rigid fixities of state space, often to create space for difference or for particular ways of life’ (Robinson, 2010, p. 6). There is thus dynamic ambivalence at work between, on the one hand, the juridical form and jurisdictional telos of states (the primary subjects of IHL) and, on the other hand, war-machines (which may be other subjects of IHL, such as resistance movements, but which might also be non-recognisable to IHL).

In order to see in greater detail how IHL orders human–other relations, as well as imagine how it can be ordered otherwise, we now look at our two examples – ‘the environment’ and ‘the swarm and AI-powered swarm of drones’. The understanding of how IHL recognises and orders its objects and subjects will be the focus, as well as the question of how the two examples could be understood as conventional objects of IHL legal ordering as well as war-machines of a new kind of IHL legal ordering in our shared posthuman ecology.

The Environment as a Non-Human Other

What is or can ‘the natural environment’ be in the ecology of an armed conflict? A meadow, a swamp, an urban environment, or a bacteriological war-machine? How do certain parts of the environment become military targets, means of warfare, or objects of protection, and how are they related to humans and non-human animals? Or just receptacles of collateral harm?

First of all, it should be noted that within IHL, the environment is referred to with the qualifier ‘natural’, signalling that it is the untouched environment – understood as external to the human and worthy of human protection. In this sense, IHL paints a romanticised view of a pristine environment far from the vibrant and violent conditions of life and death known to any ecosystem. A more accurate view would be to define the environment as ecosystems interacting with each other in which the human is one of many entities, agents, or materials, singled out by law as culpable for violations and environmental damage and obligations to protect ecosystems as such.¹¹ Because of its vitality and forces, the environment can be regarded as both a planetary and a multilevel ecosystem war-machine: any given war-machine has environmental aspects, including those appropriated by states.

By way of example, belligerent state armies move in and through rural as well as urban landscapes. In doing so they interact with and change each ecological system they encounter, briefly becoming part of it, changing it, and being changed themselves: military vehicles produce dust clouds as they move in convoys through sandy deserts, making humans involuntary inhale the fine dust particles. Parts of the sandy desert ecology will, as a consequence, travel as microscopic particles stuck in the lungs of warfighters and other military personnel, cross oceans and become part of decomposing human bodies in wholly different parts of the globe. In turn, the original sandy desert ecology may receive human emissions – inclusive of hormones and medicinal drugs intended to enhance human warfighting capacity and resilience – during a pee break. IHL, in contrast, does not account for environments as constitutive for warfare, or for ecologies emerging through inter-species and multi-aspects encounters. Its scale is larger, and its legal ordering works through distancing distinctions. ‘The environment’ is, to be clear, conceptually set apart as an ‘other’ in relation to the human and humanitarian concerns.

As a consequence of the distinction between humans and the environment in IHL, the environment only has weak and inadequate legal protection in armed conflict ecologies. The result is, in most cases, that substantial environmental damage caused by warfare is regarded as lawful under IHL (Sjöstedt, 2020; Bothe *et al.*, 2010, pp. 569–592; Dinstein, 2001; Falk, 2000; Verwey, 1995; Simonds, 1992–1993; Hulme, 2010; Orellana, 2005). ‘Military necessity’ is, when weighed against ‘environmental protection’, found to have the upper hand in most cases. After all, IHL’s central principles primarily aim at protecting humanity conceptually understood as distinct and set apart from ‘nature’.

Since all military conduct must be carried out in a given environment, restrictions applicable on the belligerents to protect the environment could nonetheless have considerable impacts on how they can conduct warfare. There are two specific provisions protecting the environment within IHL: Articles 35(3) and 55(1) of Additional Protocol I (1977). The provisions contain an absolute protection of the natural environment from ‘long-term, widespread and severe’ damage even if the environment or parts of it constitutes a military target. The cumulative requirements exclude most damage inflicted towards the environment using conventional weapons in armed conflict. In fact, the two articles have never been applied to a concrete case of environmental harm during an armed conflict. Given that Additional Protocol I (1977) was adopted in the aftermath of the Vietnam War, the type of environmental damage that may be covered by the articles is most likely to be of the scale of harm inflicted during that war. As part of US military tactics during the Vietnam War, chemical agents – the infamous ‘Agent Orange’ being the best known – were sprayed over hectares of Vietnamese soil causing massive acute environmental damage having both immediate and long-term implications on public health and a variety of ecological systems. At the time of the war, however, this type of war on the environment was yet to be outlawed by IHL.

The two articles through which IHL orders human–environmental relations are different in scope and aims. Article 35(3) protects the environment ‘irrespective of its context and relationship’ with the human population (Koppe, 2014, p. 66), while Article 55 focuses on preventing adverse effects for the sake of the human population. In fact, the adoption of Article 35(3) is based on the new threats directed at humanity that environmental degradation poses. As warfare has become more technologically and chemically advanced, components of certain war remnants can have permanent harmful effects on humans, animals, vegetation, water, land, and the ecosystem as a whole (Sandoz, Swinarski, and Zimmerman, 2017, pp. 410–411).¹² In addition, Article 35(3) is not limited to the environment of the enemy but recognises the global character of the environment and the transnational adverse effects on it. Schmitt (2000, p. 128) states that, ‘[A]rticle 35(3) is the sole provision that operates in isolation of anthropocentric values’.

The division of the articles was mainly a result of two camps having conflicting views during the ICRC Conference (between 1974 and 1977). One camp advocated a provision protecting the environment for its importance for humans, while the other camp wanted protection for the intrinsic value of the environment unqualified by the human factors. The other camp suggested adopting articles that inclined towards treating the environment, from an instrumental perspective, based on its value for humans, which merits protection because of the harm to the population that can be caused by environmental damage. As a result, to accommodate both these efforts, two articles were adopted.

The protection is however outdated, as it does not incorporate the modern concerns about a less resilient environment due to a changing climate, increased pollution, collapsing ecosystems with mass extinction of species, and so on. As a response, the ILC has attempted to address this issue. In an early suggested draft principle that was later deleted during the drafting process, the first Special Rapporteur of the topic Protection of the Environment in Relation to Armed Conflict in the ILC proposed that ‘the environment is civilian in nature’ and thus should be spared from the destructive forces of armed conflicts; the latter understood as human–military (ILC, 2015). The indication here is, again, that ‘the environment’ is primarily seen as a romanticised passive object worthy of protection from human aggression. At the same time, the environment contains strong vital as well as deadly forces, likely for states to appropriate and try to control in warfare as part of state-appropriated war-machines. The war-machinic forces encapsulated by the IHL notion of the environment may be employed as weapons, or as part of weapons systems in warfare, although its explicit use – in terms of human manipulation of earthquakes, tsunamis, and lightning – is highly unusual. The war-machinic force of the atom, released through nuclear fission in the atomic bomb, is rarely used, yet its mere existence haunts modern warfare and IHL. In addition, the environment and the human dependence on it can also be used in warfare. Scorched earth tactics are a common feature in warfare where belligerents destroy crops, water wells, and marshlands; slaughter livestock; and so on to deny enemy forces as well as civilians food, water, and energy and thereby creating a hostile environment that challenges human existence.¹³

One of the most notorious examples of employing scorched-earth policies in modern warfare took place during the Vietnam War, when the United States directly attacked and destroyed vegetation as a response to guerrilla warfare conducted by the North Vietnamese army and the Viet Cong guerrillas using the surrounding jungle as a cover. In that context, the United States developed a strategy aiming at destroying forest and farmland. Between 1961 and 1972, the United States sprayed approximately 70 million litres of herbicides and other chemical substances, notably Agent Orange, as part of its military operations to achieve these aims. As a result, allegedly, 43 percent of the farmland and 44 percent of the total forest area of South

Vietnam were contaminated. All of these military activities have had a severe impact on the Vietnamese environment, destroying entire biotic communities. In addition, the United States army manipulated the weather patterns through cloud seeding in order to prolong the monsoon season to interfere in the North Vietnamese army and Vietcong's warfare (Westin, 1976, pp. 221–222).

The United States and New Zealand conducted secret tests during the Second World War that aimed to create a tsunami, although they never employed the technique during wartime. The so-called 'tsunami bomb' was designed to attack coastal cities by using underwater explosions to generate enormous tidal waves (Pearlman, 2013; Leech, 1950). Furthermore, several tests of using bacteria and viruses, as part of biological warfare, have been conducted by several states. Most of these activities are part of secret programs but tests made by the United States, Germany under the Nazi regime, and the Soviet Union are now known.¹⁴ In 1942, the British tested an agent causing anthrax at Gruinard Island. Since the test, the island remains uninhabitable, primary because the microorganism that was introduced has become a permanent part of the ecosystem (Schafer, 1989).

The 1972 Biological Weapons Convention has restricted all types of acts related to all types of bacterial weapons. Also, the 1976 Convention on the prohibition of military or any other hostile use of environmental modification techniques (ENMOD Convention) has been adopted that prohibits any interference with environmental forces for military purposes. This convention prohibits manipulating forces of nature in states' warfare, such as creating tsunamis, earthquakes, lightning, and so on. Moreover, man-made structures can be used in warfare to cause destruction harming humans as well as non-humans. Dams, dykes, oil and gas wells, as well as nuclear power plants are examples of installations containing dangerous forces that have been granted special protection under IHL, given their destructive abilities (Additional Protocol I, 1977, art. 56; Additional Protocol II, 1977, art. 16).

While the environment is often invoked as an object of protection, not the least in order to secure a sustainable future, IHL has – as we have tried to show here – only little to offer towards such aims. The categorical separation of the environment from the human, as well as from central humanitarian concerns in IHL's humanizing mission has, instead, resulted in an array of dispersed IHL norms with only some degree of 'success' in offering any protection. Braidotti's suggestion for 'drastic changes to our familiar mind-sets and established values' (Braidotti, 2019, p. 3) requires, in our view, a more 'drastic' reconfiguration of IHL in relation to the environment. Concretely, this could be carried out on both normative and practical levels, including an expanded consideration for non-human aspects – such as the environment – in proportionality assessments and in assessments of military necessity under IHL.

Moreover, if violent outbursts of 'the natural environment' – including volcanic eruptions, tsunamis, and swarms of locusts – rather than (human-made) 'armed conflicts', such as IHL applies to in its contemporary form, were considered *subjects* rather than objects of protection under IHL, the environment in its various forms and figurations would be in a more promising position: it would be less of a 'romantic' and passive object 'worthy' (or, as is the case most often in contemporary IHL, unworthy) of human protection, and potentially lethal violent eruptions and relations between humans and others would instead, and more importantly, be a central concern for legal ordering. Having no specific priority to humankind – as detached from other species, elements, and aspects of our shared posthuman ecology of life – death would, in such a reconsideration of IHL, be a 'drastic' move for IHL and its scholarship, yet a necessary move in a posthuman reality. It would be a move in which environmental concerns could be more adequately fitted as both objects and subjects of legal ordering.¹⁵

The Swarm and the Swarm of AI-Powered Drones as the Non-Human Other

What is a swarm of AI-powered drones, or what can it be, in the ecology of an armed conflict? How does IHL seek to order emerging technologies such as the AI swarming drones? Especially, how does IHL recognise and order technologies emulating features of ‘natural’ war-machines – such as a swarm of birds or bees – once these technologies work autonomously within the military ‘mission command’, as well as once they appear as integrated human–other collaborations in a swarm-based state military war-machine?

AI-powered drones with a capacity to swarm are mathematically modelled on ‘behavioural modes’ of swarming insects, such as the common mosquito. In their ‘natural environment’ the latter ‘aggregate together, hover in the same place, or migrate as a moving collective’ (Dublon and Sumpter, 2014). Insects swarm either to mate or migrate: the common imagery of a swarm of angry bees chasing and attacking a cartoon character is a rare sight outside the realm of popular culture (Dublon and Sumpter, 2014). More than anything, swarms *swarm* because the movements and relations involved in swarming creates the swarm as a multiplicity, having its own making as its primary goal (mating, migration for food or shelter). Death – the death of others (it happens that swarms attack and kill others) as well as of individuals within the swarm – is only one possible outcome and not a goal in itself (Deleuze and Guattari, 2013, pp. 277–278). Deleuze and Guattari gesture towards the swarm as the war-machine par excellence, its force residing in numbers, versatility, adaptivity, sudden and unpredictable movements and eruptions, and its ability to reconfigure itself and move across – or rather regardless of – state borders. Swarms are not defined by singular-species characters or by single-materials: a swarm becomes a swarm through its swarming behaviour – its doing ‘the swarm’. In a conventional IHL register, the *levée en masse* – in other words, people spontaneously taking up arms to resist an approaching (enemy) force – is a swarming war-machine in the Deleuze-Guattarian sense. The spontaneous, versatile, and unpredictable eruption of violence performed by what is known to IHL as civilians, makes it an object recognisable to the legal ordering. Yet, as we will return to shortly, the state military is the most lethal human–‘zoo/geo/techno-oriented’ swarm known on the planet (Braidotti and Bignall, 2019, p. 1).

Swarming is a well-known military tactic recorded as part of Mughal and Byzantine modes of warfare, considered especially suitable for guerrilla warfare or surprise attacks (Edwards, 2000; Arquilla and Ronfeldt, 2000; US Army UAS Center of Excellence, 2010). Its tactical drawback is the primary technical problem of (a lack, hitherto, of technological development suitable for) instantaneous communication during swarming – in insects and AI swarming drones such communication is known as ‘sensing’. The advantage of swarming as a military tactic is its force of multitude, the strategic military advantage of sudden and irregular patterns of movement (withdrawals, outbursts), and the system of distributed decision-making throughout the entire swarm which is particular to swarming. The latter makes military decision-making instantaneous and collectively distributed for implementation: it is fast and, if correctly coordinated, extremely forceful.

AI-powered swarms – understood as tech-entities of similar size that ‘aggregate together, hover in the same place, or migrate as a moving collective’ (Dublon and Sumpter, 2014) – have been developed with some intensity for commercial, military, and mixed purposes during the last decade. Such swarms emulate the ‘functionally versatile and powerful, and highly distributed’ sensory systems of insects, meaning that they operate by ‘decentralized control policies that can cope with limited local sensing and communication abilities of the agents’ (Hüttenrauch, Sošic, and Neumann, 2018). Simply put, AI swarming drones are able to take on military missions as a

collective, communicate relevant information amongst themselves, distribute tasks, and ‘reconfigure themselves, autonomously changing direction in response to sensor input to achieve the mission at hand’ (Arvidsson, 2020, p. 126).

In contrast to conventional drones, AI swarming drones thus have the capacity to act within the framework of a military mission without a central command or human commander – the latter often referred to as ‘the human in the loop’ whose function it is to make sure that ‘reasonable human control’ is exercised (Skarkey, 2016, p. 23). If, or when, an individual swarm member malfunctions, is taken out by enemy fire or gets lost in terrain, the swarm automatically reconfigures itself according to a swarming protocol in order to carry out the mission. In other words, AI swarming drones act not unlike conventional (human) warfighters. The difference is that they are exceptionally good – much better than no/low-tech human–other configurations deployed in armed conflicts – at communicating, distributing tasks, making decisions, and completing the military mission successfully (at a low-cost, as compared to the potential loss of human warfighters). This is, at least, how they are being ‘marketed’ as part of military, state-appropriated war-machines.¹⁶

AI drones are already operative as part of human–machine swarming – also known as human–drone ‘teaming’ – for surveillance, military operative engagement, medical evacuation, and disaster response search missions (Johnson, 2020).¹⁷ In order to fit AI swarming drones into the ecology of armed conflict, IHL practice and its scholarly debates have focused on the drones’ capacities as new lethal weapons systems capable of autonomous and distributive decisions (e.g., Kalpouzos, 2020). This, as we noted in the introduction, renders them recognisable for the purpose of the Article 36 review, ordering AI swarming drones alongside (other) weapons systems: the ‘obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party’.¹⁸ The review process of Article 36 can be understood, as David Roden argues, as a question of assessing the ‘human-like[ness]’ and the ‘rational “self-mastery”’ of an agent (AI entity, human, or both) (Roden, 2017, p. 99; Arvidsson, 2020, p. 128), meaning that the aim of the test is to ascertain that the weapons system is not explicitly forbidden by international law and that the central principles of IHL – distinction, proportionality, and humanity – can be upheld through the use of it (Goussac, 2019). What amounts to a ‘new weapons system’ (or a weapons system in the first place) is not properly defined in IHL. Scholars have addressed the problem primarily within the context of autonomous weapon systems (AWS) – pointing to the difficulties in defining what constitutes autonomy (in relation to humans), taking for granted that a weapons system is already a known definition (Kalpouzos, 2020; Jones, 2018).

The assumption in Article 36, as well as in the scholarly and otherwise recognition of AI swarming drones as weapons systems in the ecology of an armed conflict, is that such swarms are categorically distinct from and therefore other to humans: they are supposed to be, within the ecology of armed conflict as ordered by IHL, distinct from non-weapons, including humans – human military commanders (whose tools – or, indeed, extensions – they are), human warfighters, and human civilians. They are also seen as distinct from the ‘natural environment’, as well as the ‘vast planetary network, fuelled by the extraction of non-renewable materials, labour, and data’ (Crawford and Joler, 2018), which enables AI-gear tech-entities to function (regardless of their civil or military status). AI swarming drones may be ‘like’ humans in certain ways and capacities during armed conflicts, their ‘self-mastery’ even better-than-humans as fully autonomous AI swarming drones can execute ‘intuitive action [that] may enable the swarm to cease an attack within nanoseconds’ (Grimal and Sundaram, 2018, p. 119). Yet, it seems as if they can never become recognised as fully human – in IHL terms, neither civilians nor combatants. They are, in other words, not subjects of legal ordering.

Human warfighters – combatants – are, in contrast to the ‘training-through-self-learning protocols’ and AI programming through which AI swarming drones incorporate IHL’s central principles as well as learn how to execute command intent within a military mission, conventionally put through military training programs. These programs teach human warfighters to embody what Roden (2017) has described above as a ‘human-like’, ‘rational “self-mastery”’. The central pinnacles of such ‘self-mastery’ are to subjugate oneself to superior military command, to carry out any mission command, and to do so in accordance with the central principles of IHL – most importantly distinction, proportionality, precaution, and humanity. As noted elsewhere, Additional Protocol I (1977), Article 43, requires a responsible (human) command as well as an internal military disciplinary system that enforces individual warfighters’, as well as collective, compliance with IHL. Any individual intent of a human or other warfighter must be subjugated to the intent of the (human) military commander: ‘the warfighter learns how to advance the intent of its military commander and through that relationship becomes “the warfighter”: no longer fully human but fully warfighter and part of/the flesh of the military swarm and [state appropriated] war machine’ (Arvidsson, 2020, p. 130). In other words, once a human individual enters the military system, her humanness is transformed as she becomes a unit in a chain-of-military-command and responsibility: she becomes part of the military state-appropriated war-machine. A human warfighter is thus never really fully or only human, but always something else (too). IHL recognises her as a combatant within the ecology of the armed conflict, and as part of the military machinery as a whole.

It seems as if IHL – or at least its practitioners and scholars – recognise AI swarming drones as non-human-yet-human-like parts of state-appropriated war-machine-swarms, largely understood as human-‘zoo/geo/techno-oriented’ lethal forces (though their terminology may look different, this is what they mean). The ordering of human-artificially intelligent (AI) swarming drone relations undertaken by IHL is thus less a distinct separation and more a matter of recognition as different agents or individuals within a swarm – each of which are interrelated and entangled.

The latter observation invites the question: to whom, and under which circumstances, does a distinction between human and ‘other’ warfighters in IHL matter? What if IHL, its practitioners, and scholars were to understand and recognise AI swarming drones simply as one of many varieties of warfighters and thus subjects to legal ordering? Warfighters primarily (but not exclusively) technological and non-human in character – just as the dog-warfighter mentioned above, caught, and treated as a POW by Taliban forces – and embedded in a military system that is already operating on a swarm-logics basis? To consider a warfighter in relation to its performance, rather than in terms of specieist hierarchies of dichotomies, would make sense not only as a gesture towards a more equal and inclusive IHL – an (admittedly small) step towards a posthuman and post-Anthropocene ethics – but also in practical terms. As species, entities, and aspects become further entangled in warfare and beyond, legal ordering would fare better – in terms of its capacity to adapt to changes, controlling as wide a set as possible of aspects of lethal violence – from dropping inter- and intra-species dichotomies, hierarchisation, and exclusions.

Or, even more straightforward, what if we were to view AI swarming drones as war-machines – as multitudes of entities, relations, minerals, forces – recognisable for IHL’s ordering if and when posing a violent, lethal threat to others? Within the framework of armed conflict ecologies, they would be required to perform as any other warfighters who are subject to IHL’s legal ordering; in accordance with IHL, in particular its central principles of distinction, proportionality, military necessity, and humanity. The distinction between the operative use of AI swarming drones and their deployment in combat as warfighters would, perhaps, still be one of an Article 36 review. Yet, such a review should apply to all new warfighters (and not just the ones who

are considered as primarily technological in design). The ‘drastic changes’ required, as Braidotti (2019) puts it, are thus concrete and applicable in already existing situations, making the move we envision for IHL one that better describes our contemporary existence of violent eruptions and forces.

Conclusions

In order to be worthy of our times, and to better act upon them in both a critical and creative manner, we have used this chapter as an exercise through which to critically map IHL and some of its legal ordering of human–other relationships during armed conflict and disaster. Our ambition has been to creatively move beyond mere iterations of IHL, environmental legal protection, and drone–warfare debates in contemporary practice and scholarship. In our suggestion, this means reconfiguring the conventional understanding of IHL: instead of referring only or primarily to the legal ordering of armed conflicts, a more cross-species and multi-aspect, embracive, and non-exclusionary IHL legal ordering would be one engaging with violent outbursts as such. The point would not be to save humankind from forces of violent outbursts or to conserve a pristine and romanticised ‘natural’ environment. Rather, the aim would be to order violent relations between humans and others during eruptions of violence originating from armed conflict or natural disasters, with no specific priority to humankind as detached from other species, elements, and aspects of our shared posthuman ecology of life as well as death.

Making use of the Deleuze–Guattarian notion of ‘war-machines’, we have considered how our two examples of the environment and AI swarming drones already invite a move towards fewer dichotomies in IHL’s legal ordering, as well as a greater attention to a variety of violent forces – inclusive of armed groups (including state armies, although with the caveat that this involves state appropriation of war-machines), volcanos, packs of wolves, and viruses. In fact, such a move is long overdue. The move towards an IHL covering disasters as well as armed conflicts is a small step in the right direction. In the Anthropocene epoch, we are more likely to encounter further disasters due to an environment made more vulnerable. The law thus needs to be able to protect environmental aspects from further human degradation as well as to enable human protection from harmful forces – in times of armed conflict and peacetime alike.

Yet, in order to arrive at a less anthropocentric and more inclusive and equal basis in a shared posthuman ecology, in which we can exercise ‘more inclusive practice[s] of becoming-human’ (Braidotti and Bignall, 2019, p. 1), the real shift is ontological and ethical. Protecting environments, inclusive or not of humans, from violent war-machines, and war-machines from state violence and appropriation, requires of IHL an ability to recognise war, disaster, and other violent outbursts as multi-species and ‘zoo/geo/techno-oriented’, while at the same time mediating and insisting on an ethical and political distribution of human responsibility (Chakrabarty, 2009; Philippopoulos-Mihalopoulos, 2017, p. 133).

The armed conflict ecologies ordered by IHL offer relations of ‘distinction’, ‘proportionality’, ‘military necessity’, and ‘humanity’, as well as ‘successful military operations’ with minimal ‘collateral damage’. Yet, the violence curbed and suffering avoided by such legal ordering is distributed along a set of excluding categorisations and dichotomies. The universal ‘human’ is, in relation to other sets of international law, less obvious, as there are several intra-human distinctions in IHL through which a hierarchy of humanitarianism unfolds: at times offering humans protection, yet at other times prioritising successful military operations or the protection of the natural environment over human lives. The anthropocentrism at work is, as it were, as messy as humankind itself.

The sustainable present and hopeful future that we want to affirm through this chapter calls on IHL scholars to challenge familiar mind-sets and established values engraved in IHL legal ordering as well as in its practice and scholarship. This, we find, is the least we can do in order to better act upon our times in critical and creative ways.

Notes

- 1 The ICRC Guidelines on Protection of the Natural Environment were published in 2020, available at <https://shop.icrc.org/guidelines-on-the-protection-of-the-natural-environment-in-armed-conflict-rules-and-recommendations-relating-to-the-protection-of-the-natural-environment-under-international-humanitarian-law-with-commentary>.
- 2 Article 3(a) offers a definition of disaster as: ‘a calamitous event or series of events resulting in widespread loss of life, great human suffering and distress, mass displacement, or large-scale material or environmental damage, thereby seriously disrupting the functioning of society, providing a non-exhaustive list of ‘equipment and goods’ in Article 3(g): ‘supplies, tools, machines, specially trained animals, food-stuffs, drinking water, medical supplies, means of shelter, clothing, bedding, vehicles, telecommunications equipment, and other objects for disaster relief assistance’. *Draft articles on the protection of persons in the event of disasters*, adopted by the International Law Commission at its sixty-eighth session, in 2016, and submitted to the General Assembly as a part of the Commission’s report covering the work of that session (A/71/10), para. 48, available at https://legal.un.org/docs/?path=.../ilc/texts/instruments/english/draft_articles/6_3_2016.pdf&lang=EF.
- 3 Central conventions include: *Geneva Convention (I) for the Amelioration of the Wounded and Sick in Armed Forces in the Field (12 August 1949)*; *Geneva Convention (II) for the Amelioration of the Wounded and Sick in Armed Forces in the Field (12 August 1949)*; *Geneva Convention (III) for the Amelioration of the Wounded and Sick in Armed Forces in the Field (12 August 1949)*; *Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War (12 August 1949)*; *Additional Protocol I; Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II) (8 June 1977)*; *Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land. The Hague, 18 October 1907 (the Hague Regulations)*; and concerning weapons: *Declaration (IV,3) concerning Expanding Bullets. The Hague, 29 July 1899*; *Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare. Geneva, 17 June 1925*; *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction. Opened for Signature at London, Moscow and Washington. 10 April 1972*; *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. Geneva, 10 October 1980*; *Protocol (II) on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices. Geneva, 10 October 1980*; *the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, 18 September 1997*; and *Convention on Cluster Munitions, 30 May 2008*.
- 4 Article 53 of *Additional Protocol I* prohibits attacks on cultural objects. Article 54(2) of the 1954 Hague Convention on Cultural Property prohibits attacks on, the destruction, removal, or rendering useless of objects indispensable to the survival of the civilian population. An inexhaustive list enumerated in the articles include: foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies, and irrigation works. For customary legal principles regarding ‘Attacks against Objects Indispensable to the Survival of the Civilian Population’, see Rule 54, in the ICRC Handbook on Customary IHL. Article 55 prohibits attacks on the ‘natural environment’.
- 5 Despite the fact that this distinction does not appear in IHL, there is a distinction between privileged combatants defined in accordance with Article 4 Geneva Convention III and Article 43 Additional Protocol I and other fighters falling outside this definition.
- 6 The example is further discussed at <https://www.orwelltoday.com/nkundagorillasafe.shtml>.
- 7 Another example, which caught media attention at the time, of difficulties and confusion arising from IHL’s difficulty in recognizing animals is drawn from the invasion of Iraq by US troops, in 2004, when US warfighters encountered a tiger allegedly belonging to Udday Hussein (one of Saddam Hussain’s sons) moving about in the old palace buildings-turned-headquarters of the occupation: the soldiers, reportedly, did not know if or how to apply the Geneva Convention to the big cat (Arvidsson 2011, p. 76).

- 8 Submarine and animal questions are further discussed, for instance, here: <https://nationalinterest.org/blog/buzz/real-submarines-check-out-russia%E2%80%99s-combat-dolphins-spy-whales-and-killer-seals-55667>, <https://www.theguardian.com/environment/2018/may/16/ukraine-claims-dolphin-army-captured-by-russia-went-on-hunger-strike>.
- 9 The US Defense Advanced Research Projects Agency (DARPA) has a number of ongoing research projects in which animal behaviour is emulated as well as – although this is rarer – biologically modified with technological enhancements, in order to develop new weapons systems, surveillance, and information technologies. See, for example, the ‘Insect Allies’ program <https://www.darpa.mil/program/insect-allies>; and the Persistent Aquatic Living Sensors (PALS) program <https://www.darpa.mil/program/persistent-aquatic-living-sensors>. See also the ‘Advanced Plant Technology’ (ATP) program presented under the heading ‘Nature’s Silent Sentinels Could Help Detect Security Threats: New Program Envisons Plants as Discreet, Self-Sustaining Sensors Capable of Reporting Via Remotely Monitored, Programmed Responses to Environmental Stimuli’ at <https://www.darpa.mil/news-events/2017-11-17>.
- 10 The Martens Clause first appeared in the preamble to the 1899 *Hague Convention (II) with respect to the laws and customs of war on land* and has formed part of IHL since then. A modern version is included in Article 1(2) Additional Protocol I. It was also reproduced in Draft Principle 12 (with a specific focus on the environment) adopted at first reading by the International Law Commission, ‘Protection of the Environment. Text and Titles of the Draft Principles Provisionally Adopted by the Drafting Committee on First Reading’ UN doc. A/CN.4/L.937 (2019).
- 11 One problem with the legal design of such ‘universal human culpability’ is that it does not account for the unequal distribution of interference, extraction, and irreversible damage inflicted by primarily industrial economies in the Global North. See further: Parikka, 2018, pp. 51–53, at 53. For a discussion of human responsibility from a post-anthropocentric ethics of becoming-with the environment, see Philippopoulos-Mihalopoulos, 2017.
- 12 This is but one of the many ways in which the human has made an increasing harmful planetary impact in the Anthropocene. It is also emblematic of how modern warfare is ‘zoo/geo/techno-oriented’ and posthuman, yet not in the emancipatory and ethically hopeful-constructive sense offered by posthuman theorists, such as Rosi Braidotti.
- 13 During the Second World War, the German occupation forces destroyed the human settlements in Northern Norway to escape Russian soldiers. All domestic animals were slaughtered; the buildings burned; the roads, bridges, and fishing boats ruined; all communications and utilities damaged; and the terrain and the harbours mined in order to hinder the advancement of the Russian forces. Another use of scorched-earth policies occurred in 1953, when the United States bombed five dams in North Korea. These attacks were undertaken for the purpose of weakening the important rice production in the state, pressuring North Korea to sign a peace agreement. Leaning, J., ‘War and the Environment: Human Health Consequences of Environmental Damage of War’, *Critical Condition: Human Health and the Environment* (1993), 127, available at http://mitpress.mit.edu/sites/default/files/titles/content/9780262531184_sch_0001.pdf.
- 14 See <https://www.gao.gov/assets/250/242279.pdf>. For instance, according to declassified documents from the Pentagon, the United States sprayed bacteria over the Hawaiian island of Oahu to simulate a biological attack on an island compound, and to develop tactics for such an attack. The test was part of Project 112, a military program in the 1960s and 1970s to test chemical and biological weapons and defences against them. The test used *Bacillus globigii*, a bacterium believed at the time to be harmless. Researchers later discovered the bacterium, a relative of the one that causes anthrax, could cause infections in people with weakened immune systems (see <https://www.cbsnews.com/news/us-admits-bio-weapons-tests/>). On 20 September 1950, a US Navy ship just off the coast of San Francisco used a giant hose to spray a cloud of microbes into the air and into the city’s famous fog. The military was testing how a biological weapon attack would affect the 800,000 residents of the city. The unsuspecting residents of San Francisco certainly could not consent to the military’s germ-warfare test; and there’s good evidence that it may have caused the death of at least one resident of the city, Edward Nevin, and hospitalised ten others. See <https://www.businessinsider.com/the-military-tested-bacterial-weapons-in-san-francisco-2015-7?r=US&IR=T>.
- 15 The consideration of the environment as a subject may seem like an imaginary picture. However, in 2019, the Special Jurisdiction for Peace (in Spanish: Jurisdicción Especial para la Paz, JEP) formally recognised the environment as a ‘silent victim’ of the armed conflict in Colombia. The JEP is a parallel legal system and tribunal established after the conclusion of the Colombian peace agreement in 2016.

- The petition to JEP to include the environment was made by an indigenous group and embodies a different way of how to consider the environment as a subject (*JEP, Case 02 – Territorial Situation of the Tiumaco, Ricaurte, and Barbacoas Municipalities (Nariño)*).
- 16 See, for example, the US Defense Advanced Research Agency (DARPA) ‘Gremlins’ initiative: <https://www.darpa.mil/program/gremlins>; and *U.S. Army Roadmap for UAS 2010–2035: The Eyes of the Army* (2010).
 - 17 For drones on search-missions without human interference, see <https://www.discovermagazine.com/technology/this-swarm-of-search-and-rescue-drones-can-explore-without-human-help>.
 - 18 The Article 36 review recalls the prohibition of a range of specific weapons systems – including, for example, the *ENMOD Convention: Convention on the prohibition of military or any other hostile use of environmental modification techniques*, New York, 10 December 1976 and 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 as amended on 21 December 2001* – with its Additional Protocols, as well as weapons prohibited by customary international law. Yet, the most important feature of the review aims at determining if a swarm of drones, operating through distributive decision-making algorithms enabling them to delegate amongst themselves various tasks within the mission on which they are sent by their (human) military commander, comply with the general requirement of distinction (Article 51(4)(c)) and proportionality (Article 51(5)(b)). See further, the ICRC ‘A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977’, *International Review of the Red Cross* (2006) 88:864, 931–956.

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