

A Robot Left in a Field Is a Mine the Law Cannot See

How the Fuze Distinction Exempts Armed Emplaced Systems from Every Obligation the Mine Regime Imposes, and the One-Line Amendment That Closes It

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Abstract

An armed robotic platform is emplaced to deny an approach. It is left there. It senses locally, decides locally, and engages what enters its arcs. It cannot be reached. Thirty days later somebody comes to collect it, or nobody does.

The literature on autonomous weapons treats such a system as a weapon under human operation with the human removed, and asks how much control was retained. This paper argues that the framing is wrong, that the right body of law is one nobody has applied to it, and that the misfit produces a gap with consequences that outlast the conflict.

The system is not a weapon in the ordinary sense. It is an emplaced device, and the law already has a developed regime for emplaced devices: Amended Protocol II to the Convention on Certain Conventional Weapons, and the Anti-Personnel Mine Ban Convention. That regime reasons from emplacement and aftermath rather than from operation and control. It imposes obligations no autonomous-weapons proposal contains, and it imposes them because a century of experience established what emplaced effects do after the people who emplaced them have gone.

The regime's obligations are five and an emplaced robotic system escapes all of them. Recording, to the exact location of every device. Marking and protection of civilians. Self-destruction within thirty days at ninety per cent reliability, with an independent backstop leaving no more than one in a thousand functional at a hundred and twenty days. Detectability, by not less than eight grammes of iron. And clearance after the cessation of active hostilities—an obligation which persists even in respect of areas the emplacing party no longer controls, requiring it to furnish technical and material assistance to whoever does.

The escape turns on a fuze. A mine within these instruments is a device designed to be exploded by the presence, proximity or contact of a person or vehicle. An armed robotic platform is not exploded by presence; it observes presence, classifies it, and decides. That distinction is real, it is doing work nobody drafted it to do, and the whole of the reason a system which is emplaced, left, victim-triggered in operation and abandoned in fact falls outside a regime built for exactly that behaviour.

The paper's second argument is that the misfit runs the other way too, and this is the part that should trouble those who assume the mine analogy is a rhetorical device deployed against these systems. Where the analogy holds, the regime's obligations are cheap to meet. A self-deactivation timer costs nothing. Eight grammes of iron is already present many times over. Recording an emplacement is a line in a log. **The one obligation the mine regime does not impose—that the device discriminate before it acts—is the one an armed robotic system can actually discharge,** and the companion engineering paper prices it at under a watt-hour a day. The law asks less of these systems than they are capable of, because it asks nothing of them at all.

The third argument concerns time, and the paper's contribution to the general law. The obligation to take constant care to spare the civilian population, and to cancel or suspend an attack when circumstances change, presuppose a continuing capacity to reconsider. That presupposition was invisible for as long as the capacity to reconsider came free with the capacity to communicate. An emplaced offline system is defined by not having it. The paper argues that constant care is a **temporal** obligation which the existing law already contains without ever having had to state, and that stating it produces a design requirement rather than an aspiration: a system emplaced for longer than the circumstances can be relied on must be capable of being reached within that period.

The paper closes with drafted amendment text extending Amended Protocol II to emplaced systems that are not mines, and with an assessment of what that would cost the states most likely to field them.

Keywords: autonomous weapons; landmines; Amended Protocol II; Anti-Personnel Mine Ban Convention; constant care; precautions in attack; clearance obligations; international humanitarian law

Note on sources and method

Every authority has been checked against a primary or authoritative record before citation, and anything unverifiable has been removed rather than approximated. Treaty text is cited to the instrument.

Three cautions govern how the argument should be read.

The system this paper analyses is specified elsewhere and is not hypothetical in its components.

A companion engineering paper sets out an emplaced armed platform in detail—its sensing tiers, its authority envelope, its power budget and its communications postures—and where this paper makes a factual claim about what such a system can or cannot do, it takes it from there and says so. What is hypothetical is that any state has fielded precisely that specification. What is not hypothetical is that armed ground platforms have held positions unattended for weeks.

The analogy to mines is offered as a legal characterisation, not as a rhetorical charge. The claim is that the mine regime is the closest developed body of law and that its obligations fit. It is not the claim that these systems are as indiscriminate as mines, and Part IV argues the opposite: their capacity to discriminate is precisely what distinguishes them and is the reason the regime should be extended rather than simply applied.

The paper argues for extending an instrument, which is an argument about what the law should be. Where it states what the law *is*, that is marked. Where it states what it should become, that is marked too, and the two are kept apart because the first is checkable and the second is contestable.

Part I—Introduction

1. The object

A tracked chassis carrying a machine gun is emplaced to cover an approach. It has passive seismic and acoustic sensing that runs continuously at microwatt levels, imaging and on-platform inference that wake only when the cheap tiers escalate, a firing arc fixed by how the machine is bolted down, and authority that expires at a time set before it was left.¹ It is powered for thirty days by a primary cell and a small harvesting surface. It emits nothing. Depending on a design choice, it either can or cannot be told to stop.

A platform of substantially that description held a fighting position on the Ukrainian front for more than a month.²

The question this paper asks is what body of law describes it. The answer the literature gives is the law of weapons under human operation, with an inquiry into how much control was retained.³ The answer this paper gives is that the object is not principally a weapon under operation at all. **It is an emplaced device**, and there is a developed body of law about those.

¹The specification is taken from the companion paper on closed-system ground robotics, which sets out the sensing tiers, authority envelope, emission postures and power budget in detail.

²ibid, reporting a Ukrainian account of a machine-gun platform holding a fighting position for over a month. The figure is reported by a party to the conflict about its own performance.

³See Part III of the companion paper on the interval — Christopher I. V. Farmer, ‘The Interval, Not the Autonomy’ (2026) preprint, DOI 10.5281/zenodo.21970778 — on the rolling text of the Group of Governmental Experts and its formula of context-appropriate human judgement and control.

2. Why the framing matters rather than being a taxonomy dispute

Two bodies of law could apply and they reason from opposite ends.

The law of weapons under human operation reasons forward from the operator. Its questions are who decided, what they knew, what control they retained, and whether the machine did what they intended. That is the frame within which the decade of debate at the Group of Governmental Experts has been conducted, and a companion paper argues that its central formula cannot be verified.⁴

The law of emplaced devices reasons backward from the aftermath. Its questions are where the thing is, who will know it is there, how long it stays dangerous, who removes it, and what happens to the farmer twenty years later. Those questions produced Amended Protocol II and the Anti-Personnel Mine Ban Convention, and they produced obligations of a kind the autonomous-weapons debate has not contemplated: recording to exact locations, marking, self-deactivation to stated reliabilities, detectability to a stated mass of metal, and clearance after hostilities that survives loss of control of the ground.⁵

The choice between the two framings is not academic, and three consequences show why.

It determines what obligations attach. Under the first framing, a state that satisfies itself about human control has complied. Under the second, a state must also record the emplacement, mark it, ensure the system deactivates, make it findable, and clear it afterwards. Those are not small additions and no current proposal contains them.

It determines when the obligations end. The first framing's obligations are discharged at or around the engagement. The second framing's principal obligations begin at the cessation of active hostilities, which is after everything the first framing looks at has finished.

And it determines who bears them. Amended Protocol II places clearance responsibility on the party that laid the devices, and where that party no longer controls the ground it must provide technical and material assistance to whoever does.⁶ Nothing in the autonomous-weapons framing generates an obligation of that shape, because nothing in it contemplates the emplacer having left.

3. The gap, stated at once

An armed emplaced robotic platform does everything the mine regime was written about. It is put in place and left. It denies ground by threatening whatever enters it. It functions on the presence of a person within its arcs. It remains dangerous after the people who emplaced it have gone. And it will still be there when the fighting stops.

It falls outside the regime because of a fuze.

A mine, within both instruments, is a munition designed to be exploded by the presence, proximity or contact of a person or vehicle.⁷ The robotic platform is not exploded by presence. It observes presence, classifies it, applies a rule, and decides. Interposing a sensor and a decision between the presence and the detonation takes the device outside a definition drafted when the only available link between the two was a pressure plate or a tripwire.

That distinction is real and it is doing work nobody drafted it to do. It was written to separate victim-activated munitions from command-detonated ones, and its purpose was to catch the devices that cannot tell who has arrived. A system that can tell who has arrived is on the right side of the distinction's purpose and the wrong side of its words, and the result is that the more capable device carries fewer obligations than the less capable one.

⁴ibid.

⁵Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons, Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices as amended on 3 May 1996 (Amended Protocol II) (adopted 3 May 1996, entered into force 3 December 1998) 2048 UNTS 93; and Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction (adopted 18 September 1997, entered into force 1 March 1999) 2056 UNTS 211.

⁶Amended Protocol II (n 5), art 10.

⁷ibid, art 2(1); Anti-Personnel Mine Ban Convention (n 5), art 2(1).

3.1 The structure of the argument

Part II specifies the object, taking its components from the companion engineering paper, and identifies the four features that matter legally: it is emplaced, it is unattended, it functions on presence within a fixed geometry, and it persists.

Part III sets out the mine regime as it stands—the obligations, their sources, and the reasoning that produced them—because the argument depends on what that regime actually requires rather than on an impression of it.

Part IV establishes the gap and tests it against the objection that the fuze distinction is principled rather than accidental.

Part V is the paper’s contribution to the general law. It argues that constant care and the obligation to cancel or suspend are temporal obligations presupposing a continuing capacity to reconsider, that the presupposition was invisible while that capacity came free with communication, and that an emplaced offline system makes it visible by lacking it.

Part VI takes occupation and territorial control, and asks what it means for a state to hold ground through emplaced machines.

Part VII drafts the extension and states what it would cost.

Part VIII concludes.

A reader pressed for time should take Part I, §14, the text at Part VII §27 and the conclusions at Part VIII §30; Parts II and III establish what those assert.

4. What is new here, and what is not

4.1 What is not new

That the mine regime imposes recording, marking, self-deactivation, detectability and clearance obligations is the content of the instruments and is not a discovery.⁸

That autonomous weapons raise problems of distinction, proportionality and precautions is the subject of an extensive literature.⁹

That the law of armed conflict already governs these systems in principle, and that they are not unlawful per se, is the position of the leading treatment and is not disputed here.¹⁰

That comparisons between autonomous systems and mines are sometimes made is true, and they are generally made rhetorically, to suggest indiscriminateness. This paper’s use is different and is set out at §4.2.

That the mine instruments can serve as a model for regulating autonomous weapons has been argued, and by serious hands. Lewis proposed the 1996 Amended Protocol as the template for regulating autonomous weapons generally—context-calibrated regulation rather than prohibition—and the International Committee of the Red Cross’s current position paper treats the mine instruments, back to the 1907 Hague rules on automatic contact mines, as “indicative baselines” for a future framework on such systems.¹¹ Both are precedent-as-model: the mine regime as a pattern to copy into new law for a different class of weapon. Neither characterises the emplaced armed system as falling within the mine regime’s own object, and neither proposes the definitional amendment. That ground remains unclaimed—and the distinction matters for

⁸Amended Protocol II (n 5), arts 3, 5, 9 and 10 and the Technical Annex.

⁹See Part V of the companion paper on the interval, and the sources collected there.

¹⁰Michael N Schmitt and Jeffrey S Thurnher, “‘Out of the Loop’: Autonomous Weapon Systems and the Law of Armed Conflict” (2013) 4 *Harvard National Security Journal* 231.

¹¹John Lewis, ‘The Case for Regulating Fully Autonomous Weapons’ (2015) 124 *Yale Law Journal* 1309; ICRC, *Autonomous Weapon Systems and International Humanitarian Law* (position paper, October 2025; version with executive summary, March 2026) 20–21 https://www.icrc.org/sites/default/files/2026-03/4896_002_Autonomous_Weapons_Systems_-_IHL-ICRC.pdf accessed 14 August 2026.

what follows, because a model must be negotiated into new law, whereas a characterisation, if right, means the law is already there and one definition short.

4.2 What is offered as new

First, the characterisation itself. That an emplaced armed robotic system is better described by the law of emplaced devices than by the law of weapons under human operation, and that the two bodies reason from opposite ends with different obligations attaching at different times to different parties. So far as the author can establish, the mine regime has not been systematically applied to these systems, and where the comparison is made it is made to argue that such systems are indiscriminate rather than to argue that a body of law fits them.

Second, the identification of the fuze as the load-bearing distinction. The definitional escape turns on the interposition of a sensor between presence and detonation, and that is a distinction drafted for a different purpose which now produces the perverse result at §3.

Third, the inversion (Part IV §14). The mine regime is more demanding than the autonomous-weapons framework, not less, and its obligations are cheap for a robotic system to meet. The regime asks nothing about discrimination because no unsensing device could discriminate; a sensing device can, and the companion engineering paper prices it. **The law asks less of these systems than they can deliver, because it asks nothing of them at all.**

Fourth, constant care as a temporal obligation (Part V). That Article 57's requirement of constant care and its obligation to cancel or suspend presuppose a continuing capacity to reconsider; that the presupposition has never had to be stated because the capacity came free with communication; and that stating it yields a design requirement rather than an exhortation.

Fifth, the drafted extension (Part VII), framed as an amendment to Amended Protocol II rather than as a new instrument, for reasons about the multilateral process set out in the companion paper.

4.3 What would falsify each claim

The **characterisation** fails if the obligations of the mine regime cannot sensibly be applied to a system of this kind—if recording, marking, deactivation, detectability or clearance turn out to be incoherent as applied. Part III tests each.

The **fuze point** fails if the definitions in either instrument are wider than this paper reads them, or if state practice already treats sensor-mediated emplaced systems as within them. The author has found no such practice and would welcome correction.

The **inversion** fails if the obligations are in fact expensive for such systems to meet. That is an engineering question and the companion paper's figures are the evidence; if those figures are wrong, this claim falls with them.

The **temporal reading of constant care** fails if the obligation is properly read as discharged at the moment of the attack decision rather than continuing. Part V argues from the text of Article 57(2)(b), and a contrary reading of that provision would defeat it.

Part II—The Object, Specified

5. Why the specification has to come first

This section sets out the system the paper analyses. It is placed before the law because a legal characterisation of a machine is only as good as the description of the machine, and because the characterisation argued for at Part IV turns on four specific features rather than on a general impression of autonomy.

The specification is taken from the companion engineering paper, which sets it out at length and prices its components.¹² What follows is what the law needs and no more.

6. The system

Emplacement. The platform is carried or driven to a position, sited to cover a defined approach, and left. Its firing arcs are fixed by physical alignment and survey at emplacement rather than by a coordinate held in software, so the boundary of what it may engage is a property of how the machine is bolted down.¹³

Sensing in tiers. A seismic and acoustic front end runs continuously at microwatt levels. It wakes a magnetic and passive infrared tier on a trip, which in turn wakes imaging and on-platform inference. Nothing is transmitted. Field figures for the always-on tier give reliable footstep detection at around thirty metres, so the engagement sector for personnel is tens of metres rather than hundreds.¹⁴

Local decision. Classification and release assessment are computed on the platform. The model is fixed at emplacement and cannot be improved in place.¹⁵

Authority bounded three ways. By geometry, to the surveyed sector. By time, expiring into inertness at a moment set before emplacement. And by a release criterion stated in terms of conduct within the sector rather than target identity.¹⁶

Persistence. The design case is thirty days, met by a primary cell for the guaranteed baseline and a small harvesting surface for the discretionary load. The whole platform draws under one watt-hour per emplaced-day on the specified architecture.¹⁷

Reachability, which is a design choice and not a fact of nature. The platform may be operated with no link at all, or as a receiver that listens and never transmits. The second costs approximately one part in a thousand of its energy budget, presents the same electromagnetic profile as the first because direction-finding locates transmitters rather than receivers, and places the emission entailed by recall on the control station to the rear rather than on the emplaced platform.¹⁸

7. The four features that matter legally

Everything in §6 reduces, for present purposes, to four properties. The argument of Parts III to VI depends on these and on nothing else.

It is emplaced. Put in a place, deliberately, by an identified party, and left there.

It is unattended. No person is present, observing, or in a position to intervene at the moment it functions.

It functions on presence within a fixed geometry. Whoever enters the surveyed sector and satisfies the release criterion is engaged. Nobody decides at the moment of function.

It persists. It remains capable of functioning long after the emplacement, and—absent expiry or recall—after the tactical purpose that justified it has gone.

Those four are the properties that generated every obligation in Part III. They are not properties of autonomy, and a system possessing all four would engage the emplaced-device regime whether its decision logic were a neural network, a lookup table or a spring.

¹²See the companion paper on closed-system ground robotics, which specifies the architecture, states its power budget and prices its components.

¹³ibid, on the authority envelope and the reasons for fixing the sector physically rather than in software.

¹⁴ibid, on the sensing tiers and on published field trials giving reliable seismic footstep detection at about thirty metres.

¹⁵ibid, on on-platform inference and on the consequence that the model cannot be improved during the emplacement.

¹⁶ibid, on the geometric, temporal and behavioural constraints, and on expiry into inertness as the correct default.

¹⁷ibid, on the emplaced-day budget and on the split between a primary-cell baseline and a harvested discretionary load.

¹⁸ibid, on emission postures, on the tiered receiver, and on the asymmetry that direction-finding locates transmitters.

7A. A fielded instance, which matters because it removes the hypothetical objection

The four properties at §7 are not a description of something nobody has built.

The SGR-A1, developed by Samsung Techwin—now Hanwha Aerospace—with Korea University, has been reported in the Korean demilitarised zone since 2010. It mounts a 5.56 mm light machine gun with an optional grenade launcher, uses infrared and thermal imaging with pattern recognition to detect and track intruders at ranges reported up to three kilometres, and issues spoken warnings in Korean and English before engaging.¹⁹ It is emplaced, it is unattended, it functions on presence within a fixed geometry, and it persists. **It satisfies all four of the properties at §7 and it has been in place for over fifteen years.**

Two observations follow and the second bears directly on Part III.

The object of this paper’s analysis is not prospective. Whatever may be said about the thirty-day expeditionary emplacement specified at §6, a static armed system that decides and fires on presence within a surveyed sector exists, is fielded by a state, and has been for some time. An argument that the mine regime should reach such systems is therefore an argument about present practice and not about a future contingency.

And the system already discharges, voluntarily, one of the obligations the regime would impose. The spoken warning before engagement is an advance warning, which is among the precautionary measures the customary formulation enumerates and which the emplaced-device regime requires in the form of marking.²⁰ Nobody compelled that design choice. It was made because it is obviously right for a system of this kind in this position, which is evidence that the obligations at Part III are not alien to how such systems are actually built—they are, in part, what a careful designer arrives at unaided.

The differences from §6’s specification should be stated so the comparison is not overdrawn. The SGR-A1 is a fixed installation with external power, on a permanently marked and monitored boundary, in ground its operator controls. The §6 system is carried forward, concealed, powered from what it carries, and left where nobody controls the ground. **Those differences are precisely the ones that matter to the aftermath,** which is why Part VI’s analysis of denial without presence applies to the second and not to the first.

7.1 What the specification is not

It is not a claim that any state has fielded precisely this. Armed ground platforms have held positions unattended for extended periods, which is established; that any was built to this architecture is not.²¹

It is not a claim that the system is indiscriminate. The imaging tier and the release criterion exist to discriminate, and Part IV §14 argues that this capacity is the reason the regime should be extended rather than a reason it should not apply.

And it is not a claim about a future technology. Every component is current, and the companion paper’s contribution is that the power budget closes on published component figures rather than that the parts must be invented.²²

¹⁹SGR-A1’ <https://en.wikipedia.org/wiki/SGR-A1> accessed 14 August 2026; and IEEE Spectrum, ‘A Robotic Sentry For Korea’s Demilitarized Zone’ <https://spectrum.ieee.org/a-robotic-sentry-for-koreas-demilitarized-zone> accessed 14 August 2026. Deployment numbers are not public and the programme is reported as classified; the sources establish the system’s character rather than the scale of its use.

²⁰Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law, Volume I: Rules* (Cambridge University Press 2005) rule 15, whose enumerated precautionary measures include the issuing of advance warning; and Amended Protocol II (n 5), arts 3 and 5(2), on marking and the protection of civilians.

²¹ibid, reporting a Ukrainian account of a machine-gun platform holding a fighting position for over a month; the figure is reported by a party to the conflict about its own performance.

²²ibid.

Part III—The Regime for Emplaced Devices

8. What the mine regime actually requires

This section sets out the obligations of the emplaced-device regime, because the argument of Part IV depends on what they are rather than on an impression of them, and because their content is more demanding than the autonomous-weapons debate assumes. Our purpose is to establish, obligation by obligation, that each was produced by experience of what emplaced effects do after the emplacing party has gone.

A reader familiar with the obligations of Amended Protocol II may pass to §9, which states the shape of the regime the argument relies on. Two instruments matter. Amended Protocol II to the Convention on Certain Conventional Weapons, adopted 3 May 1996 and in force since 3 December 1998, regulates mines, booby-traps and other devices.²³ The Anti-Personnel Mine Ban Convention, adopted 18 September 1997 and in force since 1 March 1999, prohibits anti-personnel mines outright for its parties.²⁴ The regimes overlap, and their memberships differ, which matters at Part VII.

8.1 Recording

All information concerning minefields, mined areas, mines, booby-traps and other devices is to be recorded in accordance with the Technical Annex.²⁵ Whenever feasible the record is to show the exact location of every mine, save in row minefields where the row location suffices.²⁶

Two features transfer directly to the systems this paper concerns.

The standard is exactness where feasible, not approximation. The obligation is to record where each device is, and the concession for row minefields is a concession to a laying method rather than a general relaxation.

The record is retained and is for use later.²⁷ Parties retain the records and, without delay after the cessation of active hostilities, must take all necessary and appropriate measures—including the use of that information—to protect civilians from the effects of what was laid.²⁸ The record is not an administrative artefact. It is the instrument by which the aftermath is managed, and the obligation to make it exists because somebody will need it after the fighting.

8.2 Marking and protection of civilians

The regime requires that civilians be protected from the effects of emplaced devices, and the measures contemplated include marking, fencing, monitoring and the use of the recorded information.²⁹ The underlying judgement is that an emplaced effect which is not marked is a hazard to whoever does not know it is there, and that the party which created the hazard is the party that knows.

8.3 Self-destruction and self-deactivation

The Technical Annex sets quantified requirements. Remotely delivered mines must self-destruct within **thirty days** of emplacement with **ninety per cent reliability**, and must carry a **back-up self-deactivation** feature such that no more than **one in a thousand** remains functional after **a hundred and twenty days**.³⁰

The architecture of that requirement deserves attention, and Part VII adopts it. It is two-layered: a primary mechanism with a stated reliability and an independent backstop with a stated residual, so that it does

²³Amended Protocol II (n 5).

²⁴Anti-Personnel Mine Ban Convention (n 5).

²⁵Amended Protocol II (n 5), art 9 and Technical Annex.

²⁶ibid, Technical Annex, on the recording of minefields and on the exact location of every mine where feasible.

²⁷The retention and later use of the record is what distinguishes the obligation from an administrative formality: the record exists so that the party which created the hazard can discharge, or enable another to discharge, the clearance duty at art 10.

²⁸ibid, art 9; and see art 3(2) on the responsibility of the party laying the devices.

²⁹ibid, arts 3 and 5(2), on marking, fencing, monitoring and the protection of civilians.

³⁰ibid, Technical Annex, para 3.

not depend on a single device working. It states numbers rather than standards, which makes compliance testable. And its horizon is thirty days—a figure the companion engineering paper arrived at independently from an operational case, and the coincidence is treated at §14.³¹

8.4 Detectability

Anti-personnel mines produced after 1 January 1997 must incorporate material rendering them detectable by commonly available technical mine detection equipment: not less than **eight grammes of iron** in a single coherent mass, or the equivalent.³²

The reasoning is the same as for recording. The obligation exists so that somebody who was not there when the device was emplaced can find it afterwards.

8.5 Clearance, which is the obligation the autonomous-weapons debate has no analogue for

Without delay after the cessation of active hostilities, all minefields, mined areas, mines, booby-traps and other devices are to be **cleared, removed, destroyed or maintained** in accordance with Article 3 and Article 5(2).³³

Three features of that obligation are without parallel in any autonomous-weapons proposal.

It attaches to the aftermath rather than to the engagement. It begins when active hostilities cease, which is after every question the autonomous-weapons framing asks has been answered.

It survives loss of control of the ground. Parties bear the responsibility in respect of areas under their control; where a party laid devices in an area it no longer controls, it must provide the party now in control with the technical and material assistance necessary to discharge that responsibility, so far as that party permits.³⁴ **The emplacer does not escape by losing the position.**

And “maintained” stands alongside removal. A party may keep an emplaced effect in being provided it complies with the marking, fencing and monitoring requirements. That matters at Part VII, because it supplies a template for a lawful long-term emplacement rather than only for its removal.

9. Why the regime looks like this

The obligations above share a shape, and the shape is what transfers.

Every one of them addresses **the position of a person who was not present at the emplacement**. Recording addresses whoever must find the devices later. Marking addresses whoever might walk into the area. Self-destruction and self-deactivation address whoever is there after the tactical purpose has expired. Detectability addresses the clearance team. Clearance addresses the population that returns.

The regime is therefore not built around the intentions of the party that laid the device, nor around the control it retained. **It is built around the fact that an emplaced effect outlives the reason it was emplaced**, and around the asymmetry that the party which created the hazard is the party that knows where it is, while the party which encounters the hazard is the party that does not.

That reasoning applies without modification to an armed robotic platform left in contested ground for thirty days. Part IV establishes why the law does not.

³¹See the companion paper on closed-system ground robotics, which takes thirty days as its design case from a reported operational emplacement rather than from the Technical Annex.

³²Amended Protocol II (n 5), Technical Annex, para 2, applying to anti-personnel mines produced after 1 January 1997.

³³ibid, art 10(1).

³⁴ibid, art 10(2)–(3).

Part IV—The Gap, and the Inversion

12. The definitional escape

This section establishes that an armed emplaced robotic platform falls outside the regime set out in Part III, identifies the provision that produces that result, and tests whether the distinction is principled.

A mine is defined in both instruments as a munition designed to be placed under, on or near the ground or other surface area and **to be exploded by the presence, proximity or contact of a person or vehicle**.³⁵ An anti-personnel mine is such a munition designed to be so exploded and to incapacitate, injure or kill one or more persons.³⁶ The Protocol's related categories are drawn on the same principle: a booby-trap is a device designed to kill or injure which functions unexpectedly when a person disturbs or approaches an apparently harmless object or performs a safe act; "other devices" are manually emplaced munitions and devices actuated manually, by remote control, or automatically after a lapse of time.³⁷

An armed robotic platform is not exploded by presence. It **observes** presence, classifies what it has observed, applies a rule fixed before emplacement, and decides. The munition it fires is not placed on or near the ground to be exploded by anyone; it is fired.

The platform is therefore not a mine, not an anti-personnel mine, and not a booby-trap. The nearest category is "other devices", and the fit there is instructive rather than sufficient.³⁸ Those are munitions and devices *actuated* manually, by remote control, or automatically after a lapse of time. A system that fires on its own assessment is not actuated by any of the three. It is not actuated at all, in the sense the definition contemplates—it acts.

The whole escape turns on the interposition of a sensor and a decision between presence and effect.

13. Is the distinction principled?

The obvious defence is that the distinction is not accidental but exactly right: the mine regime exists because mines cannot tell who has arrived, and a system that can tell should not be governed by rules written for devices that cannot.

That defence is correct about the purpose and wrong about the consequence, and separating the two is the work of this section.

The purpose of the fuze distinction was to identify victim-activation. The line between a mine and a command-detonated munition is the line between a device that functions on the arrival of whoever arrives and one that functions when a person decides it should. Everything in Part III follows from the first: recording, marking, deactivation, detectability and clearance are all responses to a device that will act on the next person to come along, whoever that is, however long afterwards.

An emplaced robotic platform is victim-activated in every respect that generated those obligations. It functions on the arrival of whoever arrives within its arcs. Nobody decides at the moment of function. It will act on the next person who comes along. And it will still be there, still able to act, long after the tactical purpose has expired—which is the precise condition the thirty-day self-destruction requirement was written for.

What it adds is a classification step, and that bears on one obligation only. Being able to tell who has arrived bears on *discrimination*. It does not bear on whether the device is recorded, whether the area is marked, whether the thing deactivates, whether it can be found, or whether anyone clears it afterwards. **Four of the regime's five obligations are wholly indifferent to whether the device can classify**

³⁵Amended Protocol II (n 5), art 2(1); Anti-Personnel Mine Ban Convention (n 5), art 2(2), which defines a mine in materially the same terms.

³⁶Anti-Personnel Mine Ban Convention (n 5), art 2(1).

³⁷Amended Protocol II (n 5), art 2(4) and (5).

³⁸Amended Protocol II (n 5), art 2(5), defining "other devices" as manually-emplaced munitions and devices designed to kill, injure or damage and which are actuated manually, by remote control or automatically after a lapse of time.

what triggers it, because they address the position of people who were not present at the emplacement rather than the accuracy of the device.

So the distinction is principled as to the one thing it was drawn for and produces an unprincipled result as to the other four. A device that can classify escapes obligations that have nothing to do with classification, because the drafters had no occasion to separate the two: in 1996 nothing that was emplaced could classify, so the fuze was a reliable proxy for the whole cluster of concerns, and a proxy is only as good as the correlation it rests on.

14. The inversion

The argument so far might be read as a charge against these systems. It is the opposite, and this section is the paper's central claim.

14.1 The obligations are cheap for a robotic system to meet

Take them in turn, with costs from the companion engineering paper where the question is technical.³⁹

Recording costs a line in a log. The emplacement is a deliberate act performed by an identified unit at an identified place, and the platform knows where it is because it surveyed the site.

Marking is a tactical decision rather than a technical constraint, and is no more burdensome than for a minefield—less so, because a system which can be told to stop can be made safe for a party that needs to cross.

Self-deactivation costs a timer. The companion paper already specifies authority that expires into inertness at a time set before emplacement, and argues that expiry into inertness rather than into continued operation is the correct default.⁴⁰ Adopting the Technical Annex's two-layer architecture—a primary mechanism at a stated reliability, an independent backstop at a stated residual—is a refinement of something the design already contains.

Detectability is met many times over. Eight grammes of iron is a fraction of the mass of a tracked chassis, and the difficulty for such a system is concealment rather than detectability.

Clearance is easier than for a minefield, because the object is large, singular, recorded, and—if it retains the recall channel—can be commanded to a safe state before anyone approaches it.

14.2 And the obligation the regime does not impose is the one these systems can discharge

The mine regime nowhere requires that an emplaced device discriminate before it functions. It could not: no device without sensing could comply, so the regime addresses indiscriminateness by controlling *where devices are, how long they last, and who removes them* rather than by requiring judgement of the device.

An emplaced robotic system can discriminate. The companion engineering paper prices it: identification and release judgement account for approximately 830 mWh per emplaced-day, roughly 91 per cent of the platform's total budget, against 81 mWh for a system that denies ground without discriminating at all.⁴¹ **A mine is the zero-energy limit of the same design—it spends nothing and exercises no judgement—and the two are separated by a measurable expenditure of under a watt-hour a day.**⁴²

The conclusion is uncomfortable in both directions and should be stated plainly.

The law asks less of these systems than they can deliver, because it asks nothing of them at all. The regime that would impose obligations does not reach them. The framework that reaches them

³⁹See the companion paper on closed-system ground robotics, and in particular its treatment of the authority envelope, expiry into inertness, and the energy price list.

⁴⁰*ibid*, on expiry into inertness as the correct default and on the two-layer structure adopted from the Technical Annex.

⁴¹*ibid*, on the discrimination exchange rate.

⁴²*ibid*.

imposes an unverifiable formula.⁴³ A state fielding an emplaced armed robotic platform today is, on the current state of the law, subject to the general rules of targeting and to nothing whatever about recording, marking, deactivation, detectability or clearance—obligations it could meet at negligible cost, in respect of a device that will outlive its purpose in exactly the way the mine regime exists to address.

And the discrimination obligation the regime never imposed becomes available for the first time. The reason mines are governed by marking, mapping and self-destruction rather than by a duty to discriminate is that discrimination was unavailable at any price. It is now available and it is cheap. Whether the law should therefore require it is a question this paper puts and Part VII drafts an answer to; that the question is now open, and has a number attached, is the finding.

14.3 The corroboration neither drafter intended

Two current documents corroborate the inversion from outside. The rolling text before the Group in 2026 would have states ensure that these systems “can be deactivated in a timely manner and/or incorporate self-destruct, self-deactivation or self-neutralization mechanisms”, and would confine their operation “to a defined perimeter”.⁴⁴ The ICRC’s position paper would require, of any system that does not permit timely human intervention and deactivation, “an effective self-destruction or self-neutralization mechanism and have a backup self-deactivation feature”.⁴⁵ That is the Technical Annex’s two-layer architecture and the mine regime’s perimeter discipline, rediscovered clause by clause for mobile systems—by a process that has not yet produced an instrument, while the instrument whose architecture is being copied has been in force since 1998 and reaches the emplaced case on one amended definition.

15. What this does not establish

It does not establish that such systems are indiscriminate. The argument is that a body of law fits them, not that they share the vice that produced it. Part IV §14 argues the opposite.

It does not establish that any state has fielded the specified system. Armed platforms have held positions unattended for extended periods; whether any was emplaced on the architecture the companion paper specifies is not established by the public record.

And it does not establish that extending the regime is the best available response. It establishes that the current position leaves a set of cheap and well-understood obligations unapplied to a device they were designed for in substance. Whether the right response is extension, a new instrument, or national practice is taken at Part VII.

Part V—Constant Care as a Temporal Obligation

16. The provision, and what it presupposes

This section makes the paper’s contribution to the general law rather than to the law of emplaced devices. Our purpose is to establish that an obligation the law has always contained has a temporal structure which has never had to be stated, and that an emplaced offline system makes it visible by lacking what the obligation assumes.

In the conduct of military operations, constant care shall be taken to spare the civilian population, civilians

⁴³See the companion paper on the interval, Part III, on the unverifiability of “context-appropriate human judgement and control”.

⁴⁴GGE on LAWS, ‘Rolling text, status date: 18 December 2025’ (UNODA documents library, CCW GGE on LAWS (2026)) [https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_\(2026\)/CCW_GGE_LAWS_Rolling_Text_-_status_18_December_2025.pdf](https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_(2026)/CCW_GGE_LAWS_Rolling_Text_-_status_18_December_2025.pdf) accessed 14 August 2026, part III para 7(D)–(E).

⁴⁵ICRC, *Autonomous Weapon Systems and International Humanitarian Law* (position paper, October 2025; version with executive summary, March 2026) 18 https://www.icrc.org/sites/default/files/2026-03/4896_002_Autonomous_Weapons_Systems_-_IHL-ICRC.pdf accessed 14 August 2026.

and civilian objects.⁴⁶ Those who plan or decide upon an attack must do everything feasible to verify the objective, take all feasible precautions in the choice of means and methods, refrain from launching an attack expected to cause excessive incidental harm, and—the provision this Part turns on—**cancel or suspend an attack if it becomes apparent that the objective is not a military one or that the incidental harm would be excessive.**⁴⁷ The customary formulation is to the same effect, and its enumerated precautionary measures include target verification, choice of means and methods, assessment of effects, advance warning, and ensuring appropriate control.⁴⁸

Read those two obligations for their temporal structure rather than their content.

“Constant care” is expressly continuing. It is not care at the moment of decision. It is care in the conduct of operations, and the adjective is doing work: the obligation does not discharge when the attack is authorised.

“If it becomes apparent” is expressly forward-looking. The provision contemplates a state of affairs coming to light *after* the decision to attack and *before* the effect, and it requires action in response. It therefore presupposes three things at once: that somebody remains capable of perceiving the change, that somebody remains capable of deciding in response to it, and **that the attack remains capable of being stopped.**

17. Why the presupposition has never had to be stated

For every weapon the provision was drafted against, the third presupposition came free.

An artillery mission can be checked fire. An aircraft can be waved off. A ship’s gun can be ordered to cease. A guided munition in flight can, on many systems, be diverted or self-destructed. In each case the ability to reconsider arrived with the ability to communicate, and the ability to communicate was a property of having people in the loop. Nobody drafting Article 57 in the 1970s needed to say that an attack must remain stoppable, because no attack was otherwise.

The emplaced offline system is the first case in which the capacity to perceive and the capacity to act on what is perceived come apart from the attack itself. The system perceives; nobody who is answerable perceives. The system decides; nobody who is answerable decides. And unless a recall channel was designed in, nobody can stop it.

That is not a gap in the law. It is a presupposition of the law that a technology has, for the first time, falsified.

18. The temporal reading, stated

The reading this paper proposes is that Article 57(2)(b) contains, implicitly, a condition on lawful employment:

An attack may lawfully be commenced only if it will remain capable of being cancelled or suspended for as long as circumstances may change in a way that would require it.

Three points establish that this is a reading of the provision rather than an addition to it.

It follows from the ordinary meaning. An obligation to cancel or suspend upon a contingency is meaningless if the person bound cannot cancel or suspend. To read the provision as satisfied by an attack that cannot be stopped is to read the obligation out of it.

It is consistent with the treatment of feasibility elsewhere. The precautionary obligations are framed by what is feasible, and a state that has chosen an architecture making cancellation impossible cannot rely

⁴⁶Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) (adopted 8 June 1977, entered into force 7 December 1978) 1125 UNTS 3, art 57(1).

⁴⁷*ibid*, art 57(2)(a) and (b).

⁴⁸Henckaerts and Doswald-Beck (n 20), rule 15, whose enumerated precautionary measures include ensuring appropriate control.

on its own design choice to establish that cancellation was not feasible. Feasibility is assessed against what the party could have done, and the companion engineering paper establishes that a recall channel for such a system costs **1.3 per cent** of its energy budget on a conventional duty-cycled receiver, falling to approximately one part in a thousand on the tiered wake-up architecture that paper proposes, requires the platform to emit nothing, and places the associated emission on the control station rather than the platform.⁴⁹ The conservative figure is the one this argument needs and the one relied on here. **A capability at 1.3 per cent of a budget is feasible on any reading of the word.**

And it explains the mine regime rather than sitting awkwardly beside it. Amended Protocol II's self-destruction requirement is, in substance, an answer to the same problem in a technology that cannot be recalled at all: where an emplaced effect cannot be stopped, the regime requires that it stop itself, within thirty days, at a stated reliability, with a backstop.⁵⁰ The mine regime and the temporal reading of Article 57 are two solutions to one difficulty, and the second is available to systems the first was not written for.

18.1 The state practice that appears to defeat this, and why it does the opposite

There is one piece of state practice squarely on the point and it must be dealt with before anything else, because on a first reading it is fatal.

On ratifying Protocol I the United Kingdom stated its understanding that **the obligation to comply with paragraph 2(b) extends only to those who have the authority and the practical possibility to cancel or suspend the attack.**⁵¹ Read at face value that disposes of this Part. Where an emplaced offline system has been left with nobody able to reach it, nobody has the practical possibility, so nobody is bound, so nothing has been breached.

The reading is available and this paper says it is wrong, for a reason that has nothing to do with whether the declaration is a permissible interpretation.

An interpretation on which a party discharges an obligation by disabling itself from performing it is not an interpretation of that obligation. It is a repeal of it, effected unilaterally, by design choice, at no cost. On that reading a belligerent could escape Article 57(2)(b) entirely and in every case simply by choosing weapons it could not stop, and the better the choice the more complete the escape. No provision of the Protocol is read so as to be defeasible at the option of the party bound, and the declaration should not be read as making this one so.

The declaration is about identifying the addressee, not about licensing the removal of the addressee. Its evident purpose is to answer a real practical question—whether a pilot, a gunner or a staff officer is the person bound—and to answer it by reference to who can actually act. That is sensible and this paper does not quarrel with it. It presupposes rather than denies that somebody occupies the position; it allocates a duty among people, and does not contemplate a case in which the party has arranged for nobody to be in a position to hold it.

And “practical possibility” must be assessed when the party still had the choice. The rest of Article 57 assesses feasibility against what the party could have done, not against what it left itself able to do, which is why a commander cannot establish that verification was infeasible by declining to look. Applied consistently, the same word in the same declaration is assessed at employment. At that moment the practical possibility plainly exists: the companion engineering paper prices it at approximately one part in a thousand of the platform's energy budget.⁵²

So the declaration relocates the question rather than answering it. **It asks who had the practical possibility, and for an emplaced offline system the honest answer is that somebody did, at**

⁴⁹See the companion paper on closed-system ground robotics, on the tiered receiver and on the placement of the recall emission at the control station rather than the emplaced platform.

⁵⁰Amended Protocol II (n 5), Technical Annex, para 3.

⁵¹United Kingdom, statement made on ratification of Protocol I (28 January 1998), recording the understanding that the obligation to comply with art 57(2)(b) extends only to those who have the authority and practical possibility to cancel or suspend the attack.

⁵²Companion engineering paper (n 49).

emplacement, and gave it up. A reader who nonetheless takes the face-value reading has identified the point at which the argument of this Part fails, and Part VIII §31 records it as such.

19. What the reading requires in practice

Two requirements, and both are design requirements with a legal source rather than exhortations.

Recall within the period over which circumstances may change. A system emplaced across an interval longer than the period the relevant facts can be relied on must be reachable within that period. The companion paper on the interval develops this as a general rule and prices the fact-decay estimate that sets it; here it is sufficient that the period is shorter than a thirty-day emplacement in contested ground.⁵³

Expiry into inertness where recall fails. Because a recall channel may be denied—a receiver can be jammed even though it cannot be located by direction-finding—the design must be such that the absence of a message is the safe state.⁵⁴ That is the same two-layer architecture the Technical Annex requires of remotely delivered mines, arrived at from the opposite direction: a primary means of stopping, and an independent backstop that stops anyway.

20. The objection that this makes lawful employment impossible

The objection is that on this reading almost no emplaced system could lawfully be used, because circumstances can always change and no recall is perfectly reliable.

Three replies.

The standard is feasibility, not certainty. The obligation is to do everything feasible, and a recall channel at the price stated is plainly feasible. A channel that works most of the time, backed by expiry, is what the law asks for; a channel that works always is not available for any weapon and is not required for any.

Short emplacements in stable environments remain available. Where the circumstances underpinning the authorisation can be relied on for the duration, the first limb is satisfied and no recall is needed. Terminal defence of a closed airspace over a defended installation is the paradigm.⁵⁵

And the objection proves less than it appears. If it were sound, it would apply with equal force to Amended Protocol II's self-destruction requirement, which likewise makes certain emplacements impossible and was adopted anyway, by consensus, in 1996. The law has already accepted that some emplaced effects must be given up because their aftermath cannot be controlled. This paper argues only that a system able to control its aftermath more cheaply than a mine should not be under a lesser obligation than one which cannot.

Part VI—Holding Ground Without Being On It

21. The question

This section asks what it means, in law, for a state to hold ground through emplaced machines rather than through soldiers. Its purpose is narrower than it may appear: not to resolve the law of occupation, which is settled in outline and contested at its edges, but to locate an emplaced robotic system within it and to show why the answer bears on the obligations at Part III.

The question is not academic. A system denying an approach for thirty days produces, by design, the effect a garrison produces. If it produces the effect without the legal consequences, the incentive to substitute machines for soldiers is a legal incentive as well as a military one.

⁵³See the companion paper on the interval, Part V, on the fact-decay rate and the two-limb rule it generates.

⁵⁴See the companion paper on closed-system ground robotics, on jamming of a receive-only channel and on expiry into inertness as the correct default.

⁵⁵See the companion paper on the interval, Part VI, on automated air and missile defence.

22. Effective control and the machine

Territory is considered occupied when it is actually placed under the authority of the hostile army, and the occupation extends only to the territory where such authority has been established and can be exercised.⁵⁶ The occupant is then bound to take all measures in its power to restore and ensure public order and safety.⁵⁷

The test is not satisfied by presence. The International Court of Justice, asking whether a state was an occupying power, examined whether its forces were “not only stationed in particular locations” but had “substituted their own authority for that of” the territorial government, and found occupation established in the one district where an officer had created and administered a province.⁵⁸ Presence without substitution is not occupation; substitution without a structured military administration may be.

The International Criminal Tribunal for the former Yugoslavia has set out what establishing that authority looks like, in five guidelines which are the most usable statement of the test available.⁵⁹ The occupying power must be in a position to substitute its own authority for that of authorities rendered incapable of functioning publicly; the enemy’s forces must have surrendered, been defeated or withdrawn, and **battle areas may not be considered occupied territory**; there must be sufficient force present, or the capacity to send troops within a reasonable time, to make the occupant’s authority felt; a temporary administration must have been established; and the occupying power must have issued and enforced directions to the civilian population.

Applying those five to an emplaced robotic system is where this Part earns its place, because the result is not the uniform failure one expects.

On four of the five the system fails, and fails completely. It cannot substitute its authority for anything, because it has none to substitute. Its whole purpose is to hold ground that has not been conceded, which makes the area it denies a contested one and, on the second guideline, expressly not occupied territory. It is not a force whose authority can be felt, and the party that emplaced it has by hypothesis gone. It establishes no administration.

On the fifth it succeeds, and it succeeds better than a garrison. The occupying power must have *issued and enforced directions to the civilian population*. An emplaced armed system issues exactly one direction—do not enter—and enforces it continuously, without fatigue, and lethally. A garrison enforcing a curfew is doing something less absolute.

That asymmetry is the finding of this Part and it is stated as such. **The one limb of the occupation test an emplaced system satisfies is the enforcement limb, and the obligations of occupation attach to the authority limbs.** The law of occupation binds the party that can govern, on the assumption—true of every case that produced it—that a party able to coerce a population is a party able to govern it. An emplaced robotic system coerces without governing, which is a combination the test was not built to catch, and it is the same separation the minefield made first: denial without presence.⁶⁰

Two things follow and neither is an argument for stretching the concept.

On the orthodox test emplaced machines do not create an occupation, and this paper does not argue otherwise. The four failures are real failures and not technicalities. A machine cannot restore

⁵⁶Regulations respecting the Laws and Customs of War on Land, annexed to Convention (IV) respecting the Laws and Customs of War on Land (The Hague, 18 October 1907) art 42.

⁵⁷*ibid*, art 43.

⁵⁸*Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v Uganda)* (Judgment) [2005] ICJ Rep 168, where the Court asked whether the forces in question were not only stationed in particular locations but had substituted their own authority for that of the territorial government, and found Uganda to be the occupying Power in Ituri, the absence of a structured military administration there not being decisive.

⁵⁹*Prosecutor v Naletilić and Martinović* (Judgment) IT-98-34-T (31 March 2003) paras 217–222, setting out the five guidelines summarised in the text and holding that what must be determined case by case is whether the occupying power exercises actual authority over the area. The Chamber declined to apply the overall-control test to the existence of an occupation, holding that a further degree of control is required than for the internationalisation of a conflict.

⁶⁰The separation of denial from presence is not new; the minefield made it first, which is why the emplaced-device regime developed as a separate body of rules rather than as an application of the law of occupation. What is new is that the separating device can now classify what it excludes—which is the subject of Part IV.

public order, cannot ensure public safety, and cannot discharge a single one of the duties Article 43 imposes; treating it as an occupant would impose obligations on nobody.

But the fifth limb identifies precisely what is missing. A party that has issued and enforced a standing direction to a civilian population, and then withdrawn, has done the thing the aftermath rules exist for. Occupation law will not reach it because it never governed. The emplaced-device regime should reach it, and Part IV explains why it does not.

23. The consequence for the aftermath

The two bodies address one underlying problem from opposite ends. Occupation law asks what a party owes the population of ground it holds. The emplaced-device regime asks what a party owes the population of ground it has left dangerous. Between them they cover the two ways a belligerent's effect on territory outlasts the fighting.

An emplaced robotic system is, at present, in neither. It does not hold the ground, so no occupation duty arises. It is not a mine, so no clearance duty arises.⁶¹ **A state may therefore render an area impassable for a month, withdraw, and owe nothing to anyone in respect of what it left behind**—a result neither body of law would have produced had the question been put to its drafters.

Two features make that worse than it first appears.

The hazard is more capable than a mine, not less. A device that decides can be wrong in ways a pressure plate cannot, and its failure modes are not legible to a person approaching it. Somebody who knows there is a minefield knows what to do. Somebody who knows there is an armed machine somewhere in a treeline does not.

And there is no record. The recording obligation exists so that the aftermath can be managed by people who were not present. Nothing requires a state to record where it emplaced a robotic system, so the information needed to find and clear it exists only in the emplacing unit's own files, if at all, and only for as long as that unit does.

24. What follows for the response

The response should not be an extension of occupation law. Denial is genuinely not control, and stretching the concept would do damage elsewhere for no gain here.

It should be an extension of the emplaced-device regime, which already reasons from the aftermath, already contains the obligations, and already binds a party that has lost control of the ground it mined.⁶² What that regime lacks is a definition wide enough to reach a device which classifies before it acts. That is a drafting problem rather than a conceptual one, and Part VII drafts it.

Part VII—The Amendment, Drafted

25. Why amendment rather than a new instrument

Three reasons, and the third is decisive.

The obligations already exist and are agreed. Recording, marking, self-deactivation, detectability and clearance were adopted by consensus in 1996 and are in force.⁶³ Nothing has to be invented, negotiated in substance, or defended from first principles. What is required is that a definition be widened.

The regime already contains the architecture the systems need. The two-layer deactivation requirement, the quantified reliabilities, and the survival of clearance duties through loss of control are all present,

⁶¹Part IV §12.

⁶²Amended Protocol II (n 5), art 10(2)–(3).

⁶³Amended Protocol II (n 5), arts 3, 5, 9 and 10 and the Technical Annex.

and Part V argued that the second of these is the mine regime's answer to the same problem the temporal reading of Article 57 addresses.⁶⁴

And the alternative route is blocked. The companion paper establishes that the Group of Governmental Experts operates under a mandate that cannot terminate: consensus applied twice, an instruction not to prejudge the instrument's nature, and a disjunctive limb permitting a state to comply by preferring other measures indefinitely.⁶⁵ A proposal that requires that process to conclude is a proposal that will not take effect. An amendment to an existing protocol proceeds under the Convention's own amendment machinery and does not depend on it.

The consensus objection must then be met, because the record contains a failure. Review Conferences operate by the same consensus as the Group, and the Convention has once already failed to strengthen its mine law by this route: a draft protocol on mines other than anti-personnel mines, negotiated over years on a co-ordinator's text, was not adopted, and the Third Review Conference in 2006 closed with a political declaration by a group of states in its place.⁶⁶ Anyone proposing an amendment to a mine protocol owes an account of why this one would fare differently.

The failure and this proposal differ in the two variables that decided it. The draft protocol would have imposed new obligations—detectability, limits on active life—on existing inventories, held by the very states that declined to adopt it; the cost fell on the installed base, and the installed base said no. This amendment attaches obligations that have been agreed law since 1996 to a category of system that is barely fielded: the cost falls on future procurement, and Part IV priced it—a log entry, a marking decision, a deactivation layer the designs already carry. That is the configuration in which this Convention has succeeded before. Protocol IV prohibited blinding laser weapons in 1995, before arsenals existed to defend, and the ICRC's current position counts the instruments that prevented rather than responded—the St Petersburg Declaration, Protocol IV—among the most effective.⁶⁷ Emplaced autonomous systems are in that window now, and the window is the argument for moving at this Review Conference rather than a later one.

And the route does not depend on a single conference. Any High Contracting Party may propose an amendment under the Convention's own machinery, and the Review Conference of 16–20 November 2026 may consider it.⁶⁸ The Protocol's own Annual Conference of High Contracting Parties—a body the Protocol itself establishes, which has met every year since 1999 to review its operation—can carry the question forward annually whatever a single conference does.⁶⁹ The rolling text, finally, contemplates in terms “the possible exclusion of certain types of systems” from the characterisation a future instrument would govern.⁷⁰ If emplaced systems are excluded there, this Protocol is the regime that remains for them. The amendment is the hedge that exclusion makes necessary.

26. The drafting problem, isolated

Everything turns on one definition. The Protocol applies to mines, booby-traps and other devices, and each is defined by the mechanism connecting a person's presence to the effect: exploded by presence, proximity or contact; functioning unexpectedly on disturbance; actuated manually, by remote control or automatically after a lapse of time.⁷¹

⁶⁴Part V §18.

⁶⁵See the companion paper on the interval, Part II, on the mandate of the Group of Governmental Experts and the five features that prevent it terminating.

⁶⁶Third Review Conference of the High Contracting Parties to the CCW, Final Document (CCW/CONF.III/11, Geneva, 7–17 November 2006); ‘Anti-Vehicle Mines Proposal Falters’ Arms Control Today (January/February 2006) <https://www.armscontrol.org/act/2006-01/anti-vehicle-mines-proposal-falters> accessed 14 August 2026.

⁶⁷Additional Protocol to the CCW on Blinding Laser Weapons (Protocol IV) (adopted 13 October 1995, entered into force 30 July 1998); ICRC, *Autonomous Weapon Systems and International Humanitarian Law* (position paper, October 2025; version with executive summary, March 2026) 2, 21 https://www.icrc.org/sites/default/files/2026-03/4896_002_Autonomous_Weapons_Systems_-_IHL-ICRC.pdf accessed 14 August 2026.

⁶⁸CCW, art 8.

⁶⁹Amended Protocol II, art 13.

⁷⁰Rolling text (n 44), part I para 1(C).

⁷¹Amended Protocol II (n 5), art 2(1), (4) and (5).

The amendment must therefore add a category defined by **what the device does and how long it persists**, rather than by the mechanism linking presence to effect. That is the only change of principle required, and it is a small one, because the obligations attaching to the new category are the obligations that already attach to the old.

27. The text

Proposed amendment to Amended Protocol II

Article 2, new paragraph. “Emplaced autonomous system” means a munition or device, other than a mine, booby-trap or other device as defined in this Article, which is—

- (a) placed in a position by a party to the conflict and thereafter left without a person present who is able to observe its functioning;
- (b) capable of causing death or injury by the use of force; and
- (c) able, without a further decision by a person, to determine that force should be used and to use it,

irrespective of the means by which it determines that force should be used, and irrespective of whether that determination involves the classification of what is detected.

Article 3, new paragraph. The restrictions in this Article on the use of mines, booby-traps and other devices apply to emplaced autonomous systems.

Article 9, new paragraph. The location of every emplaced autonomous system shall be recorded, and the record retained and used, in accordance with this Article and the Technical Annex.

Article 10, new paragraph. Emplaced autonomous systems shall be cleared, removed, destroyed or maintained in accordance with this Article.

Technical Annex, new paragraph. Every emplaced autonomous system shall—

- (a) be so designed that its authority to use force expires not later than thirty days from emplacement, with a reliability of not less than ninety per cent;
- (b) incorporate a back-up mechanism, operating on a physical principle independent of that in subparagraph (a), such that not more than one in one thousand retains the capacity to use force after one hundred and twenty days;
- (c) incorporate material rendering it detectable by commonly available technical detection equipment; and
- (d) where it is to be employed for a period exceeding that over which the circumstances relied on in authorising its emplacement may reasonably be expected to obtain, be capable of being rendered incapable of using force by a communication from the party which emplaced it, within that period.

28. Notes on the drafting

The definition is deliberately mechanism-blind. Paragraph (c) and the closing words are drafted to prevent the escape identified at Part IV: it does not matter whether the device explodes on contact, fires on a classification, or acts on any process yet to be invented. What matters is that no person decides at the moment of function. That formulation also avoids the term “autonomous weapon system” and every controversy attached to it, which is deliberate—a state may hold any view about what autonomy means and still apply this definition, because the definition does not use the concept.

Paragraph (a) of the definition carries the emplacement requirement, which is what confines the amendment to the systems Part II specifies. A remotely piloted aircraft is not caught, because a person is

able to observe its functioning. A loitering munition within communications range is not caught, for the same reason. The provision reaches the case where nobody is watching.

The obligations are transplanted rather than invented. Recording, clearance and the general restrictions are applied by reference. The Technical Annex provision restates the existing quantified requirements for a new category, at the same figures, so a state already compliant for remotely delivered mines has no new engineering to do and no new standard to argue about.

Subparagraph (d) is the one genuinely new obligation, and it is drafted to be met by design rather than by conduct. It requires reachability where the emplacement outlasts the reliability of the circumstances, which is the temporal reading of Article 57(2)(b) at Part V §18 expressed as a technical requirement.⁷² It does not require that the communication succeed on every occasion, which no channel could guarantee; it requires that the capability exist. Where it is denied by jamming, subparagraph (a)'s expiry is what remains, which is why the two are drafted together.

And nothing here requires the device to discriminate. That is a deliberate omission and it should be defended rather than passed over. Part IV §14 established that discrimination is available to these systems at approximately 830 mWh per emplaced-day and that the regime has never required it of emplaced devices because no unsensing device could comply.⁷³ A discrimination requirement is therefore now possible for the first time. It is not included here for two reasons: it would import the whole of the definitional controversy this amendment is designed to avoid, and it would be a new obligation rather than an extension of an agreed one, which is what makes the rest of this text adoptable. **The case for such a requirement is now open and priced, and this paper's position is that it should be made separately rather than smuggled into a definitional amendment.**

29. What it would cost

States party to the Anti-Personnel Mine Ban Convention lose little, because they have already given up the class of device to which these systems are most closely analogous, and because the amendment imposes obligations on a capability they may still lawfully field.

States party to Amended Protocol II but not to the Ban Convention—a group including the principal military powers—face obligations they already discharge for remotely delivered mines, applied to a new category. The engineering burden is close to nil for the reasons at Part IV §14.1: a timer, eight grammes of iron, a log entry, and a receiver.

The genuine cost is subparagraph (d), and it is a cost in capability rather than in money. A state wishing to field an emplaced system that cannot be reached, in an environment whose circumstances cannot be relied on for the emplacement period, would be prevented from doing so. That is the point of the provision and the only thing in this text a state would have reason to resist.

And the cost of not doing it is stated at Part VI §23: an area rendered impassable for a month, by a party which then withdraws, owing nothing to anyone in respect of what it left. That is the result the current law produces, and it is not one any state defended or intended.

Part VIII—Conclusions

30. Conclusions on each element

The object is an emplaced device and the law has a regime for those. Four properties do the work and none of them is autonomy: it is placed and left, nobody is present when it functions, it functions on presence within a fixed geometry, and it persists beyond the purpose that justified it. A system with those four properties would engage the emplaced-device regime whether its decision logic were a neural network or a spring.

⁷²Part V §18, and Additional Protocol I (n 46), art 57(2)(b).

⁷³Part IV §14.2, and the companion paper on closed-system ground robotics on the discrimination exchange rate.

The regime is more demanding than the autonomous-weapons framework, not less. Recording to exact locations, marking and protection of civilians, self-destruction within thirty days at ninety per cent reliability with an independent backstop at one in a thousand after a hundred and twenty days, detectability by not less than eight grammes of iron, and clearance after the cessation of active hostilities which survives loss of control of the ground. No proposal in the autonomous-weapons debate contains an obligation of the last shape, because none contemplates the emplacer having left.

The escape turns on a fuze, and the distinction is principled as to one thing and unprincipled as to four. A mine is exploded by presence; a robotic platform observes presence, classifies it and decides. That line was drawn to identify victim-activation, and an emplaced robotic system is victim-activated in every respect that generated the obligations. The classification step bears on discrimination alone. **Four of the regime's five obligations are wholly indifferent to whether the device can classify what triggers it,** because they address people who were not present at the emplacement rather than the accuracy of the device.

The inversion is the paper's central claim. The obligations are cheap for such a system to meet: a timer, a log entry, eight grammes of iron in a tracked chassis, and a receiver. And the one obligation the regime never imposed—that the device discriminate before acting—is the one these systems can discharge, at approximately 830 mWh per emplaced-day. **The law asks less of them than they can deliver, because it asks nothing of them at all.**

Constant care is a temporal obligation and a technology has falsified its presupposition. The duty to cancel or suspend an attack when circumstances change assumes somebody can perceive the change, decide, and stop the attack. For every weapon the provision was drafted against, the third came free with the ability to communicate. It does not come free here. The reading proposed is that an attack may lawfully be commenced only if it will remain capable of being cancelled for as long as circumstances may change in a way requiring it—which follows from the ordinary meaning, is consistent with how feasibility is assessed elsewhere, and explains rather than displaces the mine regime's self-destruction requirement.

Denial is not control, and that is why the gap exists. An emplaced system does not hold ground in the sense that creates an occupation, so no occupation duty arises; and it is not a mine, so no clearance duty arises. A state may render an area impassable for a month, withdraw, and owe nothing to anyone in respect of what it left behind. Neither body of law would have produced that result had the question been put to its drafters.

And the response is an amendment rather than a new instrument, because the obligations already exist and are agreed, the architecture is already there, and the alternative multilateral route operates under a mandate that cannot terminate. What is required is one definition, drafted to be mechanism-blind so that it does not depend on any view about what autonomy means.

31. What would change the analysis

A definition in either instrument wider than this paper reads it, or state practice treating sensor-mediated emplaced systems as already within the regime. The author has found neither and would welcome correction, because it would mean the obligations already apply.

A demonstration that the obligations are expensive for such systems to meet. The inversion at Part IV §14 rests on the companion engineering paper's figures. If those are wrong the claim falls with them, and the amendment becomes a real burden rather than a formality.

A contrary reading of Article 57(2)(b) on which the obligation to cancel or suspend is discharged at the moment of the attack decision rather than continuing. Part V argues from the ordinary meaning of “constant” and “if it becomes apparent”; a persuasive contrary reading would defeat the temporal argument without touching the rest. The sharpest form of it is on the record already: the United Kingdom's understanding that the obligation extends only to those with the authority and practical possibility to cancel. **Part V §18.1 answers that the possibility must be assessed when the party still had it, and a reader who prefers the face-value reading has found where this paper's central argument fails.**

And evidence that emplaced systems are in fact recorded and cleared in practice, whatever the law requires. Practice may be better than the instruments. If so the amendment codifies rather than reforms, which would be the best outcome available.

32. Summative remarks

A machine that is put in a place, left, and made dangerous to whoever comes next is the oldest problem in this area of law and the one about which the most has been learned. The learning is in Amended Protocol II: record where it is, mark the ground, make it stop, make it findable, and come back for it. Those five obligations were bought with a century of casualties among people who had nothing to do with the war that produced them.

An armed robotic platform emplaced for thirty days is that machine, with a sensor between the presence and the effect. The sensor is a genuine improvement and the reason the system can do something no mine could ever do, which is to look before it acts. It is also, on the current state of the law, the reason none of the five obligations applies to it.

That is not a conclusion anyone intended and it is not one that requires a new body of law to correct. It requires one definition to be widened, and the obligations that follow are ones the states most likely to field such systems already meet for a cruder device. The amendment drafted at Part VII is short for that reason.

What it does not do is settle whether such systems should be built, or whether the capacity to discriminate that distinguishes them from mines should be required of them rather than merely available. Part IV prices that question and leaves it open. It is a better question than the one the field has been asking for a decade, and it is now answerable in watt-hours.

A companion engineering paper specifies the system analysed here and prices the recall capability on which Part V's argument depends. A further companion paper treats the general temporal framework of which Part V is an application.

Appendix—The Five Obligations, Applied

Part IV asserts that the emplaced-device regime's obligations are coherent as applied to a robotic system and cheap to meet. Assertion is not enough, and the objection at Part I §4.3 is precisely that they may turn out to be incoherent. This Appendix works each obligation through, so that a reader can test the claim rather than accept it.

Costs stated as technical are taken from the companion engineering paper and are marked. Everything else is the author's analysis.

A.1 Recording

What the regime requires. The location of every device, exactly where feasible, recorded and retained, and used after the cessation of active hostilities to protect civilians.

Applied. This is straightforward, and in one respect easier than for a minefield. An emplacement is a single deliberate act at a single point, performed by an identified unit, and the platform surveys its own site at emplacement in order to fix its arcs. The record required is a grid reference, a date, a unit, an arc of fire and a recovery status.

Coherent? Yes. There is no feature of a robotic system that makes its position harder to record than a mine's; there are fewer of them and each is larger.

What it would change. At present nothing requires the record to exist, so the information needed to find the platform after the fighting exists only in the emplacing unit's own files, for as long as that unit does.

A.2 Marking and protection of civilians

What the regime requires. Marking, fencing, monitoring and use of the record, so far as necessary to protect civilians from the effects.

Applied. The tactical objection is obvious and must be met: marking a concealed system defeats its purpose in a way that marking a minefield does not, because a minefield deters by being known and this system works by not being found.

Coherent? In part, and the divergence is instructive. Marking is coherent and appropriate **after** active hostilities and for a maintained emplacement, which is when the regime's marking obligations principally bite. It is not coherent during the emplacement, and the regime does not require it to be: the obligation is to take feasible measures to protect civilians, and during hostilities in a contested sector the feasible measure is the recall channel and the expiry, not a fence.

What it would change. It converts an area a party has left dangerous into an area a party must mark or clear once fighting stops, which is the whole of the point.

A.3 Self-destruction and self-deactivation

What the regime requires. Expiry within thirty days at ninety per cent reliability, plus an independent backstop leaving not more than one in a thousand functional at a hundred and twenty days.

Applied. The companion engineering paper already specifies authority that expires into inertness at a time set before emplacement, and argues that expiry into inertness rather than continued operation is the correct default. *[Technical, from the companion paper.]* Adding the second layer means a mechanism on a different physical principle from the first—a mechanical timer against a software one, or a battery-isolation device—so that a common fault cannot defeat both.

Coherent? Yes, and the regime's architecture is better than what the engineering paper had arrived at unaided, which is why Part III recommends adopting it wholesale.

Cost. A timer. Negligible in energy, mass and money.

A.4 Detectability

What the regime requires. Not less than eight grammes of iron in a single coherent mass, or equivalent.

Applied. Met many times over by any tracked or wheeled chassis. The requirement is trivially satisfied and the practical difficulty for such a system is the opposite one: remaining concealed while emplaced.

Coherent? Yes, though it does almost no work here. It is included in the drafted amendment for completeness and because a future system might be small enough for it to bite.

A.5 Clearance

What the regime requires. Clearance, removal, destruction or maintenance without delay after the cessation of active hostilities; responsibility borne by the party which emplaced, surviving loss of control of the ground, with an obligation to furnish technical and material assistance to whoever now controls it.

Applied. Easier than for a minefield in every respect. The object is large, singular, recorded under A.1, and—if it retains the recall channel—can be commanded to a safe state before anyone approaches. Where the emplacing party has lost the ground, the assistance it must furnish is precisely the information at A.1 together with the means of safing, which it holds and nobody else does.

Coherent? Yes, and this is the obligation with no analogue in any autonomous-weapons proposal.

What it would change. Everything about the aftermath. It is the difference between a party that may withdraw owing nothing and a party that must come back, or tell somebody else how.

A.6 What the exercise shows

All five are coherent as applied, with one qualification at A.2 which the regime's own structure already accommodates.

Four of the five are cheaper for a robotic system than for a minefield, because the object is singular, large, recorded, and capable of being safed remotely.

And the qualification at A.2 is the only place where the analogy strains. A minefield deters by being known; this system functions by not being found. The regime handles that because its marking obligations attach principally to the aftermath, but a reader who thinks the strain is greater than stated has identified the right place to press.

A.7 What this Appendix does not establish

It does not establish that states would comply, which is a question about institutions rather than about drafting.

It does not establish the technical figures, which are the companion paper's and are marked as such throughout.

And it does not address whether a discrimination obligation should be added to the five. Part IV prices that question and Part VII §28 explains why the drafted amendment deliberately leaves it out.

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