CIVIL LIABILITY FOR AUTONOMOUS POLICE ROBOTS: THE INADEQUACY OF § 1983 IN RESPONDING TO ROBOT EXCESSIVE FORCE

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I. INTRODUCTION

[1] In the fall of 2023, New York City announced its plan to deploy an autonomous police robot, called K5, to patrol the Times Square subway station.¹ Mayor Eric Adams touted the initiative as a cost-saving measure—K5 costs less per hour than a human patrol officer.² But K5 was by no means a replacement for a human. It was effectively a security camera on wheels.³ K5 could be used to call for help but could not otherwise intervene in an emergency, and it was not capable of using force to respond to a threat.⁴

[2] But in the not-so-distant future, autonomous robots that can use force may very well be patrolling public spaces.⁵ There are already plenty of examples of police using remote-controlled robots to apply force.⁶ If those physical capabilities are combined with K5’s ability to make independent decisions, police departments could have a powerful new


² See id.

³ See id.


⁵ See Elizabeth E. Joh, Policing Police Robots, 64 UCLA L. REV. DISCOURSE 516, 521 (2016).

tool\textsuperscript{7}—one that allows them to conduct a wide range of law enforcement activities at a lower cost and at a lower risk to human officers.

[3] Such robots could take many different forms. They could serve as sidekicks for human officers, perhaps taking on the role currently served by police dogs.\textsuperscript{8} Or they could be like human officers themselves, capable of making independent decisions about when to investigate a situation or even when to arrest someone. They might even be able to do things that human law enforcement officers cannot; imagine, for example, a swarm of insect-like robots that can quickly track down a suspect and incapacitate them.\textsuperscript{9}

[4] This paper deals specifically with police robots that are capable of both acting independently and using force. If deployed, such robots will inevitably make mistakes, including by using excessive force. This paper discusses how these robots’ autonomy might pose a significant barrier for victims trying to bring civil claims for the use of such force.

[5] Victims of police excessive force can generally pursue a number of civil claims, including state common law claims.\textsuperscript{10} Most commonly,

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\textsuperscript{7} See Joh, \textit{supra} note 5, at 521. China’s AnBot comes close to combining the two technologies; it can independently patrol and it has an “electrically charged riot control tool,” but the tool can only be activated remotely by a human. Liang Jun, \textit{China’s First Intelligent Security Robot Debuts in Chongqing}, PEOPLE’S DAILY ONLINE (Apr. 26, 2016), http://en.people.cn/n3/2016/0426/c90000-9049431.html [perma.cc/KDU6-J7H4].


\textsuperscript{9} See Joh, \textit{supra} note 5, at 529 (discussing this possibility).

however, plaintiffs will file suit under 42 U.S.C. § 1983,\textsuperscript{11} which provides a federal remedy when a government official violates an individual’s constitutional rights.\textsuperscript{12}

[6] Generally, a plaintiff bringing a § 1983 excessive force claim must first show that a law enforcement officer subjected them to a Fourth Amendment seizure.\textsuperscript{13} Then, the plaintiff must demonstrate that the officer’s use of force was unreasonable under the circumstances.\textsuperscript{14} Even where an officer’s use of force is found to be unreasonable, the officer may raise the defense of qualified immunity, which precludes recovery where the unlawfulness of the officer’s actions has not yet been “clearly established.”\textsuperscript{15}

[7] The use of autonomous robots by police raises a number of issues with respect to § 1983 excessive force claims. For example, where the applier of force is a robot, how should courts evaluate reasonableness?\textsuperscript{16} If robots are better at making split-second decisions than human police officers, should courts hold the robots to a higher standard than human

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\textsuperscript{11} Id. at 83.
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\textsuperscript{12} 42 U.S.C. § 1983.
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\textsuperscript{14} See id. at 395–96.
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\textsuperscript{16} See generally Joh, supra note 5, at 535–38 (discussing how courts could apply reasonable force to robots).
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defendants? It is also not clear how qualified immunity should apply to instances of robot excessive force.

These issues, while important, are beyond the scope of this paper. Instead, this paper focuses on the most glaring problem with § 1983 litigation in this context: plaintiffs can no longer sue the applier of force themselves. Plaintiffs in excessive force actions can try to recover from the police officer’s supervisor or the municipality that employs them, but it is usually easier to go after the individual who actually injured them. In the future, however, there may be circumstances where that “individual” is not an individual at all, but a judgment-proof machine.

This paper is split into four parts. Part II explains why, in some instances, plaintiffs will not be able to attribute a robot’s use of force to an individual human police officer. Part III explores alternative theories of liability—namely § 1983 supervisory and municipal liability—but concludes that none of these theories would provide sufficient opportunities for recovery. Part IV discusses why addressing this liability gap ought to be a priority for lawmakers. Finally, Part V discusses potential legislative solutions: (1) a “human-in-the-loop” requirement for police robots, and (2) a social insurance system for robot excessive force.

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17 See id. at 536 (asking whether robots should be held to higher standard of reasonableness); see also Graham, 490 U.S. at 396–97 (“The calculus of reasonableness must embody allowance for the fact that police officers are often forced to make split-second judgements . . . about the amount of force that is necessary in a particular situation.”).


19 See infra notes 56–57, 64–65 and accompanying text.
II. INDIVIDUAL OFFICER LIABILITY

[10] The first way a plaintiff may try to recover for a police robot’s excessive force is to argue that the robot was just an instrument of a human officer. If a human officer unreasonably uses a taser, courts have no trouble holding that officer liable.20 Is a police robot not just an advanced weapon? Police dogs may provide a better analogy. A K-9 unit is still very much a tool, but like an autonomous police robot, it is capable of independent action. Courts often hold a police dog’s handler liable for excessive force applied by the dog.21 So perhaps, by the same logic, a human can be held liable for excessive force applied by a robot.

A. The Police Dog Analogy

[11] For some robots, the police dog model would work well, the most obvious example being a robot K-9 unit that behaves like a living police dog.22 But as autonomous police robots become more complex, this analogy starts to break down.23 Imagine a robot that can do almost everything a human police officer can do—communicate with suspects and witnesses, use force, and make high-level decisions like whether to arrest someone. This sort of behavior requires emergence—the ability to learn and adapt.24

20 See, e.g., Boyd v. McNamara, 74 F.4th 662, 668 (5th Cir. 2023) (holding that a police officer “could not constitutionally fire a taser at a non-threatening, compliant subject”).

21 See, e.g., Chew v. Gates, 27 F.3d 1432, 1443 (9th Cir. 1994).

22 See supra note 8 and accompanying text.

23 This paper does not attempt to draw the line at which the K-9 analogy is no longer applicable. This will probably be a fact-intensive inquiry—one that depends not only on the technical capabilities of the robot that applied the excessive force but also specifically how it was used in the incident giving rise to the suit.

But emergent behavior might lead to unexpected outcomes, including the use of unconstitutional force. A robot’s makers presumably intended for the robot to efficiently enforce laws and promote safety while respecting citizens’ rights. But because of its advanced capabilities, it uses excessive force in rare circumstances.

[12] Police dogs, while theoretically capable of emergent behavior, typically only do one thing. Depending on the jurisdiction, they either “bite and hold” (bite a suspect until they are apprehended) or “circle and bark” (circle a suspect and bite them only if they try to leave that circle). There is still some uncertainty about what the result of releasing a police dog will be—the severity of the suspect’s injuries depends on which part of their body the dog bites. But it is easy for the dog’s handler to take that uncertainty into account when deciding whether to release the dog in the first place.

[13] Indeed, in § 1983 cases involving police dogs, courts do not focus on the unreasonableness of what the dog actually did, holding the human officer vicariously liable for the resulting harm. Instead, courts focus on the reasonableness of the officer’s decision to release the dog, or their

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25 See id. at 542.

26 Jarrett v. Town of Yarmouth, 331 F.3d 140, 143 (1st Cir. 2003).

27 See Robinette v. Barnes, 854 F.2d 909, 912 (6th Cir. 1988) (describing an incident in which a police dog killed someone by biting his neck).

28 See Chew v. Gates, 27 F.3d 1432, 1441 (9th Cir. 1994) (concluding that an officer’s decision to release a dog might have been unreasonable given the officer’s awareness of the harm the dog could cause).

29 See, e.g., id.; Crenshaw v. Lester, 556 F.3d 1283, 1292 (11th Cir. 2009).
failure to call off the dog once the suspect has been apprehended. The inquiry is whether the human officer’s own actions were lawful. Thus, if the officer’s decision to release the dog was reasonable, but excessive force resulted because the dog did something unexpected, the officer would not be liable under § 1983. In other words, the officer is only responsible for the dog’s actions to the extent that the dog actually behaved as an instrument of the officer.

For an advanced police robot, then, the focus of a reviewing court’s analysis would be the decision to put the robot out into the world for the day, or perhaps the decision to give it a general set of instructions (e.g., “apprehend this suspect”). As long as that robot had a good track record for accurate and reasonable decision-making, it would be impossible for a court to find that the decision to use the robot was itself unreasonable, even if it resulted in excessive force. In contrast to a human officer using a police dog, in which the decision to release the dog usually is what gives rise to the rights deprivation, the human officer’s interactions with the robot would simply be too attenuated to hold the human accountable. The robot’s independence and ability to behave unexpectedly would shield the officer from liability.

B. Integral Participant Liability

Even if the robot cannot be treated as a mere instrument of a human officer, a plaintiff could try to hold an individual officer liable for the robot’s

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31 See, e.g., Crenshaw, 556 F.3d at 1293.

32 See id. at 1293.

33 Cf. Cortesluna v. Leon, 979 F.3d 645, 656 (9th Cir. 2020) (declining to hold an officer liable for the excessive force applied by two officers because “there [was] no evidence that [he] knew what the other defendants would do, and the events unfolded very rapidly”), rev’d on other grounds sub nom. Rivas-Villegas v. Cortesluna, 595 U.S. 1 (2021).
actions under an integral participant theory.\textsuperscript{34} The archetypical example of this is suing an officer for failing to stop another officer from using excessive force.\textsuperscript{35} But this, too, will fail in many circumstances.

\[16\] The Supreme Court has held that “[b]ecause vicarious liability is inapplicable to . . . § 1983 suits, a plaintiff must plead that each Government-official defendant, through the official’s own actions, has violated the Constitution.”\textsuperscript{36} In other words, for a human officer to be held liable for a robot’s excessive force, the officer themselves must have done something unlawful. Courts have held police officers responsible as integral participants in constitutional violations in two circumstances:

\begin{enumerate}
\item the defendant knows about and acquiesces in the constitutionally defective conduct as part of a common plan with those whose conduct constitutes the violation[,] or
\item the defendant “set[s] in motion a series of acts by others which [the defendant] knows or reasonably should know would cause others to inflict the constitutional injury.”\textsuperscript{37}
\end{enumerate}

\[17\] There might be some easy cases involving police robots that fall squarely under the first theory. For example, human officers might bring an autonomous robot with them to deal with a high-risk situation. In such cases, their failure to stop the robot from using excessive force against someone may render them responsible for the resulting harm.\textsuperscript{38} But where

\footnotesize{\textsuperscript{34} See generally Peck v. Montoya, 51 F.4th 877, 889 (9th Cir. 2022) (describing the integral participant theory).

\textsuperscript{35} See id.

\textsuperscript{36} Ashcroft v. Iqbal, 556 U.S. 662, 676 (2009).

\textsuperscript{37} Peck, 51 F.4th at 889 (alteration in original) (quoting Johnson v. Duffy, 558 F.2d 740, 743–44 (9th Cir. 1978)); accord Buck v. City of Albuquerque, 549 F.3d 1269, 1279–80 (10th Cir. 2008); Gutierrez-Rodrigez v. Cartagena, 882 F.2d 553, 560–61 (1st Cir. 1989).

\textsuperscript{38} See supra note 35 and accompanying text.}
a human and robot are not working in concert, making the first theory inoperative, the second theory will not provide relief. It is true that a human officer who turns on the “patrol bot” and asks it to complete a task “sets in motion” a series of events leading to the excessive force.\textsuperscript{39} However, but-for causation is not enough.\textsuperscript{40} Instead, the plaintiff must show that the officer \textit{should have known} that sending the robot to complete the task would result in excessive force.\textsuperscript{41} If the robot has a good track record of respecting constitutional boundaries, this will virtually never be the case. And yet, because of the robot’s ability to behave unexpectedly,\textsuperscript{42} it is still possible for the robot to apply excessive force in carrying out its mission.

[18] In sum, because of the unique characteristics of an advanced police robot, it may be impossible in some cases for plaintiffs to hold a human directly liable for excessive force applied by the robot. Neither analogizing to police dog cases nor turning to an integral participant theory would be successful. Thus, plaintiffs will have lost their primary means of recovering for unconstitutional excessive force.\textsuperscript{43}

III. ALTERNATIVE THEORIES OF LIABILITY

[19] Though holding police officers directly liable for robots’ actions seems fraught, plaintiffs could try to recover in other ways. This Part examines three alternative theories of liability, ultimately concluding that each is inadequate. Section A briefly discusses the problems with trying to recover through state tort actions. Sections B and C describe § 1983 supervisory and municipal liability, respectively. Finally, Section D outlines the most significant problems with the latter two theories.

\textsuperscript{39} See \textit{supra} note 37 and accompanying text.

\textsuperscript{40} \textit{Peck}, 51 F.4th at 890.

\textsuperscript{41} See \textit{id.} at 891.

\textsuperscript{42} See \textit{supra} notes 24–25 and accompanying text.

\textsuperscript{43} See \textit{supra} text accompanying note 19.
A. State Tort Claims

[20] Excessive force victims can bring state tort claims instead of, or in addition to, a § 1983 claim. Though this paper is focused on § 1983, and the viability of state tort claims in this context is deserving of its own full analysis, it is worth noting a few reasons why such claims might be unsuccessful. First, these claims run into one of the same issues discussed elsewhere in this paper: emergence making it difficult to show causation. Second, while the use of robots raises the possibility of bringing product liability claims, issues related to the robots’ technological complexity will likely preclude recovery. Finally, state tort claims, unlike § 1983 actions, do not vindicate constitutional rights.

44 See supra note 10 and accompanying text.


46 See infra text accompanying notes 68–70.

47 See Hubbard, supra note 45, at 1853–55. Showing that a programmer or manufacturer could have prevented the harm through better engineering would likely be required for a successful claim; for complex robots, like the “patrol bot” envisioned here, making that showing might be too difficult. See id. at 1854–55. A plaintiff could still try to recover under a strict liability theory. See generally Rebecca Crootof, War Torts: Accountability for Autonomous Weapons, 164 U. Pa. L. Rev. 1347 (2016) (advocating for strict liability for autonomous weapons). The plaintiff would have to show that the police robot in question was ultra-hazardous—that its use involves a “highly significant risk of physical harm” and is not an “activity . . . of common usage.” Restatement (Third) of Torts § 4.20 (Am. L. Inst. 2012). The problem is that policing is very much a matter of common usage. See id. § 4.20 cmt. j (suggesting that there can be no strict liability for an activity that is “common and familiar within the community”).

make victims whole but also shine a light on the fact that the victim was deprived of a fundamental right by an agent of the government.\textsuperscript{49}

**B. Section 1983 Supervisory Liability**

\textsuperscript{21} There is no vicarious liability for § 1983 claims.\textsuperscript{50} The doctrine of *respondeat superior* does not apply to constitutional torts.\textsuperscript{51} But supervisors may still be liable for the excessive force of their subordinates even though they did not directly participate in the rights deprivation.\textsuperscript{52} Recovery in such circumstances is possible if there is a causal connection between the supervisor’s acts or omissions and the excessive force.\textsuperscript{53}

\textsuperscript{22} Various supervisory acts might give rise to § 1983 liability. Past cases dealing with imprudent hiring decisions\textsuperscript{54} or failure to discipline subordinates\textsuperscript{55} are likely to be the most helpful in dealing with the supervision of police robots. For imprudent hiring decisions, plaintiffs must show that the supervisor was deliberately indifferent to the “known or obvious consequences” of hiring the individual who engaged in the misconduct.\textsuperscript{56} For failure to discipline, recovery is possible where the supervisor knew, or should have known, about problems with a specific officer, the supervisor failed to address those problems, and this failure

\textsuperscript{49} See id. at 52.

\textsuperscript{50} See supra note 36 and accompanying text.

\textsuperscript{51} Ashcroft v. Iqbal, 556 U.S. 662, 676 (2009).

\textsuperscript{52} Pahls v. Thomas, 718 F.3d 1210, 1225 (10th Cir. 2013).

\textsuperscript{53} See Ingram v. Kubik, 30 F.4th 1241, 1254 (11th Cir. 2022).

\textsuperscript{54} See, e.g., Parker v. Blackwell, 23 F.4th 517 (5th Cir. 2022).

\textsuperscript{55} See, e.g., Blankenhorn v. City of Orange, 485 F.3d 463 (9th Cir. 2007).

\textsuperscript{56} Parker, 23 F.4th at 522 (quoting Gros v. City of Grand Prairie, 209 F.3d 431, 433 (5th Cir. 2000)).
contributed to the conduct giving rise to the suit.\textsuperscript{57} Applying these theories to advanced police robots would be relatively straightforward. Instead of analyzing a supervisor’s decision to hire a human officer, courts would look to the decision to procure a certain model of robot. The equivalent of disciplining an officer may be a supervisor requesting a software update from a robot’s manufacturer.\textsuperscript{58}

C. Section 1983 Municipal Liability

A municipality may be liable under § 1983 when a municipal policy caused a police officer to use excessive force.\textsuperscript{59} As with supervisory liability, both imprudent hiring decisions\textsuperscript{60} and inadequate discipline\textsuperscript{61} can provide the basis for municipal liability. For hiring, the decision must be made by a “policymaker,”\textsuperscript{62} someone who “decide[s] the goals for a particular city function and devise[s] the means of achieving those goals.”\textsuperscript{63} The plaintiff must show that “a full review of [the candidate’s] record reveals that [the policymaker] should have concluded that [the candidate’s] use of excessive force would be a plainly obvious consequence” of hiring

\begin{itemize}
\item \textsuperscript{57} See \textit{Blankenhorn}, 485 F.3d at 485 (citing Larez v. City of Los Angeles, 946 F.2d 630, 646 (9th Cir. 1991)).
\item \textsuperscript{58} Or, perhaps, reprimanding the robot in the same way a supervisor would reprimand a human officer.
\item \textsuperscript{59} See, \textit{e.g.}, Garner v. Memphis Police Dept., 8 F.3d 358, 364–65 (6th Cir. 1993).
\item \textsuperscript{61} See, \textit{e.g.}, Depew v. City of St. Marys, 787 F.2d 1496, 1499 (11th Cir. 1986).
\item \textsuperscript{62} See Bd. of Cnty. Comm’rs v. Brown, 520 U.S. 397, 411 (1997).
\item \textsuperscript{63} Bennet v. Slidell, 728 F.2d 762, 769 (5th Cir. 1984).
\end{itemize}
them. For inadequate discipline, the plaintiff must show that the municipality was deliberately indifferent to officers’ constitutional violations and that this indifference resulted in the plaintiff’s injuries.

D. Supervisory and Municipal Liability Are Not Sufficient

[24] In most instances, supervisory and municipal liability will not provide relief for victims of excessive force by police robots. There will be some easy cases. For example, a supervisor or municipality that chooses to procure a police robot with a poor track record—one that frequently uses excessive force—could readily be held liable for the resulting harm. The same could be true when a robot is engaging in frequent misconduct and a supervisor or municipality fails to take corrective action. But in many cases, the plaintiff will be without a way to recover.

[25] As with integral participant liability, the fundamental issue with holding supervisors or municipalities liable for robot-caused harm is emergence. If a robot’s excessive force is unexpected, it cannot be said that the decision to employ the robot in the first place was constitutionally

64 Brown, 520 U.S. at 412–13. For the purpose of this paper, whether someone is better thought of as a “supervisor” or a “policymaker” is unimportant—§ 1983 is inadequate either way. See infra Section III.D. But this distinction is still important for plaintiffs (whether there was a robot involved or not). Municipalities generally have deeper pockets than supervising officers, and they cannot raise a qualified immunity defense. Allen v. Santa Clara Cnty. Corr. Peace Officers Ass’n, 38 F.4th 68, 73 (9th Cir. 2022). But unlike supervisors, municipalities cannot be made to pay punitive damages for constitutional violations. City of Newport v. Fact Concerts, Inc. 453 U.S. 247, 271 (1981). So, whether someone counts as a “policymaker” or not can have a significant effect on a plaintiff’s ability to collect damages.

65 See Wilson v. City of Chicago, 6 F.3d 1233, 1236, 1240 (7th Cir. 1993).

66 See supra notes 56, 64 and accompanying text.

67 See supra notes 57, 65 and accompanying text.

68 See supra notes 24–25 and accompanying text.
defective. Holding a supervisor or municipality liable for such a decision would be effectively the same as holding a supervisor or municipality liable for excessive force applied by a human police officer with no history of misconduct. This theory is clearly foreclosed by existing case law.

Plaintiffs could still try to hold supervisors or municipalities liable by making a “sample size” argument. When a supervisor or decision-making body makes police personnel decisions, it will undoubtedly consider whether individual candidates have engaged in concerning behavior in the past. But for robot procurement decisions, the decision-maker will not evaluate its options in the same way. It will not look at the individual robot’s performance record. Instead, it will consider how other robots of the same model have performed.

If a city’s human resources manager was evaluating a candidate for a police officer position and that candidate had used excessive force five times during the past year as an officer for another department, it would probably be reckless to hire the officer. Compare that to a police department’s procurement manager who is deciding whether to purchase units of a police robot. There are thousands of robots of the same model already in use, and collectively, they used excessive force on five different occasions during the past year. An excessive force victim could argue that the legal outcome should be the same: that it was unconstitutional to put such robots to use. The counterargument, of course, would be that courts

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69 See supra notes 56–57, 64–65 and accompanying text.

70 See supra notes 56–57, 64–65 and accompanying text.

71 Well, probably. It is possible, especially for more advanced, expensive robots, that a police department would try to procure a used robot from another police department—one with its own existing record of performance. But it would still make sense for the decision-maker to look at (and perhaps weigh more heavily) the overall performance of the model.

72 See supra notes 56, 64 and accompanying text.
should normalize the inquiry—that is, for robots, courts should look at instances of misconduct \textit{per unit}.

[28] Ultimately, the sample size argument will likely fail. A record of misconduct by other units of the model is probably enough to put the decision-maker on notice that excessive force \textit{might} occur, but courts seem to require that the misconduct be \textit{likely} to occur.\textsuperscript{73} Also, the defense could make a persuasive policy argument that failing to normalize creates a legal preference for human officers, which is undesirable if advanced robots are more cost-effective than human officers and engage in misconduct less often.

[29] In sum, most victims of robot excessive force will be unable to recover for their injuries, at least under § 1983. They will no longer be able to sue the applier of force, and the actions of supervisors and municipalities in this context will seldom be found unconstitutional. The existing law is simply inadequate to make victims whole.

\section*{IV. Why This Is a Problem}

[30] Precluding recovery for excessive force runs afoul of the principles underlying both § 1983 and the Fourth Amendment. The Supreme Court has explained the importance of allowing recovery for constitutional rights deprivations via § 1983:

\begin{quote}
How “uniquely amiss” it would be . . . if the government itself—“the social organ to which all in our society look for the promotion of liberty, justice, fair and equal treatment, and the setting of worthy norms and goals for social conduct”—were permitted to disavow liability for the injury it has begotten. A damages remedy against the offending party is a vital component of any scheme for vindicating
\end{quote}

\textsuperscript{73} See, e.g., Parker v. Blackwell, 23 F.4th 517, 523–24 (affirming denial of summary judgment because misconduct would be the “plainly obvious consequence” of hiring a certain prison guard).
cherished constitutional guarantees, and the importance of assuring its efficacy is only accentuated when the wrongdoer is the institution that has been established to protect the very rights it has transgressed.74

The use of police robots could render this “vital component” toothless.75 The government would indeed be able to “disavow liability” for running afoul of “cherished constitutional guarantees.”76

[31] The Supreme Court has also discussed how limiting opportunities for recovery under § 1983 reduces the statute’s deterrent effect on law enforcement.77 If using robots allowed police departments to insulate themselves from liability, police departments would be less concerned about the risk of excessive force in making robot procurement decisions. In turn, manufacturers of police robots might feel less pressure to prioritize safety in designing new models.

[32] In excessive force cases, the Fourth Amendment reasonableness standard requires courts to balance “‘the nature and quality of the intrusion on the individual's Fourth Amendment interests’ against the countervailing governmental interests at stake”78—namely, society’s interest in effective policing.79 The use of police robots, because it would preclude § 1983 recovery, seems to upset the balance established by existing case law on excessive force. Advanced robots will make policing more effective, but


75 Id.

76 Id.

77 Id. at 656.


this will likely come at the expense of the Fourth Amendment interests of those who encounter such robots. Indeed, in terms of civil remedies, recognition of individuals’ Fourth Amendment interests would be effectively eliminated, all because a robot, instead of a human, was doing the policing.\footnote{80}

That said, there is an argument to be made that precluding recovery for robot excessive force would actually result in greater respect for civil rights. Advanced police robots might be better than human officers at respecting constitutional boundaries. Some robots might be more capable of making split-second decisions that effectively balance risk mitigation with liberty concerns.\footnote{81} They might also be better than humans at avoiding racial bias.\footnote{82} And they could be more precise when they do use force—they could be much better, for example, at incapacitating someone without causing them significant bodily harm, especially if the robot is not concerned with its own survival and well-being in the same way a human officer is.\footnote{83} If advanced police robots will use excessive force less often than humans, perhaps the legal system should do everything it can to encourage police departments to replace their human personnel with robots, including shielding police departments from liability when they use such robots.\footnote{84}

\footnote{80}{In criminal cases, the exclusionary rule might still provide relief to defendants where a police robot violated the Fourth Amendment. See generally Wong Sun v. United States, 371 U.S. 471, 484–85 (1963) (discussing the exclusionary rule).}

\footnote{81}{See \textit{Graham}, 490 U.S. at 396–97 (“The calculus of reasonableness must embody allowance for the fact that police officers are often forced to make split-second judgments . . . about the amount of force that is necessary in a particular situation.”).}

\footnote{82}{\textit{But see Jeff Raikes, AI Can Be Racist: Let's Make Sure It Works for Everyone}, FORBES (Apr. 21, 2023), https://www.forbes.com/sites/jeffraikes/2023/04/21/ai-can-be-racist-lets-make-sure-it-works-for-everyone/?sh=fe92182e40d [https://perma.cc/422Z-MU77] (discussing how existing artificial intelligences carry racial biases).}

\footnote{83}{\textit{But see} Joh, \textit{supra} note 5, at 537–38 (discussing why it might make sense to allow police robots to act in self-defense).}

\footnote{84}{\textit{Cf.} Hubbard, \textit{supra} note 45, at 1868–69 (discussing how imposing liability on manufacturers for autonomous vehicle accidents could discourage innovation).}
This argument is misguided for several reasons. First, there are probably already adequate incentives for police departments to make use of advanced robots once they are safe and available. Recall Mayor Adams’s discussion of K5’s relatively low cost. If police robots are more economical than human officers, they will likely be attractive to municipalities even if they do not provide a liability shield. Also, if the “patrol bot” is truly better than human officers at respecting constitutional rights, replacing humans with robots could result in less excessive force liability, regardless of whether plaintiffs can recover when a robot is the applier of force. The use of police robots is also attractive because it would likely reduce the risks of physical harm to human officers.

Second, even if using robots reduces the overall number of incidents of misconduct, those who are subjected to excessive force will be left without a way to recover. One of the primary goals of tort law is corrective justice—allocating the cost of harm based on desert. Without legal intervention, victims of robot excessive force will unfairly bear the social costs of policing.

Finally, it is wrong to think of § 1983 simply as a tool for minimizing incidents of misconduct. It is also meant to vindicate constitutional rights. It would be a mistake, then, to approach this problem like liability for autonomous vehicles, where the challenge is almost exclusively about

85 See supra note 2 and accompanying text.


87 See id. at 118.

88 See infra Section V.B.

89 Whitman, supra note 48, at 25, 52.
striking an ideal balance between innovation and opportunity for recovery. Of course, an ideal liability regime for police robots would strive for this, but it would also aim to preserve some sort of legal acknowledgment of unconstitutional conduct.

V. POTENTIAL SOLUTIONS

This Part suggests two different legislative solutions to § 1983’s inadequacy when it comes to advanced police robots. Section A discusses a “human-in-the-loop” requirement. Section B suggests a social insurance system for compensating plaintiffs. Section C concludes that the social insurance system is the preferable intervention.

A. Requiring a Human in the Loop

A “human-in-the-loop” requirement would be a rule that when law enforcement is using an advanced robot—one capable of making autonomous decisions about the use of force—there must be a human observing its actions who is capable of intervening when things go awry. This requirement has previously been proposed for autonomous weapons used in warfare. Scholars have offered several rationales for the requirement, including minimizing errors and preserving the human dignity of those who are affected by robot actions. But for the purposes of this...

90 See Hubbard, supra note 45, at 1872.

91 See generally Rebecca Crootof et. al, Humans in the Loop, 76 VAND. L. REV. 429 (2023) (defining and discussing “human-in-the-loop” requirements for systems capable of making decisions).


93 See, e.g., Crootof et al., supra note 91, at 475, 480.
paper, the primary virtue of the requirement is that it might preserve excessive force victims’ ability to recover under § 1983.\footnote{See generally id. at 482–83 (discussing the ability to hold a human responsible for the robot’s actions as another benefit of a human-in-the-loop requirement).}

[39] If a police robot uses excessive force and an observing human officer could have intervened remotely (e.g., by commanding the robot to stop or by simply shutting the robot down), the victim can potentially sue the observer through an integral participant theory.\footnote{Peck v. Montoya, 51 F.4th 877, 889 (9th Cir. 2022).} The observer’s failure to prevent or terminate the excessive force could be considered “acquiesc[ing] in the constitutionally defective conduct.”\footnote{See supra note 36 and accompanying text.}

[40] This legislative response has a few potential flaws. First, the observer would not be vicariously liable for the robot’s actions.\footnote{See Graham v. Connor, 490 U.S. 386, 396–97 (1989) (quoting Johnson v. Glick, 481 F.2d 1028, 1033 (2d Cir. 1973)) (“‘Not every push or shove, even if it may later seem unnecessary in the peace of the judge’s chambers’ violates the Fourth Amendment. The calculus of reasonableness must embody allowance for the fact that police officers are often forced to make split-second judgments . . . about the amount of force that is necessary in a particular situation.” (citation omitted)).} Accordingly, there may still be many circumstances in which the observer cannot be held liable even though the robot did, in fact, use excessive force. The observer, for example, may have mistakenly (but reasonably) concluded that what the robot was doing was constitutional, perhaps because of the limitations of their observational equipment.

[41] Second, the requirement could undermine one of the key potential benefits of using robots for policing: their ability to make decisions more quickly than humans. The Supreme Court has taken for granted that when a law enforcement agent must decide quickly, it is more likely that they will make a mistake.\footnote{See supra Section II.B.} Robots not having the same constraints is one reason they
might be more effective than human officers while also engaging in harmful behavior less often. The human-in-the-loop requirement reintroduces human cognitive limitations into spur-of-the-moment decision-making.

**B. Insuring Against Robot Excessive Force**

[42] Alternatively, the government could establish an insurance system by which excessive force victims can receive damages without identifying a human or municipality who is responsible for their injuries. The victim would still have to show that the robot’s use of force was unconstitutional. An alternative system could do away with this requirement and use strict liability instead. But that may make it too easy for plaintiffs to recover, discouraging police departments from using advanced robots in the first place.\(^99\)

[43] One potential objection is that shifting responsibility for the use of excessive force from individual officers to the government could deter the use of police robots and might be unfair to taxpayers, who will ultimately shoulder the government’s liability. But police departments already indemnify their officers most of the time.\(^100\) And many police departments already insure against misconduct liability by purchasing commercial insurance or pooling resources with other departments.\(^101\) Thus, the shift in financial responsibility will not be that significant. Even if this were not the case, the potential low error rate for police robots, coupled with the other possible benefits of robot policing (e.g., greater effectiveness, lower risk to human officers), will likely outweigh the costs of robot misconduct.

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\(^{99}\) Unless, of course, a strict liability system was also imposed for injuries caused by human police officers. See generally Elias R. Feldman, *Strict Tort Liability for Police Misconduct*, 53 COLUM. L.J. & SOC. PROBS. 89 (2019) (advocating for this).


In addition, shifting costs to taxpayers would not be unfair. Since robots are judgment-proof under § 1983, switching to an insurance model would not reduce deterrence. If excessive force is now exclusively the result of emergence, and no one can be fairly considered at fault, robot excessive force is best thought of as an externality—an unfortunate and inevitable cost of effective policing which, without legal intervention, is borne exclusively by only a few. Insurance offers a way to internalize that externality and to spread out the costs. Almost all taxpayers would benefit from more effective policing through the use of robots. A social insurance system just asks taxpayers to pay the true cost of that public benefit.

C. Social Insurance Is the Better of the Two Interventions

Both a human-in-the-loop requirement and social insurance would mitigate the fundamental issue addressed in this paper—that § 1983 does not offer excessive force victims a way to recover when the applier of force is an autonomous robot. However, requiring a human in the loop will provide victims with recourse in fewer circumstances than social insurance would. A human-in-the-loop requirement might also reduce a robot’s effectiveness in certain situations. Social insurance, meanwhile, is likely to provide comprehensive protection for victims without discouraging the adoption of police robots or making police robots less effective.

VI. Conclusion

The use of autonomous police robots could create significant challenges for excessive force victims trying to recover for their injuries. Section 1983, in particular, is ill-equipped to provide recourse when a robot violates the Fourth Amendment. Plaintiffs will be unable to hold human police officers directly liable for robot misconduct, either by treating autonomous robots as instruments or through an integral participant theory. Theories of supervisory or municipal liability are also inadequate.

Without legislative intervention, these limitations will result in a liability system that is at odds with the purposes of § 1983 and the Fourth Amendment’s balancing of governmental and individual interests. This
paper offers two potential solutions: a human-in-the-loop requirement and a social insurance system. Ultimately, it concludes that the latter is best suited to facilitate the effective use of police robots while also compensating excessive force victims.