
ON PREDICTING AND STOPPING DYSTOPIA

EVAN SELINGER* & WOODROW HARTZOG**

Is it reasonable to be dystopian about how the future will likely unfold? We think so. For some time, we have been arguing that facial recognition technology is a perfect tool of oppression, and that its pernicious affordances are leading society down a slippery slope toward the evisceration of privacy by obscurity.¹ This is a soft form of “determinism”—the notion that while technology is not an unstoppable force and the future is not preordained, there nevertheless are identifiable factors, such as the invitingness of affordances, human nature, and incentives that drive technology in certain directions and make some social outcomes more likely to occur than others.² But would Ryan Calo agree—not only that the type of prediction we make is sound, but that also our proposed solution, the line drawing of an absolute prohibition, is appropriate?

* Evan Selinger is a Professor of Philosophy at Rochester Institute of Technology.

** Woodrow Hartzog is the Andrew R. Randall Professor of Law at Boston University School of Law.

¹ See, e.g., Evan Selinger & Woodrow Hartzog, *The Inconsistency of Facial Surveillance*, 66 LOY. L. REV. 33 (2020); Evan Selinger & Woodrow Hartzog, *What Happens When Employers Can Read Your Facial Expressions?*, N.Y. TIMES (Oct. 17, 2019), <https://www.nytimes.com/2019/10/17/opinion/facial-recognition-ban.html>; Woodrow Hartzog & Evan Selinger, *Facial Recognition Is the Perfect Tool for Oppression*, MEDIUM (Aug. 2, 2018), <https://medium.com/s/story/facial-recognition-is-the-perfect-tool-for-oppression-bc2a08f0fe66>; Woodrow Hartzog & Evan Selinger, *Why You Can No Longer Get Lost in the Crowd*, N.Y. TIMES (Apr. 17, 2019), <https://www.nytimes.com/2019/04/17/opinion/data-privacy.html>; Woodrow Hartzog & Evan Selinger, *Surveillance as Loss of Obscurity*, 72 WASH. & LEE L. REV. 1343 (2015); Woodrow Hartzog, Evan Selinger & Johanna Gunawan, *Privacy Nicks: How the Law Normalizes Surveillance*, 101 WASH. U. L. REV. 717 (2024); Woodrow Hartzog, Evan Selinger & Judy Hyojoo Rhee, *Normalizing Facial Recognition Technology and the End of Obscurity*, 6 EUR. REV. DIGIT. ADMIN. & L. 163 (2025); Evan Selinger & Woodrow Hartzog, *Obscurity and Privacy*, in SPACES FOR THE FUTURE: A COMPANION TO PHILOSOPHY OF TECHNOLOGY 119 (Joseph C. Pitt & Ashley Shew eds., 2018); see also Woodrow Hartzog & Frederic Stutzman, *The Case for Online Obscurity*, 101 CALIF. L. REV. 1 (2013); Woodrow Hartzog & Frederic Stutzman, *Obscurity by Design*, 88 WASH. L. REV. 385 (2013).

² Evan Selinger & Darrin Durant, *Amazon’s Ring: Surveillance as a Slippery Slope Service*, 31 SCI. AS CULTURE 92, 93 (2021) (citing LANGDON WINNER, *THE WHALE AND THE REACTOR* 11 (1986)).

In *Law and Technology: A Methodical Approach*, Calo offers a few remarks on the debate over facial recognition technology but does not take a side.³ We are less interested in Calo's position on facial recognition technology per se and more intrigued by his analysis of prediction as it relates to the "Collingridge dilemma."⁴ Calo acknowledges that some approaches to prediction are indeed reasonable and legally necessary.⁵ But how far he is willing to embrace soft determinism remains an open question.

Calo follows most Science and Technology Studies ("STS") Scholars in rejecting the idea that certain kinds of technologies are inevitable, arguing instead that they are "nearly always contingent."⁶ While as a social fact, technology "has the capacity to shape social and societal relations, sometimes profoundly, . . . the development and adoption of technology is itself shaped by people and institutions in multifaceted ways."⁷ However, Calo also insists that "taking this idea too far can lead to regulatory paralysis."⁸ After all, "if there is no way to predict what a technology will do, how can governments make rules in advance? Failing to acknowledge that technology is only part of any story of change has led many in the field astray."⁹

In this short reflection on Calo's book, we offer up a gentle suggestion for those wondering how to apply Calo's prescription of combining STS's insights with law's pragmatism and normativity. If lawmakers do not intervene early and forcefully, we know that the cycle of regulatory inaction will continue indefinitely due to normalization and a host of dependency effects. Consequently, we shouldn't retreat from acknowledging this potentially tragic truth. To address it head-on, we must give more consideration to foreseeability by elevating its role in legal analysis and acknowledging the power of more urgent and constraining legal approaches than Calo does in his book. Doing so is our only hope of not being gutted by the Collingridge dilemma.

I. CALO ON THE COLLINGRIDGE DILEMMA

The famous "Collingridge Dilemma," originally formulated by David Collingridge in *The Social Control of Technology*,¹⁰ is described by Calo as a "double-bind" concerning information and power.¹¹ The informational problem is that one cannot fully understand the societal impact of technology until it becomes

³ See generally RYAN CALO, *LAW AND TECHNOLOGY: A METHODOLOGICAL APPROACH* (2025).

⁴ See DAVID COLLINGRIDGE, *THE SOCIAL CONTROL OF TECHNOLOGY* 13 (Cambridge University Press 1980).

⁵ CALO, note 3, at 103-04.

⁶ *Id.* at 26.

⁷ *Id.* at 29.

⁸ *Id.*

⁹ *Id.*

¹⁰ See generally COLLINGRIDGE, *supra* note 4.

¹¹ CALO, *supra* note 3, at 42, 102.

widely used and integrated into our personal, professional, and political lives.¹² Only then will the vast range of consequences be understood.¹³ The power problem is that once this future arises, path-dependence and lock-in effects will have set in.¹⁴ Consequently, people will have become materially and mentally invested in using the technology, and industry will have entrenched interests that incentivize maintaining, if not further developing, it.¹⁵ These factors will make it difficult, if not impossible, to rein in or regulate technology that has become essential infrastructure, if not what Langdon Winner called a “form of life.”¹⁶ Or to repeat a much-abused cliché, by then the genie will long be out of the bottle.

Calo accepts some version of the Collingridge dilemma, declaring that it “is real.”¹⁷ Nevertheless, he argues that it is also “dramatically overstated,” and poses two objections.¹⁸ One objection is that the Collingridge dilemma has been rhetorically transformed into the “pacing problem,” the idea that technology moves so much faster than the law that it outpaces it.¹⁹ “Through the magic of libertarian rhetoric,” Calo argues, the pacing problem has become “a widely accepted tenet of law and technology” and reinforces the conviction that since the law cannot keep pace with technology, it should not bother trying to do what it cannot viably accomplish.²⁰ As Calo sees it, this rhetorical move is a perversion of Collingridge’s motivation and insight since Collingridge’s goal was to diagnose a governance challenge, not advocate for legal futility.²¹ Moreover, Calo disagrees with the very presumption of legal futility because he finds it to be empirically false.²² Throughout *Law and Technology: A Methodical Approach*, Calo provides examples of how the law has, in fact, successfully regulated technology, concluding that “law often keeps up with technology just fine.”²³

Calo’s second objection is that “many of the adverse consequences of technology can be, and indeed, are predicted.”²⁴ For example, he writes, “I am astonished anew every time I think about the way the United States began licensing the construction of nuclear power plants in the 1950s without a clear plan to dispose of nuclear waste.”²⁵ While Calo concedes that technology can and often does evolve in complex ways that make perfect prediction impossible, thus ren-

¹² *Id.* at 102.

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*; WINNER, *supra* note 2.

¹⁷ CALO, *supra* note 3, at 102.

¹⁸ *Id.* at 42.

¹⁹ *Id.* at 74.

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

²³ *Id.* at 7.

²⁴ *Id.* at 42.

²⁵ *Id.* at 102.

dering the thesis of hard technological determinism, which posits a future that is absolutely fixed, false, he nevertheless maintains the following.²⁶ There are methods of forecasting and scenario planning, some more formal and others more qualitative, that offer credible insight into how things may develop and can help the law draw lines under conditions of uncertainty.²⁷ Calo writes, “It turns out that there is an entire discipline, complete with journals and conferences, devoted to forecasting . . . Governments increasingly expect forecasting specifically around emerging technology from the firms they regulate.”²⁸ Indeed, Calo himself, along with Stephanie Ballard, offered three forecasting methods (design fiction, scenario planning, and future wheels) that can help lawmakers in their article *Taking Futures Seriously: Forecasting as Method in Robotics Law and Policy*.²⁹

Ultimately, Calo’s comments on forecasting suggest he is amenable to the position of “soft determinism,” which allows analysts, including philosophers and law professors like us, to make defeasible predictions about the future that emphasize technical constraints, financial incentives, and a host of other relevant dynamics, including psychological ones.³⁰ Reflecting on the STS scholarship that he draws from, Calo acknowledges that the field “rejects determinism, and yet it doesn’t too.”³¹ In other words, as Calo sees it, while STS scholars deny that the future will unfold like a stack of falling dominoes, their scholarship provides concepts and case studies that successfully demonstrate how powerful technological affordances can be and how much “momentum” large techno-social systems can take on.³²

II. BAN IT OR EMBRACE DYSTOPIA: WE KNOW HOW THIS WILL END

We applaud Calo for highlighting the need to balance humility about the difficulty of predicting the future with the eventual use of legal intervention to avoid an endless state of watchful paralysis by lawmakers. But we also think that his discussion of the Collingridge dilemma might not have fully recognized the state of play. When analyzing affordances relationally, one must consider the material features of a technology; the socio-cultural norms, goals, and values of both designers and users; and where the greatest loci of power lie. Sometimes, as in the present, socio-cultural features are, by far, the most causally influential.

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.* at 102-03.

²⁹ Stephanie Ballard & Ryan Calo, *Taking Futures Seriously: Forecasting as Method in Robotics Law and Policy* (2019) (We Robot 2019 draft at 2), https://robots.law.miami.edu/2019/wp-content/uploads/2019/03/Calo_Taking-Futures-Seriously.pdf [<https://perma.cc/JT7U-G2V6>].

³⁰ See WINNER, *supra* note 2 (developing the concept of “soft determinism”).

³¹ CALO, *supra* note 3, at 58.

³² *Id.* at 65.

Consequently, explanations or predictions that fail to identify the most powerful constraints and catalysts will be out of sync with social reality.

Although Collingridge's description of the choices available to lawmakers depicts a "dilemma" or "double bind," that framing is now likely a misnomer.³³ Our current moment, where surveillance only increases and we grow ever more vulnerable to data abuses, has already revealed that there are only so many realistic options on the table. Those who seek to deploy new information technologies figured out a long time ago that all you have to do to avoid legal accountability for data and design practices is insist upon an overly robust, scientifically validated conception of harm (what Jeffrey Vagel highlighted as tech law's version of the Kehoe Strategy) and stall long enough until people become so acclimated to and dependent upon these systems that they can no longer muster the political will to demand robust rules or rigorous enforcement.³⁴

We get it. It's hard to predict the future.³⁵ Still, there are some things that we can reliably count on. Capitalism will continue to shape economic incentives around how artificial intelligence ("AI") is designed, deployed, and discussed. That's why "Information Capitalism" is such a potent ingredient in the tech oligarchy and authoritarian ruler cocktail.³⁶ Also, humans are hard-wired to react to some social situations and some technological affordances in predictable ways. Given these and other relatively static features of the setting within which AI will be deployed, we think that the foreseeability of harms, dynamics, and incentives isn't just part of the ensemble cast of factors lawmakers should consider when weighing when, if, and how to intervene in technology-related issues. It's the main character.

Calo's methodology is meant to be adaptable and iterated upon. One aspect we think would be good to build out is enhancing the precision around which actions are most relevant when weighing how technology affects society (and vice versa), and when those factors are likely to progressively inhibit meaningful human development and democratic accountability to shape or preserve the world we want.³⁷ In our work, we have referred to these factors as "slippery

³³ See COLLINGRIDGE, *supra* note 4.

³⁴ See Jeffrey Vagel, *Resisting a Kehoe Strategy for Privacy* (July 29, 2025) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5284315.

³⁵ With all due credit to the great Philosopher King Yogi Berra, apocryphally quoted as saying "[i]t's tough to make predictions, especially about the future." *Yogi Berra Quotes*, GOODREADS, https://www.goodreads.com/author/quotes/79014.Yogi_Berra [<https://perma.cc/JJ9R-K43P>] (last visited June 11, 2026); see also *Quote Origin: It's Difficult to Make Predictions, Especially About the Future*, QUOTE INVESTIGATOR (Oct. 20, 2013), <https://quoteinvestigator.com/2013/10/20/no-predict> [<https://perma.cc/B6P2-PR4F>].

³⁶ See, e.g., JULIE COHEN, *BETWEEN TRUTH AND POWER: THE LEGAL CONSTRUCTIONS OF INFORMATIONAL CAPITALISM* (2019); SHOSHANA ZUBOFF, *THE AGE OF SURVEILLANCE CAPITALISM* (2019); MARIETJE SCHAAKE, *THE TECH COUP: HOW TO SAVE DEMOCRACY FROM SILICON VALLEY* (2024).

³⁷ For example, we have recently argued that a right to obscurity is necessary to respect human dignity and autonomy by avoiding a world of targeted harassment and ubiquitous sur-

slope drivers.”³⁸ Slippery slopes get a deservedly bad rap and are a textbook fallacy when they make unrealistic and deterministic claims from a position of absolute certainty. This is why we agree that hard technological determinism doesn’t justify robust legal intervention. However, when slippery slope predictions are only probabilistic and defeasible, and grounded in sound causal mechanisms (“slippery slope drivers”), we think they provide a much more reasonable basis for robust and early legal intervention. Unfortunately, this sort of soft determinism is too easily rejected when foreseeability is given short shrift or subject to overly demanding standards.

The easy dismissal of soft determinism usually spells doom for enacting robust and early legal interventions, such as bans and other tough bright-line rules, to prevent dystopian outcomes. This is a significant problem because these strong and urgent remedies might be the only thing that is capable of breaking lawmakers’ indefinite watchful paralysis, as predicted by the Collingridge dilemma. For example, in previous work, we have highlighted the exceptionally dangerous way in which markets, laws, and norms work together to normalize dangerous surveillance practices.³⁹ The normalization of exploitative data practices poses a grave threat because it can push society past a “point of no return”—a stage at which we become so dependent upon and acclimated to tolls that society can no longer muster the necessary political will to meaningfully regulate large tech companies. Normalization occurs when repeated exposure turns intrusive practices into background routines, so that incursions into core human values, including those necessary for our collective well-being, never register as severe enough to spark legal or political responses. Over time, our social expectations about the reasonable uses of digital tools shift. Indeed, each new data grab redraws the boundary of what is considered reasonable, and the cumulative effect is an erosion of dignity and autonomy, an increasing vulnerability to power through exposure.

Our previous distinction between privacy “nicks” (like little paper cuts) and “chops” (like dramatic cleaves) sharpens this diagnosis.⁴⁰ Nicks are small, often incremental incursions—think seemingly minor data collections or convenience-driven disclosures—that individually appear trivial.⁴¹ Chops are larger, more consequential losses of dignity, autonomy, or well-being that often follow from the accumulation of these nicks.⁴² Normalization operates largely through

veillance. See Woodrow Hartzog & Evan Selinger, *On a Right to Obscurity*, 17 CALIF. L. REV. ONLINE 23 (June 2026).

³⁸ Evan Selinger & Judy Rhee, *Normalizing Surveillance*, 22 N. EUR. J. PHIL. 49 (2021); Hartzog, Selinger & Gunawan, *supra* note 1; Hartzog, Selinger & Rhee, *supra* note 1.

³⁹ See generally Hartzog, Selinger & Gunawan, *supra* note 1; Hartzog, Selinger & Rhee, *supra* note 1.

⁴⁰ Hartzog, Selinger & Gunawan, *supra* note 1, at 720-21.

⁴¹ *Id.*

⁴² *Id.*

the steady accretion of nicks, which lower resistance and recalibrate what society accepts, making it easier for the loss of privacy to follow.⁴³

Two psychological processes accelerate this slide. “Unexceptional habituation” makes surveillance and exploitation feel mundane as people repeatedly encounter data collection in daily life.⁴⁴ Meanwhile, “favorably disposed normalization” occurs when routine use of a tool signals social approval, prompting people to rationalize their participation.⁴⁵ Both processes push individuals to emphasize immediate benefits—convenience, speed, and personalization—while discounting abstract harms such as indefinite retention, opaque profiling, and systemic discrimination.⁴⁶ Indeed, we already have many examples of society completely normalizing digital tools. Although it was once controversial, we’ve long stopped noticing CCTV as exceptional or out of place. “Internet of Things” doorbells, such as Amazon Ring, are similarly becoming so commonplace as to be unremarkable.⁴⁷

Once actors looking to deploy a technology have reached this point of no return in a particular context, they are free to set their sights on the next battle and work to stall until society has become similarly dependent and acclimated. And unless lawmakers intervene early, which requires confidence in the prognostic value of slippery-slope drivers, this cycle will repeat indefinitely until it ends in dystopia.

⁴³ *Id.* at 723.

⁴⁴ *Id.* at 762-63.

⁴⁵ *Id.* at 763-65.

⁴⁶ *Id.* at 767.

⁴⁷ *Id.* at 741-42.