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# Friction Matters: Balancing the Pursuit of Perfect Protection With Target Hardening

## Editor's Note

It is my great pleasure to share a guest “Last Word” column by Dr. Elissa Redmiles, Clare Luce Boothe Assistant Professor at Georgetown University, with *IEEE Security & Privacy* (S&P) readers. Prof. Redmiles has gained particular attention due to her highly lauded work in security and privacy inequities in marginalized and at-risk communities. This column gives a flavor of the real-world practical insights that have resulted from this work, which I hope will also lead S&P readers to want to delve further into the terrific set of references provided.

Prof. Redmiles is the first in a series of “Last Word” guest columnists that we look forward to sharing with S&P readers in the coming months and years, alongside our existing “Last Word” columnists—Steve Bellovin, Dan Geer, and Bruce Schneier—that our readership already enjoys. I invite our readers to enjoy these insightful and entertaining perspectives—both old and new—in our “Last Word” columns.

—Sean Peisert, Editor in Chief

Digital security often focuses on protecting against a worst-case adversary. But many forms of online abuse are conducted by low-effort attackers, not worst-case ones.

As Bruce Schneier wrote nearly 15 years ago, “...worst-case thinking focuses only on the extreme but improbable risks and does a poor job at assessing outcomes.”<sup>1</sup> By focusing on worst-case adversaries, we miss the opportunity to identify imperfect defenses that introduce enough friction to slow or stop average-case attackers. Research from other domains finds that imperfect but harm-reducing defenses can provide big safety benefits.

Using friction to increase the effort attackers must put in is a central tenant of physical security strategy (see ASU Center for Problem-Oriented Policing<sup>2</sup> [p. 39]). As one approach to doing so, *target hardening* in particular focuses on “denying access to a crime target through physical barriers, such as locks, alarms, fences, and gates.”<sup>3</sup>



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Target hardening can be both effective and low effort. In Portsmouth, U.K., for example, a program that involved marking bicycles with serial numbers using ultraviolet pens or etching resulted in a 39% drop in bicycle thefts year over year.<sup>4</sup>

End-user-on-end-user abuse is an especially promising area for introducing such friction. In the United States, the “Kia Challenge” went viral in 2022 and 2023 on TikTok. In this trend, videos show social media users how to steal older Kia models that are missing a key friction feature: an engine immobilizer. Without the

Digital Object Identifier 10.1109/MSEC.2023.3333972  
Date of current version: 19 January 2024

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immobilizer in place, even a novice thief can take off the steering column cover and insert a USB cord into a plug behind it to start the engine.<sup>5</sup> And that is just what they did. Thousands of social media users, some too young to legally drive, stole Kia cars and posted videos of themselves joyriding as part of the challenge. To combat the rapid rise in thefts by nonexperts,<sup>6</sup> police departments started handing out old-school steering wheel lock bars as effective deterrents against low-effort criminals who had just watched a video on TikTok before heading out to steal a car.<sup>7</sup>

Not unlike newcomers to the Kia Challenge, many online abusers are not experts. For example, research on image-based sexual abuse, like sharing intimate content someone sent you without their consent, finds that many perpetrators engage in such abuse casually, without even an explicit intent to harm.<sup>8</sup> Like stealing cars for the Kia Challenge, engaging in nonconsensual distribution of intimate imagery can bring “social currency” or status that the perpetrator is seeking.<sup>9</sup> Similarly, research on other forms of online harassment finds that perpetrators often engage in abusive behavior out of impulsivity.<sup>10</sup>

As one participant in our research on image-based sexual abuse put it, “No matter how much features people put into safety, there’s always always always going to be a risk... [but] as long as the features and the way you’re doing it has the minimum level of safety, that will [stop] most people.”<sup>11</sup> Introducing features that people can use to add friction in, for example, someone’s ability to easily reshare content they’ve sent them, like screenshot prevention, can help deter average or low-effort abusers.

But technology companies have been slow to offer users the ability to

engage in their own friction behaviors. At the corporate level, Netflix has long implemented screenshot prevention to slow the illegal distribution of copyrighted material. But only one consumer application—Grindr—offers screenshot prevention to stop users from sharing other users’ intimate content without their consent.

Of course, friction approaches like screenshot prevention are not perfect. More seasoned criminals can bypass steering wheel locks. Worst-case attackers can circumvent screenshot prevention by using a second device to capture content.

There is precedent for applying such imperfect defenses even in cybersecurity. For example, consider “Moving Target Defense,” a cybersecurity strategy in which a system is modified in real time to change the attack surface while the attacker engages with a system, without taking that system down.<sup>12</sup> While a worst-case attacker may eventually breach the system, many average-case attackers will be deterred by the friction Moving Target Defense implementations introduce.

In public health, the principle of harm reduction “(a) explicitly assumes continuation of the undesired behavior as a possibility and (b) aims to lower the total adverse consequences, including those arising from continuation.”<sup>13</sup> First applied in the space of drug use, harm reduction offers the intuition that we must aim to lessen as much immediate harm as we can while still pursuing long-term protective solutions.

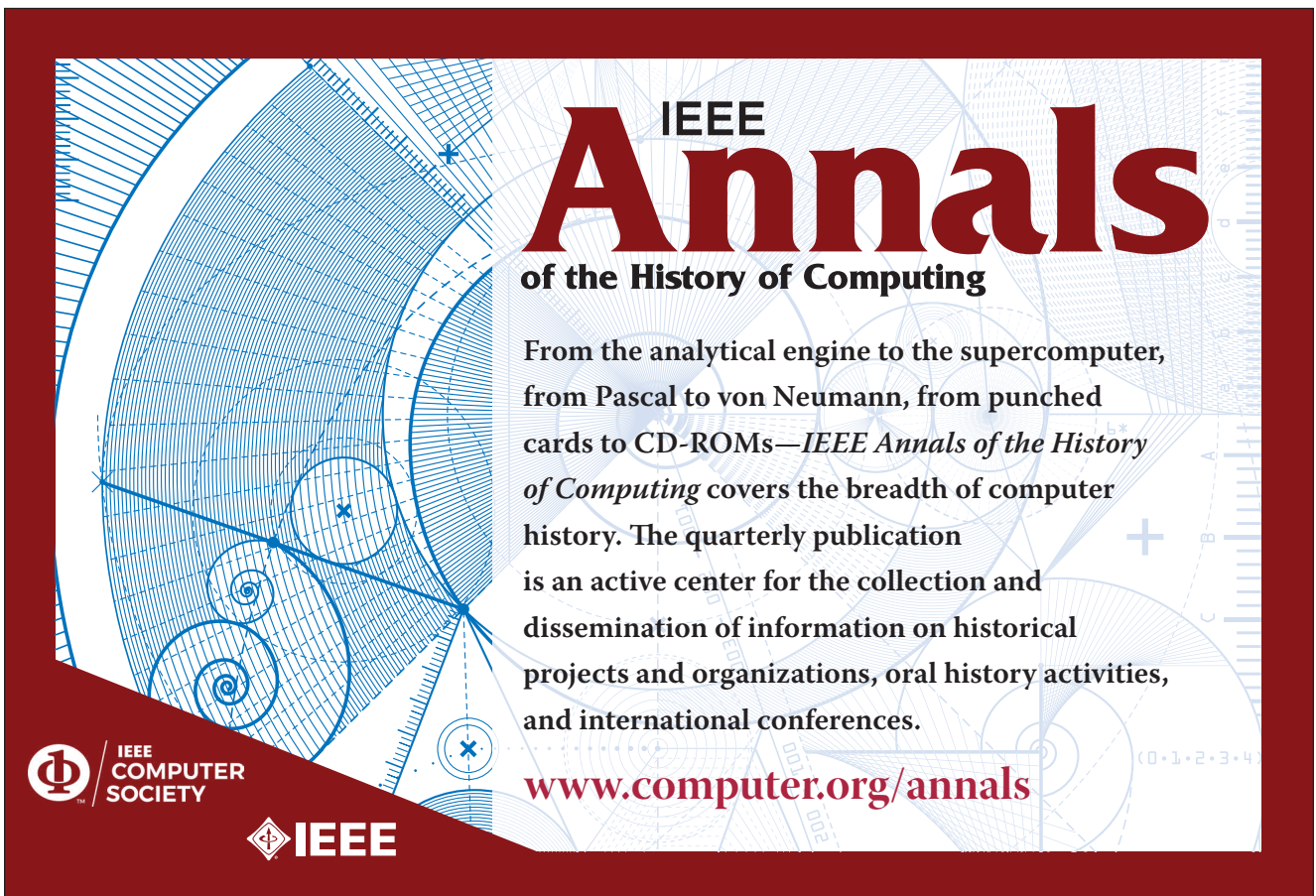
A similar principle is relevant in digital security, particularly for end-user-on-end-user abuse. To stop harm both immediately and in the long term, we need to balance our resources between harm-reducing

friction and the long-term pursuit of perfect protection. By balancing our focus between short- and long-term protections, we can live in a safer today and build toward a safer future. ■

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