Oops? Sociotechnical Errors as Interdisciplinary Stories of Complex Relations, Shared Consequences, and Resilient Hopes

Introduction

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Introducing a collection of articles tracing sociotechnical errors across varied disciplines, sites of inquiry, and normative stakes, we situate such errors as complex and affectively charged relations between humans and nonhumans. When told as interdisciplinary stories, errors become ways to see how precarious systems are, who has the power to diagnose their breakdowns, and what alternative sociotechnical arrangements may be prompted by centering their breakdown, maintenance, and repair.

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The curious thing about complex sociotechnical systems is that they work at all. Indeed, contemporary life is full of such arrangements gone awry. Health insurers' flawed algorithms unfairly deny coverage (Mole, 2023); broken pollution detectors misrepresent environmental harm (Ward, 2023); Google AI mistakes a crime reporter for a criminal (Thorne, 2024); Apple News alerts people to events that never happened (Makortoff & Booth, 2025); a driverless Waymo car errantly circles a parking lot while its dizzy passenger calls for help ("Man Trapped," 2025); Mark Zuckerberg ends Facebook's factchecking program because he claims it is "making too many mistakes" and "getting in the way of the free expression" (Kaplan, 2025, para. 3). And in the city where we live, Los Angeles in January 2025, "an unknown technical glitch that officials had not yet been able to identify and fix" sent erroneous fire evacuation alerts to our phones, causing officials to fear "that residents might ignore future, accurate alerts because they'd become accustomed to false warnings" (Bogel-Burroughs, Fortin, & Brumer, 2025, para. 5).

Living with sociotechnical systems means living with a seemingly endless stream of errors, breakdowns, and unmet expectations. We cannot escape failed designs, malfunctioning hardware, biased datasets, defective predictions, disingenuous technology oligarchs, and unreliable public information

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systems. We tell ourselves stories about why we think these systems fail and, in doing so, we reveal how we think systems and societies work—or should work.

As Steve Jackson argues, errors show how systems only "work" through "subtle acts of care by which order and meaning [is] maintained and transformed, human value is preserved and extended, and the complicated work of fitting to the varied circumstances of organizations, systems, and lives is accomplished" (Jackson, 2013, p. 222). This "broken world thinking" makes sociotechnical systems seem successful and stable (Jackson, 2013, p. 222). In contrast to popular celebrations of newness, disruption, opportunity, and invention (and inventors), errors show caretaking, repair, and resilience to be the unsung heroes of technological complexity. Sociotechnical infrastructures—human–nonhuman relationships that invisibly meld into seemingly stable artifacts, expectations, and language—work well enough, most of the time, because "broken world thinking" and maintenance labor sustain them. They help people, systems, materials, groups, and structures persist through what are variously seen as failures, mistakes, errors, glitches, misalignments, faults, breakdowns, misunderstandings, or unmet expectations. Errors always trigger couplings: interruption and reestablishment, breakdown and recovery, disappointment and hope.

Errors show not only how systems succeed or fail but how people want or expect systems to do so—what counts as "good enough" to whom, when, and why. They reveal pragmatics of sociotechnical systems (Hickman, 1990), illustrating how "work" and "fail" subjectively depend on which successes and thresholds matter and who has the power to diagnose an event, make a repair, and assign responsibility (Ahmed, 2021).

These images of error motivate this collection of short, interdisciplinary essays. We are inspired by Jackson and other scholars of sociotechnical maintenance, care, and repair (England, 2005; Graham &Thrift, 2007; Howard & Irani, 2019; Lin & Jackson, 2023) who ask how complexity is effectively cared for by failure. We offer here interdisciplinary, playful, and constructive stories of failure to help people—scholars, designers, engineers, users, and policymakers alike—appreciate the precarity and dynamism of sociotechnical arrangements. While we acknowledge that the risks and harms of failure are unevenly distributed, and we reject naively fetishizing failures as exclusively positive moments of growth—some people suffer breakdowns more than others—the articles suggest that stories of error told from multiple perspectives can spur new learning, knowledge, and action. They can offer new ideas about what went wrong, what could have gone right, why something happened, what should be done, who is at fault, and which expertise and investments could prevent future errors.

A burgeoning space of interdisciplinary scholarship examines errors from multiple perspectives. For example, Sætra and Selinger (2024) show how tracing problem–solution pairings leads to more precise critiques of techno-solutionist ideologies. Magaudda and Balbi (2024) survey years of communication research to argue that notions of "success and failure" are never static but "co-evolve together with the economic, political, and cultural transformations of the society in which the media themselves are created and used" (p. 12). Cabitza, Campagner, and Mattioli (2022) show how the seemingly sophisticated sociotechnical claim of doing "emotion detection from static images crumbles into inconsistency" (p. 1) when such systems encounter the complexities of everyday life.

Indeed, stories of failure are always embedded in rich social and cultural histories. In her study of public discussions of AI failures, Barassi (2024) offers a "theory of AI errors" to explain how computational systems that promise robust, humanlike knowledge simply recapitulate longstanding epistemological patterns rife with "mischaracterizations and flawed cognitive relations" (n. p.). Indeed, some errors may be impossible to correct because systems can never be fully separated from the flawed thinking that drove their creation, from inadequate investments in their maintenance, from their fundamentally ungovernable dynamics, and from encounters with complex environments that make them precarious. Focusing on a seemingly niche example, Dick and Volmar (2018) show how Microsoft created the phenomenon of "DLL hell" (a programmer's curse) by failing to maintain the largely invisible "dynamic-link libraries" that so much software relies on, starting a cascade of software breakdowns. Systems that needed such DLLs became unstable and unreliable as programmers modified libraries, nonstandard versions propagated, and Microsoft failed to repair or maintain their standardization.

When errors are anticipated, intended, tolerated, or deemed unacceptable, we learn something about how power and relationships work. We learn whose suffering matters, which outcomes trigger actions, whose authority commands fixes, when people are compensated, and who accepts responsibility and accountability (Elish, 2019; Parvin & Pollock, 2020). We also learn about the labor required to know and fix errors—the work needed to trace a breakdown through messy relationships; to document causes and harms and prioritize them in accessible language; to see failures as mixes of people, organizations, designs, emotions, standards, and norms that resist simple plotlines; and to prototype and evaluate ameliorations, deciding whether subsequent errors were similar enough to an original error to reapply or revisit a remedy (Barassi, 2024; Berber & Srećković, 2023; Downer, 2024; Kerr & Kant, 2024; Keyes & Austin, 2022; Lin & Jackson,2023; Rettberg, 2022; Vaughan, 1996, 2021). Some errors show broad social structures and dominant epistemologies—becoming "super controversies" (Marres, Castelle, Gobbo, Poletti, & Tripp, 2024)—while others are small-scale idiosyncrasies needing artisanal diagnoses and one-off fixes (Haynes, 2021; Law & Mol, 2002). Still other errors are public problems—ongoing, shared circumstances that need managing, auditing, governance, and binding judgments of cause and accountability. And some errors might poetically be seen as cases of failed imagination when some combination of hubris, conservatism, and presentism made a breakdown impossible to anticipate, much less plan for.

There is indeed no shortage of scholarship showing that sociotechnical systems are precarious and that their failures reveal a great deal about how humans and nonhumans work—or fail to work—together. What drives this Forum is an interdisciplinary curiosity about the messiness of errors and the challenges of finding, creating, narrating, and valuing them. Our aim in assembling these articles is not to argue that they all mean any one thing, that they offer a coherent story, or that they represent the full space of sociotechnical errors. Our aim is to spur thinking within and across them to provoke and sketch alternative relationships between and among people and machines. Indeed, as Law (2004) rightly argues, "Other possibilities can be imagined . . . if we attend to non-coherence" (p. 85). We aim to tap into imprecise sociotechnical imaginations of progress that prey on "desire and fear" (Hughes, 2024) in a sober and pragmatic attempt to "tame innovation monsters" that traffic in "anticipations of progress or catastrophe" (Laurent, 2024, p. 71).

These authors engage sociotechnical errors without limiting their definitions or foreclosing their meanings. They do not see errors only as anomalous problems to be solved but instead explore errors, failures, breakdowns, interruptions, mistakes, and glitches—the words are used somewhat interchangeably here, a conscious compromise—across a wide and creative swath of materials, methods, and sites of inquiry. While some offer ways to contend with or move past an error, others focus on a particular case to narrate how an error is made and why it matters. In embracing varied instances, definitions, and valences, the collection illustrates error's relationality—its co-construction and sometimes dissonance with social processes and environments. Indeed, some authors argue that error might be usefully referred to instead as a loophole, suggesting that what looks like an error may not be a mistake at all.

In "Uncertainty as Spectacle: Real-Time Algorithmic Techniques on the Live Music Stage," Stephen Yang leads us through a "new terrain of live sonic expressivity rooted in the speculative possibilities of failures" where changes in technology shift performers' orientations toward error and its attendant algorithmic techniques. Also taking up the concept of algorithmic technique perhaps more as a corporate loophole, Eugene Jang's "When Faulty AI Falls Into the Wrong Hands: The Risks of Erroneous AI-Driven Healthcare Decisions" traces healthcare companies' knowing use of problematic decision-making technology for financial gain. Even as subsequent errors in patient treatment are accounted for, this article asks us to consider the tension between errors and intentionality and how the appearance of error shifts across perspectives. Sook-Lin Toh and Jiwon Park show how an error's framing tells a system's story, arguing in "Fake It Till You Make It: Synthetic Data and Algorithmic Bias" that framing synthetic data as a response to bias simply begs further analysis of what failure led to the need for synthetic data in the first place. In his piece, "Discourses of Sociotechnical Error and Accuracy in U.S. and PRC News Media: The Case of the 1999 Bombing of the Chinese Embassy in Belgrade," Max Berwald shows another way to tell an error's story, this time as an anomaly triggering a competing set of causes, frames, data, and harms.

Returning to an alter-ego of error—glitch—other authors focus on an error's unintended or unanticipated consequences (Parvin & Pollock, 2020). Finn and colleagues' article, "Affective Experiences of Error," traces the design and maintenance of COVID dashboard projects in the United States and India, showing how a typo raised questions about larger data ecosystems and those who participate in them. Other unintended consequences question social norms and the role that data infrastructures should play in seemingly nontechnological contexts, as Pratik Nyaupane and Alejandro Alvarado Rojas do in their article, "Kicking Error Out of the Game: Video Assistant Referee as Technosolutionism." They trace how the introduction of the Video Assistant Referee sparked a broader conversation about what sport should be and who participates in it. Their work centers the question of procedural authority and how people's desires about and for technologies always reveal preexisting cultures, discourses, and assumptions about how technology relates to other domains of life. Similarly, in "Peeling Back the Layers of 'Paint on Rotten Wood': Unraveling the Senate's 'Big Tech and Child Sexual Exploitation Crisis' Hearing," Kyooeun Jang offers a precise breakdown of one particular 2024 U.S. Senate hearing to demonstrate how misdirected attempts at resolving error might further harm those at risk.

Taken together, these articles expertly frame analyses that show how individuals, groups, and communities are simultaneously working to determine where an error lies and who is responsible for it.

Several papers focus on social media platform errors, such as "When User Consent Fails: How Platforms Undermine Data Governance," in which Rohan Grover traces the errors that stem from trying to cast humanistic concepts like consent into technological processes. Sui Wang also grapples with tensions between interpersonal or corporeal concepts in "Ephemeral Platforms, Enduring Memories: Errors and Digital Afterlife," arguing that errors occur when technologies fail to align with the subtle nuances of death, grief, and (digital) personhood. Kirsten Crowe, in ":Chatting: Errors in Live Streamer Discord Servers," also contends with platform errors and the interpersonal governance of group norms, prompting us to consider how platform affordances and user actions frame and deploy error, making it a key part of how online communities form and function. Relatedly, in "Hole in the (Pay)Wall: Monetized Access, Content Leaks, and Community Responsibility," Celeste Oon interprets errors through a "logics of care" framework, showing how a paywall error is only a part of a larger story of infrastructures that break down and need to be maintained.

Finally, the story of error is told as environmental emergence. When Cindy Lin and Steven J. Jackson ask in "Edges, Seams, and Ecotones: Error in Interstate Landscapes" what work error does, they invite us to consider whether error can even be measured at all, tracing its appearance and construction across shifting material contexts like soil, peat, and conservation work. And situating error within complex challenges of shelter construction and governance, Elana R. Simon's "Quantifying Housing Need in California: The Erroneous Practice of Evidence-Based Policy" reconsiders the California Regional Housing Need Assessment to show how error is both created and revealed via seemingly stable but actually shifting land-use planning methodologies.

This collection is an invitation—to seek out errors, see them anew, trace their dynamics, and provoke stories about them that show what human–nonhuman arrangements could be.

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