

Critical Affects: Tech Work Emotions Amidst the Techlash

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Techlash encapsulates a breaking point reached with the critique of technology companies. To investigate how this whirlwind of rage, inquiry, and accountability affects the lives of tech workers, we conducted interviews with 19 tech workers. Our methodological approach and contribution adopts a style of writing and analysis associated with anthropologist Kathleen Stewart, where we focus on the affective textures of everyday life in an attempt to redirect the temptation to representational thinking to a slowed ethnographic practice. This paper dwells on the affects of tech workers facing critique and scrutiny. Through this approach, we find that emotional habitus conditions the possibilities of personal and political action and inaction in response to critique. By emotional habitus, we refer to the emotional dispositions honed among tech workers by tech culture's rationality and optimism. This habitus must shift if people are to access new ways of relating and acting. We argue for more fruitful attitudes and practices in relation to critique.

CCS Concepts: • **Human-centered computing** → **Collaborative and social computing**.

Additional Key Words and Phrases: tech worker; critique; techlash; affect; emotion; emotional habitus

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1 INTRODUCTION

Silicon Valley and its cousins are what many imagined as exemplars of economic, artistic, and social abundance. Through the mid-2000s, San Francisco had become a symbol of a city transformed for the needs of elite technology workers. Yet, Silicon Valley residents and workers had long struggled with rising housing costs, low wages, and even exposure to toxins [51]. For critics like Solnit [63] or Rushkoff [55], the Google Bus represented the way private industry's uses displaced public ones, as private shuttles competed with public buses and even used public bus stops to serve only a narrow set of residents. Some began to use the term "tech bro" to locate the problem of Silicon Valley in a thicket of cultural entitlement, oversupply of capital, and narrowness of vision. In Europe, leaders, regulators, and journalists questioned the power of US tech companies to gather and circulate data on European citizens. Despite these longstanding concerns, it was not until 2016 that these frustrations with technology companies exploded into a mass awareness in the US in what is now called the *techlash*. With this techlash, figures of derision of technology industry actors exploded as

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“tech bros” gave way to a new, post-2016 lexicon of “big tech,” “surveillance capitalism,” and even “grifter.” Congressional questioning of tech company CEOs became national news events in the US.

Scholars have traced the antecedents of the techlash with a political economy lens, emphasizing how policy and economic dynamics interrelate in ways that produce harm, exploitation, or precarity. Zuboff [79], for example, named surveillance capitalism to mark the emphasis on data as an exploitable resource to control behavior. Others identify a longer standing fetishization of the tech sector among policy makers as exacerbating inequality [27]. Fundamentally, these scholarly critiques focus on the role of industry and government in resourcing and sustaining the actual designs we get to live with.

We turn to the technology workers who design and program the technologies that have come under public scrutiny. While acknowledging the importance of political economy views of the techlash, in this paper, as computing researchers, we adopt a different lens. We ask: How does the whirlwind of rage, inquiry, and accountability stemming from the techlash *affect* the lives and beliefs of those working in these companies? Our work inquires into the affects of industry technology workers and the ways that those affects play a role in enabling or resisting new public engagements with the technologies they build.

By affect, we refer to what is sometimes understood as emotion or, more broadly, the capacity to affect others. Affect and emotion are central to the industrial practices of high tech. Social theorists have identified how affect both shapes and is shaped by economic formations such as capitalism [76]. We can see affects at work in a range of ways in sites of technological innovation. In contexts of rapid technological and policy change, workers are expected to demonstrate an optimistic ethos of exploring risks but not being overwhelmed by them and by maintaining optimism for the sake of team cohesion and productivity [35]. Emotion is also central to the public acceptance of technologies sold in the marketplace. When technologies were sold to managers for use by workers, human-computer interaction (HCI) focused on the values of efficiency and usability – those qualities legitimate within managerial practices. But as the technology industry shifted to selling directly to consumers, cultural values such as delight, play, and meaning made emotion more central to HCI expertise [35, p.149][9, 14, 29, 44, 68]. At the level of policy, Silicon Valley thrived on optimism of policy makers who for decades saw it as the industry that was supposed to lead Americans into post-industrial jobs as trade agreements sent manufacturing, agricultural, and certain kinds of extractive work abroad [60]. And among workers, especially abroad, technology skills promise financial stability, even as structural conditions may prevent this promise from coming to fruition [5, p.162].

This paper endeavors to make *empirical contributions in tandem with methodological contributions* to inform how our field engages with industry and the work we do with it and as part of it. First, this paper offers an empirical account of how tech workers experience criticism. We began our research concerned with emotions and people’s capacities to affect one another through communication, feeling, and contact. Our empirical data and analytic approach led us to see affect as structured into more durable patterns sociologists call habitus [38, 77]. Habitus names structured and durable patterns of action that, for our concern, condition how knowledge is received, understood, and produced. While these affects can sustain the tech industry, they can also lead to ethical action and resistance. Amrute [6] centers affects in her analysis of how tech workers organize together to resist military surveillance work at Google and environmental waste at Amazon. She argues that tech workers bring to their workplaces complex histories, shaped by gender, race colonialism, immigration, disability, and other differences in experience. These complex histories mean they react to workplace ethical dilemmas in unpredictable ways and in ways that can open the possibility for collective action with other workers. Central to ethics, for Amrute, is the possibility for the affective state of tech workers to puncture the habitus encouraged by tech industry practices [31, 35, 42]

that aim to stabilize and channel affects toward the production of financial value. Drawing on our empirical work, we discuss the conditions for this possibility and what political imaginaries it may augur.

Second, by taking up this notion of technology worker affects, we identify an opportunity for HCI and CSCW researchers to establish new methods to engage with and through industry. We take seriously affect theorists' commitment to tell open-ended, non-definitive stories that allow readers to imagine different ways for events to unfold. Critical analysis that warns of likely outcomes or analyzes power at work is important, but we also need attention to details from which new possibilities for solidarity, resistance, and reconfiguration might spring. This paper moves away from what Sedgwick and Frank [56] call "paranoid inquiry" – the mood of critical theory manifested as guardedness, aggression, irony, and exposure [23, p.21]. They suggest that this critical mood can become a form of autopilot, leading to unsurprising conclusions. We do not deny the importance of critique, but we do seek a mode of analysis that opens up possibilities rather than foreclosing them. We experiment with a style of writing inspired by anthropologist Kathleen Stewart [22, 66] that conveys not only meaning, but felt intensities and asks the intrepid reader to be a co-actor with text, perhaps even upon multiple readings. By depicting the intensities and textures tech workers felt, we seek ways of understanding where CSCW's ethical and political possibilities for action – as a site within the wider world of tech work – might go from here.

2 RELATED WORK

2.1 Sites of Technology Critique

One of our goals is to explore alternatives to critiques for scholars in CSCW and allied disciplines. Our sites of interest – workers and organizations involved in technical or design practices – are a focus of prior critical work. Here, we discuss design, organizations, visions, and social movements as sites of critique.

Past scholarship identifies the insidious manner in which designs can harm groups and individuals, perpetuate inequities between stakeholders, and inappropriately reduce complex problems into ones that design can "solve." Design justice, for instance, highlights the lack of diversity among workers in Silicon Valley firms. Biases are perpetuated in design that enhance the lives of dominant, privileged groups while reducing opportunities for those that have been historically oppressed [19]. Justice-oriented efforts do not only critique design and its structural antecedents, but suggest alternative design practices. Dombrowski et al. [21] describe exemplar strategies such as accountability that call for designs enabling those who gain from harmful practices to be held responsible [3, 28, 36]. Justice-oriented efforts that challenge existing social relations can sometimes evoke emotions of shame, loneliness, and frustration [26] that can feel as if one is opening a can of worms amidst the convivial and conciliatory emotions promoted in contemporary managerial strategies [74] of the tech companies featured in this paper.

A critical approach toward production settings can arguably be traced to early participatory design (PD). In reaction to the siloing of social and technical aspects of work, PD welcomed a sociotechnical approach to work organizations [7]. This perspective also considered the external environment in which an organization operates and the balance between the organization and the environment. Early PD in Scandinavia was legitimized and backed by legal mandates that trade unions have a voice in workplace technology [11]. This holistic and political perspective is one we hold in our work: that critique is, even moreso now we argue, interwoven with the social and technical interactions within and beyond an organization. With the PD perspective came questions, from an organizational stance, of whom design benefits and who holds the reins of design [54]. Critique was aimed at corporate managerial visions of user-centered design that were antithetical

to an emancipatory ethos [7]. PD also critiqued existing design practices that embraced a strictly rational process [7] still prevalent in today's tech industries. PD advocates instead embraced more reflective approaches to design.

Reflective design practices, in conversation with PD traditions, turn the gaze of critique inward to the roles that researchers and designers may play in inducing harmful or limiting futures. Reflective design seeks to ferret out unconscious assumptions of designers and support the possible reinterpretation of technologies by users for their own values [58]. Users' values can be at odds with values of "technical practice: functionality, efficiency, optimality, [and] task focus" [57]. Overall, reflective design provides an antidote to overly optimistic visions of technological determinism [5]. However, reflection is not a panacea. Visions of democratic design, however well-intentioned toward PD principles, can once again create futures where some individuals are rendered invisible [8]. Because the future is often couched in the discourse of progress or a better tomorrow [12], it can render some as undesirable or anachronistic. In addition, a number of studies have shown the challenges of inserting reflective practitioners, such as critical social scientists, into corporate or engineering organizations [59, 75].

Contemporary tech worker movements have adapted and adopted participatory design calls for democratized control over technology. These movements are comprised of tech practitioners organized to redirect their companies' technological agendas, notably resisting Google's entry into the business of artificial intelligence for drone warfare and a number of companies' provision of cloud services for government agencies engaged in human rights violations. HCI scholars have participated in these movements [2]. Computer scientists have also produced critical assessments of their fields' contributions to racialized violences of incarceration, colonialism, and capitalism; Seny Kamara's CRYPTO 2020 keynote speech about cryptography and Black lives is a notable example [40]. Scholars are also reassembling older histories of tech worker organizing such as the Black-led Polaroid Revolutionary Workers' Movement organizing against South African apartheid [13] and Computer People for Peace [39]. The ACM's own literature bears the traces of such activism by organizations such as Computing Professionals for Social Responsibility [4, 49].

2.2 The Logics of Silicon Valley

The reflection and slow time of participation called for by the above traditions run counter to the temporal and organizational logics of Silicon Valley-influenced innovation cultures. Stark and Girard [65] describe how the demands of Silicon Valley to innovate at a breakneck speed led web design firms to transition from merely producing websites to becoming collaborative consultants capable of keeping up with an ever-changing kaleidoscope of technologies. These dynamics lead to Silicon Valley cultures that value employees who can work independently but have an ability to "get along with others in an extraordinarily stressful and fast-paced environment" [65]. However, this expectation from individuals coupled with the flat structure of web design firms can be emotionally draining. As Stark and Girard note, the flat structure creates a "lateral accountability" that is "emotionally demanding. The absence of clear-cut lines of vertical authority involves trade-offs – for you are now accountable to many."

Optimism is also central to high-tech production, sometimes militating against more critical or pessimistic affects [35, 45]. In a study of designers working as contractors in India, Irani [35] found that designers spent significant time telling stories and presenting media to maintain positive emotional investments in their projects as they worked to enlist partners or solicit organizational resources. Further, some teams valued critique only in so far as they mitigated risks or improved a product's chances for success; critique that questioned the product entirely, however, was often dismissed as "hardcore ideological." In entrepreneurial cultures, critique was prized for its capacity to generate what Stark and Girard [65] calls "creative friction" that can discover new sources of

value. However, organizational practices such as brainstorming rules, strict timelines, and cultural norms suppressed critique that posed a threat to productivity in innovation [35].

Scholars have analyzed how political economy affects cultures of Silicon Valley and, in turn, the fate of critical interventions – whether knowledge production or design. Metcalf et al. [45] study the formalized integration of tech ethics into organizations and argue that most tech workers are not yet “moved by ethics.” Tech workers instead are stymied by “pitfalls introduced by tech logics and organizational structures.” Similarly, Irani’s work analyzing the relationship between engineers and Amazon Mechanical Turk workers argued for the challenge of solidarity between them; engineers’ productivity and identity depends on outsourcing labor at low cost to Turk workers [34]. While Metcalf et al. and Irani focus on the durable social patterns that lead technology practitioners away from ethical or political efforts, Amrute turns an optimistic eye to solidarities, however improbable, evident in recent tech worker movements. Amrute [6] examines the ethical dispositions of technology workers and finds the ethical expressed in myriad forms of aspiration. She argues that feminist scholars seek out “techno-affects” – the attunement of “senses...trained through human actors and technical systems...which prompt different kinds of ethical engagements” – as inspiration for how digital workers might already be sensitive to varied ethical concerns in need of articulation and action.

To explain the variegated reactions of tech workers to external critique, we need to recognize that such reactions are conditioned by the individual’s background experiences and mediated by organizational structures and practices of their employer. It is this intersection that we elaborate throughout this paper.

3 METHODOLOGY

To understand how critiques affected technology workers, we conducted a qualitative study. Our goal was to understand their experiences at work and in their communities, as well as how they have responded to the changing public legitimacy of their industry. To understand the experience of receiving external critique of a public-facing technology one works in, we limited recruitment to individuals in technical or design roles which have some influence on product development. To learn from individuals who were less accustomed to their company culture, we included people with less than 10 years in their role and who are non-managers (or have only recently become a manager). We sought to recruit an informant pool which included some people with experience in academia so that we could understand experiences of being accountable to academic critique. We considered academic experience to involve receiving training and engaging with the academic community as part of working toward a PhD.

The semi-structured interview protocol first asked workers about their job position, responsibilities, and their company’s internal organization. Organizational scholars have argued that visual data collection methods such as sketches better allow workers to articulate feelings [46, 78]. The subject of our interest, affect, can similarly be difficult to articulate in words [26, p.21]. We therefore asked workers to visually sketch a representation of an external, memorable critique. We then turned to a discussion of the sketch, focusing on the source, affect, content, and delivery of the critique; any actions they did in response to the critique; how the critique affected themselves and their company; and how they would like the experience of that critique to change.

We recognized that prospective informants may be reluctant to speak frankly about their experiences with potentially negative critiques of their employers. We therefore took measures to protect informant confidentiality and increase informant comfort with being interviewed. For example, we created pseudonyms with participants before we began recording the interview that were then used for the duration of the interview, so that no real names were captured in the recordings.

Table 1. Tech Worker Informants ($N = 19$)

Pseudonym	Gender	Age	Company Location	Company Pseudonym	Job Position
Alex	Male	28	Silicon Valley	Big Core	Software Engineer
Casey	Male	34	San Francisco, CA	Tamarind	User Researcher
Charlie	Male	35	Seattle, WA	Banana	Data Scientist
Dakota	Male	35	New York City, NY	Koala	Senior UX Researcher
Emery	Female	29	United States	Cedar	UX Researcher
Frankie	Female	35	Pacific Northwest	Hummingbird	Researcher
Jaime	Female	30	San Francisco, CA	Venus	Junior UX Researcher
Jessie	Male	31	Seattle, WA	Hickory	Scientist
Kerry	Male	32	Bay Area, CA	Unicron	Software Engineer
Kris	Male	38	San Francisco, CA	Gandalf	Senior UX Researcher
Morgan	Female	39	Silicon Valley, CA	Gambit	Researcher
Pat	Female	34	Santa Barbara County, CA	Magneto	Senior Product Designer
Peyton	Male	29	San Diego, CA	Rainbow	Software Security Engineer
Riley	Female	NA	Boston, MA	Westlake	Software Engineering Manager
Robin	Female	28	Chicago, IL	Zebra	UX Researcher
Rory	Male	29	San Jose, CA	Mulberry	Senior Software Engineer
Tate	Male	32	Silicon Valley, CA	Hitchcock	Software Engineer
Taylor	Female	38	San Francisco, CA	Hemingway	UX Researcher
Sidney	Female	22	San Diego, CA	Hazel	Software Engineer

3.1 Informants

In total, we conducted 19 semi-structured interviews with tech workers. Eight interviews were conducted in person; the remaining 11 were done remotely. All interviews were audio recorded and transcribed. Table 1 lists the demographics as reported by our informants. The average age of our informants was 32 ($SD = 4$) and gender was roughly distributed equally between female and male.¹ Most employers were located in technological hubs (e.g., Silicon Valley).

15 of the 19 interviewees were recruited through personal contacts. Though we did attempt to recruit beyond these contacts through other approaches, including social media and a tech worker listserv, it is possible that due to the sensitive nature of the research topic, informants with prior contact with us or our colleagues were more comfortable speaking with us.

3.2 Our Writing Process and Style

In our analysis, we took an affective writing approach inspired by Stewart. Stewart's writing style in *Ordinary Affects* [66, p.4] "tries to slow the quick jump to representational thinking and evaluative critique long enough to find ways of approaching the complex and uncertain objects." To avoid quick representations and evaluations, Stewart's scenes are characterized by "potentialities, sensations, tangents, and detours" [22]. The writing works to convey the emotions, temporality, and texture of life to the reader, conveying experience without spelling out what that experience is or should be.

This style is at odds with normative modes of writing in CSCW. The typical approach to qualitative analysis has been described as a "nonstyle" that values "limited metaphor, simplicity, and a formal, if not mathematical, precision" [72]. In following Stewart's vein, however, our work is intentionally ambiguous and avoids closure. Stewart's writing circuitously provides a way to experience the

¹We asked the question, "Are you...?" with radio button choices: "Female, Male, Something else: specify, Prefer not to say" by Bauer et al. [10]. We appreciate guidelines to use gender rather than biological sex [64] and will do so going forward.


affect of “data” in its rawness – to exude the nervous, charged, and happenstance trajectories of affect. The reader must co-produce the feeling of the text.

Our writing style is an attempt to achieve a more provisional stance in our findings, slowing down the de rigueur excitement for reductive analyses that refers to informant IDs, codes, themes, data saturation, and implications. In seeking a middle ground between Stewart’s “experiment in ethnography” [22] and normative styles of writing in CSCW, our nomenclature deviates from Stewart’s in several ways. First, aside from a preface and some more theoretical scenes, Stewart’s book is mostly without any explicit statements on interpretation or contribution. We, on the other hand, clearly demarcate the researchers’ voice to guide the reader. Second, while Stewart’s structure is flat, we have sections and subsections for our various voices. We devised the following notation:

THEME 1

This is the researchers’ voice (V_1). This text is our interpretation of the scenes that follow (S_1, S_2, \dots). It acts as commentary to guide the reader between scenes and sections.



The above fleuron () acts as a separator from the researchers’ voice and the scenes.

Scene 1. This is a scene (S_1) from a single informant pertaining to V_1 . This writing style allows the reader to see each scene as “happening” to a character. Scenes have a descriptive title, are written in the third person and derive from our interview transcripts, often using the speaking style or direct words of informants.

Scene 2. This is another scene (S_2) providing another informant experience pertaining to V_1 .
...

Subtheme

This is the researchers’ voice ($V_{1,1}$) and interprets a particular aspect of Theme 1. The scenes ($S_{1,1}, S_{2,1}, \dots$) that follow pertain to $V_{1,1}$.



Scene 1₁. This is a scene ($S_{1,1}$) from one informant pertaining to $V_{1,1}$...

The scenes in our paper result from an iterative process of analysis, writing the scenes, and arranging of the scenes. We began by transcribing each interview. To familiarize ourselves with the content of the interviews, we open coded the transcripts [17]. Codes that resulted from this process included, for example, “work communication – disagreement” and “response from higher-ups.” Initially, everyone on the research team coded the same subset of interviews. The remainder of the interviews were coded by individual members of the research team. We discussed, merged, and renamed codes during meetings.

With these initial codes as sensitizing concepts [17], we returned to each transcript to write stories (scenes). Taking Stewart’s approach, we wrote scenes in the present tense and in the third person to convey immediacy and that these are drawn from real utterances [66, p.5]. Some scenes were told linearly in the transcripts by informants; we constructed others by drawing on different threads in the transcript to create a cohesive narrative. Though the scenes should not be taken as direct quotes from participants, we endeavored to stay close to what informants said and also the style in which they say it – oftentimes we found that their words, with minimal editing, were far more compelling than any “improvements” we could attempt.

Once we created the scenes, we began to organize them into the narrative in which they are presented in this paper. To do so, we clustered and refined our scenes into themes and subthemes such as “scarlet letter,” “helplessness,” and “dulling” (our goal was to cluster scenes by affect and habitus, compared to our initial open coding stage). We exchanged drafts and iterated among our research team; we often returned to the scenes and transcripts to ensure that we had not fabricated nor overreached in inferring from our informants or to expand scenes. The scenes in this paper were also distributed back to our informants for member checking. We did not receive any substantial comments from informants, only clarifying minor details (e.g., correcting a pronoun) or removing minor potentially identifying details.

4 SCENES ON THE AFFECTS OF EXTERNAL CRITIQUE

THE ALLURE OF TECH

Many workers we interviewed had sought jobs in the tech industry, especially at a well-known company. To land a job there was prestigious. In these companies, many felt they were surrounded by the elite. They received validation from others. They worked hard to be here, and many felt they now belonged to an exclusive club.

Beyond status, tech work’s allure lay in the high pay for those in certain roles – opportunities for riches. This economic success validated tech workers’ long hours and other frustrations.



Living the dream. Casey had first worked as a contractor. He couldn’t believe it when he then got a full-time position. Everyone he met was like, “Oh my god, you work for them?” It was huge.

External validation. When Jaime’s company IPO’d around her first-year anniversary, it was just another day at work – though exciting! But when she got some messages from her friends outside of work – “Congrats!” “You are going to become rich!” – that led her to reflect that, yes, this is a pretty significant milestone! The acknowledgment made her feel more valued. It was the experience of being part of a group where people outside of the group were trying to celebrate for them.

This reminded her of when she got her offer to work there. She felt pretty neutral – a little happy that she didn’t have to move – but once her friends got excited, she realized: this was good news.

WEATHERING THE TECHLASH

The techlash transformed the rosy and respected relationship many tech workers we interviewed had with their neighbors, families, and in the public eye. Many told us that a new malaise permeated their workspaces. More inexperienced workers often didn’t know how to handle this. They had always felt good about what they did, but what was once exalted had become subject to derision.

External critique did not just affect what workers knew or felt about their work. It transformed the working day, invading the workspace at the drop of a hat. The campus was no safe haven. Communication technologies – Twitter, instant messaging, and emails – enabled external voices to affect workers as they worked, disrupting their sense of self. Workers felt demoralized.

Critique even followed tech workers beyond the workplace – on subways, in dating sites, on the street. It affected not just the quality of work, but a range of human relationships from the professional, to the familial, to the romantic. Like financial work after the 2008 toxic mortgage crisis [71], tech work had acquired a moral taint. And that taint generated all kinds of interruptions, confusions, and stress with which few were equipped to engage.



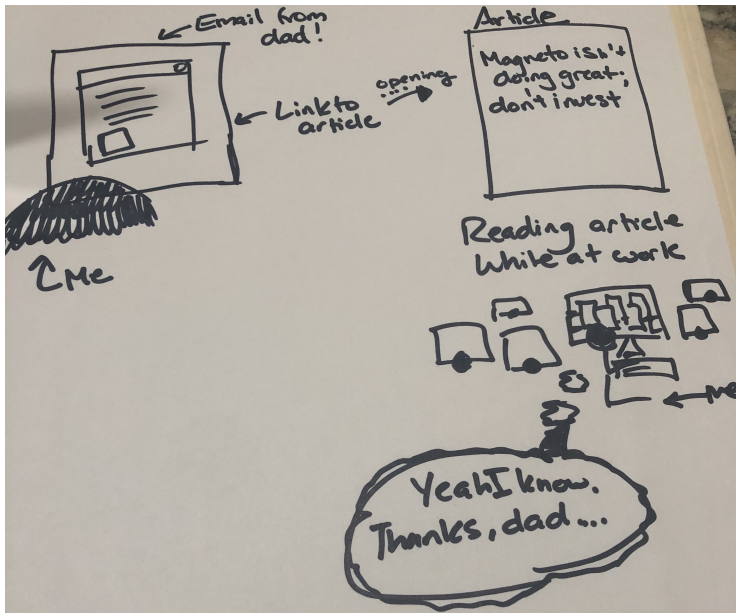


Fig. 1. Pat's sketch of an article critiquing her company forwarded from her father via email in the middle of the workday. She is amidst a sea of coworker screens and her many browser tabs.

He was not taught how to deal with critique. Kris is part of a new team, all of whom started around the same time. Though they'd gotten a heads up from their company, Gandalf, a couple weeks before the news broke, they couldn't have fathomed the sheer magnitude of the media reaction. The few weeks before it came out, they were in a Silicon Valley mood – happy hours, games, barista coffee breaks, constantly at each other's desks. When it came out, it came out big – front page news around the world. After that, no one wanted to play anymore. No one knew what to say. It was a hard blow – even a trauma for some. Kris's starstruck feeling about the company has quickly evaporated. Nobody seems to know how to deal with the critique.

The loaded inbox. Pat's dad never sends her fun emails, like pictures of him and her mom. It's always something very dense, where she needs to send deep thoughts. And, often, these emails are not-super-flattering articles about her company (Figure 1). She receives these in the middle of her workday. It's a real strain to deal with the disruption. Her job isn't very glamorous to begin with – the emails demoralize her, make her want to search LinkedIn for new jobs.

Is this like working for an oil company? Casey worked hard to transition from contractor to full-time employee at his prestigious company. Only coming up on two fucking years, everything changed. At a recent conference, people made faces or rude comments when Casey told them who he worked for (though they also asked if he could put their name and resume in for a position).

And Casey's on dating apps, right? It used to be fine, maybe even helpful, to have his company listed on his profile. Now, on a date, he borderline got into an ethical "how do you feel working for the company" kind of conversation.

He told us that before talking to us, just this morning, he thought "at what point does working for this company start to feel like working for an oil company?" I asked him why this morning. He

said it's a thought he has had before, but also "it was part of the fact that you reached out to me. You know, presumably you're not asking people at small start-ups this."

SCARLET LETTERS

Another peculiar torture was felt in the gaze of a new eye. When strangers looked curiously at the scarlet letter... she could scarcely refrain, yet always did refrain, from covering the symbol with her hand. – Nathaniel Hawthorne's *The Scarlet Letter*

External critique does not only come as questions, emails, or links to articles. It comes as people stared, glared, and prodded tech workers in public. The schwag – hoodies, bags, and laptop stickers – suddenly became a liability after the techlash. Companies even advise their employees to not stick out too much. Protests included issues of "misinformation," gentrification, or privacy and surveillance issues. But people targeted the tech workers in their midst rather than the managers and owners of the companies. For the tech workers we interviewed, this was their new normal.



The logo, it became almost like a scarlet letter. Dakota is on the subway, minding his business, listening to music with his headphones on. A first-generation Caribbean immigrant, he had grown up hypervisible as the only person of color in his town. But this is a new thing. He turns to see something out of the corner of his eye. It seethes with anger. He tries to ignore it, but it hovers about, buzzing at him. Their mouths move, grumbling for attention, speaking in a sort of Peanuts-like dialect: "Wah, wah <angrily>."

Pulling out his headphones, he says, "Excuse me?" Then they say it and he realizes. The scarlet letter drew them in. Like many tech workers, Dakota got company schwag – a bag proudly displaying Koala's emblem. He calls it a Scarlet Letter. So many things are spinning through his head. He's trying to piece together a puzzle in a split couple of seconds before he can even respond. Who is this person? What do they want? Where are they coming from?

Nonetheless, he's numb to this déjà vu of hypervisibility. "Here we go again." Once he figures out what they are trying to do, he puts on his headphones, turns away, and kept going.

Later, he took a black marker and scratched out the bag's logo. But that wasn't enough. He removed the stitches. Yet, there was parts of it that you could still see through the removal. So he eventually used a different bag.

Be quiet about who you work for. Charlie had learned that clothing could provoke bitterness about gentrification. The housing market is tight where he lives. Many perceive tech workers as forcing people out of affordable housing. The public think companies like Banana don't participate positively in civic life. After all, Banana fought back against popular city ordinances to mitigate their impact.

You won't be popular walking downtown in the city with a Banana sweater or hoodie. Banana told them, from a security perspective, "Don't be loud about the fact that you are working for Banana." Charlie tries to be incognito when walking outside the building. He tries not to stick out.

Charlie heard a similar experience from a coworker. "I felt like people were giving me dirty looks while I was commuting on the bus," the coworker said, "so I no longer wear my hoodie outside of the office."

THE TECH WORKER'S EMOTIONAL HABITUS

Tech workers develop a repertoire of emotional practices that pattern how they tend to respond to critique. We heard from so many that arguments should be "rational" or even "data driven," not "emotional." Passion or stories of personal impact might be dismissed as anecdotal. Critiques might be dismissed if they are not ones tech workers can "work with." A critique without an engineering

or design solution is exasperating, often dismissed by tech workers we spoke with. Tech workers do critique and offer feedback, but mostly as it serves to improve products rather than slow down or stop productivity.

These emotional dispositions have a structure to them – what sociologist Deborah Gould calls “emotional habitus” [26, p.34]. Habitus explains social behavior through the durable and even habitual ways people learn to walk, talk, move, and feel with their bodies through their life experiences. These habits of interaction go along with cultural norms, meanings, and moral valuations that tend to legitimate structures of power and violence [15, 26].

By the time public scrutiny or critique arrives on the scene, the social life of the response has been structured by education systems, family structures, and gendered, raced, and classed experiences. It is this structured response that is emotional habitus.



Can't translate to binary. Morgan draws me a picture (Figure 2) to describe her experience with critique. Inside, the house of Gambit is nirvana, a hermetically sealed environment. Grass and flowers abound. Engineers have their faces buried in computers, punching in ones and zeros to produce code. But outside, these hot, red clouds approach from the horizon. On the TV blares announcements that Gambit endangers you. Doubt hovers over users as they furiously type into their smartphones.

Morgan tells us that users see her as the human face of Gambit. She's absorbing the heat from these looming clouds: the screams from users about their negative experiences with Gambit. But, she needs to stay above the fray. Her ladder needs to be long enough to see the forest for the trees. She's responsible for addressing this with a measured mind.

And, here Morgan is, stuck in between, balancing precariously on a ladder looking into Gambit. She's knocking on the windows, trying to break in. She wants to tell them about these messages coming from the outside. But, she told us, if she tells her managers stories from her users, they don't believe it. “Oh well, it's just one person,” she says as she recounts one dismissive kind of response.

For the devs, it's always, “What do you want me to build, man.” “Ship or don't ship, just tell me.” But you get these nuanced people problems and this news cycle behind how people are feeling. That's very hard to translate into binary. They always want to know what's actionable about it.

Useful Critiques

There are rarely simple technical solutions that can address issues brought up in critiques. Scholars of technology and development have argued again and again that inequities and harms are often because of social relationships in which some have power over others, whether through resources, the ability to assert truth, or violence. Technology reflects and amplifies that [5, 24, 60, 70]. These are not critiques tech workers alone can address. And the call to simply stop doing what they do struck some tech workers we spoke with as naive. There are so many societal and systemic issues intertwined with the actual product that it isn't as easy as turning off a switch. Or the act of not building something is not conceivable for workers trained – habituated – in computer science and engineering programs where problems always have a technical solution and building is privileged over analysis.



Give me something I can tackle. Charlie liked to challenge his friends, many of whom were heavily involved in the nonprofit sector, volunteerism, and social justice issues: “What does it mean for a

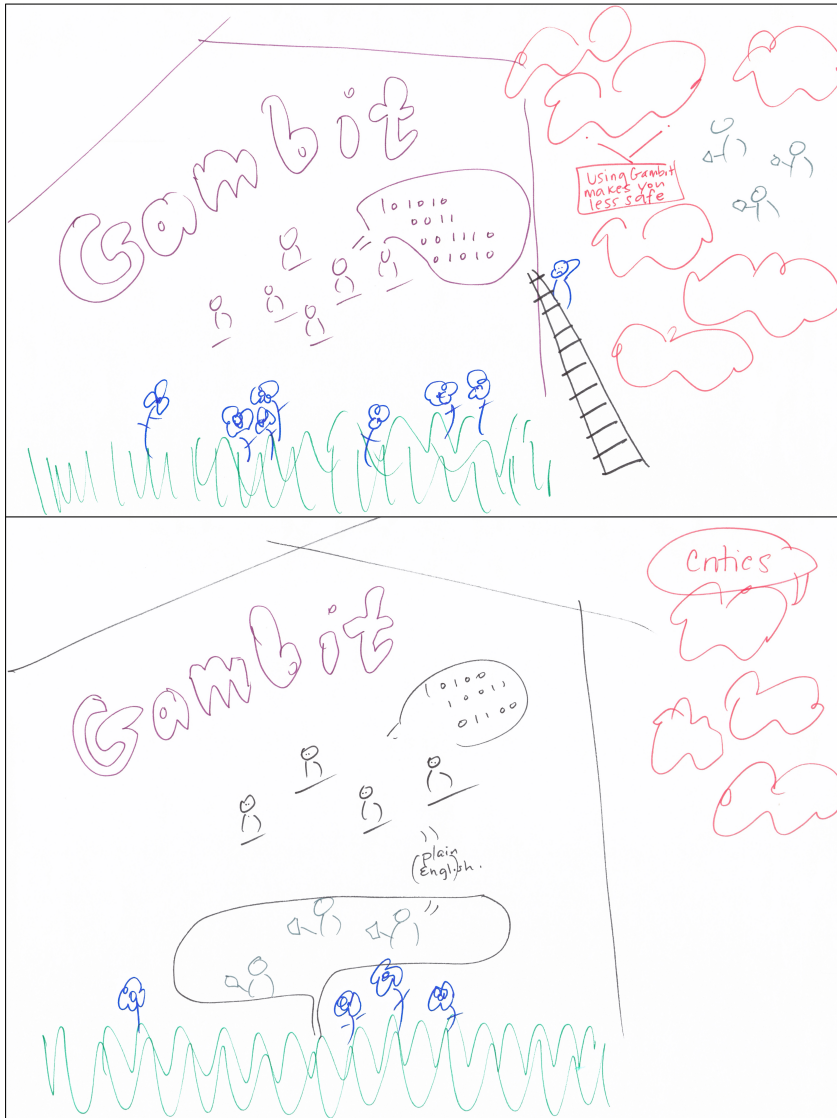


Fig. 2. Top: Morgan weathers critique from outside, standing between users and the busy developers inside Gambit’s lush, green nirvana. Bottom: Morgan translates critique by outside actors for Gambit’s developers within. In both pictures, the Gambit building is quickly sketched with the pointed roofs iconic of homes in the US.

company to be considered ethical?” They wanted Banana to fix all the problems from colonialism to capitalism. This was, in Charlie’s mind, a simplistic critique. Charlie provided us an analogy:

Suppose there’s a recording device that someone puts in their house and then this household has children and these children have friends and then the children’s friends come over and talk to the listening device. Now the state of California is suing tech companies for recording children without their consent. The critiques he hears amount to something like, “The company just should stop recording those children’s voices.” But, that might not be technically doable, Charlie argues.

How good are they at detecting when a child is talking? What if a child needs help and we ignore them? Often, people are oversimplifying the implementation details. They think that too much is within the power of these companies to be able to catch those edge cases or foresee them.

He thinks this critique extends to discussions about machine learning. There's a lot of criticism that's warranted – that machine learning algorithms really aren't objective, they're picking up the biases of the people that train them or the data sets that go into them. But if you go, "Okay, stop doing that," do you have an alternative proposal of where to build the training data set?

"Okay, fix colonialism and capitalism." What? Charlie can't do anything about that. It's not a real critique. He would've loved if they followed up with, "Hey, but more realistically or more practically what about this thing?" Then they could have talked about what a solution would be to some practical, concrete thing that the company could try to do.

Ultimately, Charlie told me, no answer other than to quit, to not participate in Banana being profitable, would've satisfied his friend.

Tech Work is Teamwork

A key characteristic of the tech work habitus is that it celebrates conciliatory collaboration. Rather than argue from above, tech workers see themselves as in the trenches, making real change from within the company through teamwork. Inside the company, they give each other constructive critique, ammunition to form coalitions, and push it through the proper channels when they want to make real change.



Changing tech work from within. Kerry was aware of the issues with the company when he joined. When he was making his decision of where to work, a lot of his close friends were like, "You should take this job – because you'll have the ability to make impact." He told us that even though he gets pushback from others (his own brother asked him, "How do you feel about working to destroy democracy?" during a recent family visit – Figure 3), his close friends understand why he is there – and he feels comfortable with this decision.

In his opinion, you can stand by the sidelines and critique all you want – or you can try to be the advocate to push the company into a better world. Kerry chose the latter.

Rational Movements

Tech workers can't address a critique by themselves. They need political savvy and emotional intelligence. They recruit allies from within to form a bullet-proof case; numbers help too. They don't attack each other – this would be a critique outside the habitus; they listen to all viewpoints and form a decision that their coworkers would call "rational."

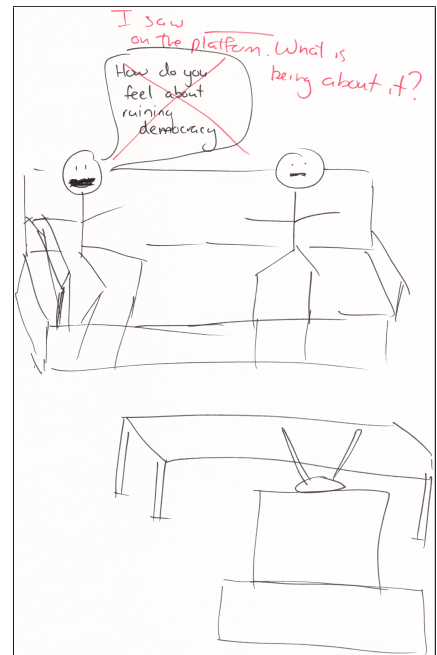


Fig. 3. Kerry being critiqued by his brother, and what he wished his brother said instead.

Politically savvy. Kerry wasn't able to give too many details, but he told us that he does make change in the company. One example is a problem he found out about from his own day to day use. At his company, if you have a strong idea, there is a flow to doing it: first, you have to have the problem formulated in a way that identifies the problem but also comes up with a solution (he looped in a senior engineer who helped him do this). Second, you need to get the idea to the right people who can make the decision (he got his idea proposed to managers). Once you do these two steps, you can get your issue onto a road map and worked upon.

He has learned over time how to frame problems at a big company with lots of bureaucracy. Saying "I disagree with this and this. I think this is terrible" is just not going to cut it. Instead, he's been coached to try to understand their viewpoint. That way they don't feel attacked – it becomes more of a collaborative process of working together to fix something.

The Cross-functional Tech Worker

Many tech workers are cross-functional. They work with and are managers, marketers, developers, and designers. Because they function much like consultants for their own company, this can hamper their effectiveness in "following through" on a critique. There's only so much one can do. Even when they try their best, it's a balancing act to deal with critiques among all their other responsibilities.



Can't always follow-up. Kris shared his approach to convincing others he'd found a serious problem with their product. He would find more researchers, including quantitative researcher to supplement his qualitative data that was sometimes perceived as anecdotal by the higher-ups.

It generated a huge amount of buzz. He wasn't sure how it was being addressed. Off to another team he went. Through the grapevine, he thinks it was addressed, maybe four months later.

The Vocal Tech Worker Inside

Despite what it may look on the outside, tech workers are not silent. They can bluntly critique their peers – that is precisely the tech habitus [65]. Those experienced with the academic world find the industry world a lot more functional, not as full of elitism and bias.



Ivory tower hypocrisy. Through Twitter she found out her own company, Hummingbird, was using AI for nefarious purposes. Frankie was very upset – but was also impressed at how openly people were discussing and complaining with leaders, even in a town hall meeting. She was touched to see people walking out and telling their C-level directors face to face, "This is wrong."

She's very aware that the company she works at is not perfect. Corporations are not good. They are there to make money and make mistakes.

Since starting at Hummingbird, Frankie has had time to mull over her time in academia. She's realized that academics are very comfortable doing critiques of industry. But academics aren't so good at critiquing academia. And so Hummingbird was a contrast. It was nice to see a company – not perfect, has a lot of flaws, has a lot of problems – whose workers were explicitly emailing the entire company to be like, "This is not okay." Tech workers were mobilizing and challenging C-level executives to defend their decisions at the hot mic in company-wide, streamed forums.

Would I protest? Pat had sensed that something was wrong related to her company and had not taken any real action – just made snide comments with coworkers. She felt bad when news then came out that people actually had lost a lot of money. If it was worse, she wondered, would she still be on the sidelines, or would she try to do something to change the outcome?

The Secrecy of Tech Work

Though they are vocal in the workplace, tech workers are silent to outsiders. That's the nature of business. It's frustrating to tech workers – they're doing tons of work to deal with critique internally, but it is often invisible. They can't say anything. Silence is interpreted as complacency.



Yes, we are addressing. Kerry's frustration with working from inside the company to create change is that you can't really talk about how the problems that users are bringing up are being addressed until they are launched. So everyone assumes that the company doesn't care at all about issues. This is a bit strange, as of course nobody would want to be associated with this terrible stuff! Even from the company's perspective, it's obviously not great for the company to have this publicity.

You don't see the projects we kill. As a researcher, Emery isn't evaluated just on which products she ships but also the ones you kill. You get a lot of credit for preventing bad experiences at Cedar. Several times she has sat down and said, "Nononononono we cannot do this, this is not gonna work, this is a really bad idea."

Frustratingly old news. Several of her colleagues excitedly said, "Let's go see this topical panel!" Taylor was very excited. The panel was related to something she worked on at Hemingway.

The room was packed. This was good – people are interested in this!

But something was off. The panel was about a technology Hemingway works on, but everyone sitting up there on the panel was an academic. There wasn't even one representative from industry.

The panel was preaching to the choir, the choir of academics that is. Everyone on stage was agreeing with critiques of industry players, saying, "Why didn't they think of this?" "Why didn't they address this?" They weren't speaking directly to Taylor and her coworkers. But she felt directly spoken to. She is receiving critiques about all of the ways in which they've been negligent or have done something that was not thoughtful or should've done better research on X, Y, Z.

This is old news. They're critiquing products that they studied and submitted a publication for review at least half a year ago. Meanwhile, the product has moved on in different directions. She's frustrated sitting there having to be silent, thinking, "Yes, we did think of that! Yes, we did do research on that! Yes, we fought to do certain things in the product!"

And, just because something doesn't make it into a shipped product, doesn't mean that there weren't people who didn't fight for it. She is one of many, internally, advocating for the end-user to their engineering teams, design teams, and executive leadership. She doesn't always win. It's the best instantiation of what is going to ship before it ships, but she doesn't make the final decision.

She feels this cognitive dissonance with the critique and the temporality of how things happen internally in industry because she simply can't talk about things until after they're released.

BUT TECH WORKERS ARE GOOD PEOPLE!

One set of tech workers we interviewed saw tech workers as essentially good people and companies as made up of these good actors doing the best they could within constraints taken as given. Critics, from academia or journalists, for example, could offer up something new, but did not call into question the fundamental organization of the company or of institutions. These tech workers felt these structures adequate, given the good intentions, to remedy mistakes and ultimately do good.

Some met critiques with fragility – frustration their good intentions and feelings as individuals featured nowhere in critical reactions. In some cases, this could become an impulse to center one's own feelings rather than the harms to others. This was a sort of "tech worker fragility," borrowing from DiAngelo's [20] "white fragility" diagnosing how progressive liberal whites react

to critique in ways that can shut down anti-racist work. Others met critiques with a “tough skin,” emotionally distancing themselves from critique – even when those critiques targeted individuals as representatives of the company.

Other tech workers expressed frustration at how others collapsed their identity with the company. Collapsed thus, critics treated tech workers as targets of mistrust rather than potential allies.



People are doing their best, but there is more to learn and work on. Despite all the critiques, Kerry is staying at his company, even though the job market is good. He stays because most people at his work are in line with his beliefs – what they are trying to do is good. Plus, even if his company went bankrupt overnight, the problems aren’t going to go away. The problems are deeper rooted in the type of industry and current society – a competitor would just replace them.

He sees his role as understanding: what made these problems happen? How can we solve this? How can we be more transparent? How can we do this in a way that everybody believes works?

Kerry keeps an eye on what people are saying about the company, rather than shielding himself from it. In the academic literature from time to time he does hear new problems to address. Often, the more public critiques are ones that the company has been working on already.

Heartbroken employees. Jaime wishes that when the big news happens, reporters understood how heartbroken the employees are, how hard they are working, how passionate they are – the vision, the culture, the team, the good thoughts people have, and the hope they have for avoiding bad things in the future. And change was happening! You see people getting fired, the new CEO gave a good speech and a clear road map of things that would change, and employee small talk shows her the culture is getting better for work life balance and less aggressive.

Blurring the Tech Worker and their Company

Tech workers are sometimes reduced to cogs in a machine, without capacity for agency and feeling. Suddenly now that you are a worker at company X, you are only seen as X.



Ostracized by academics. Having moved from academia into industry, Taylor feels she is no longer respected as an individual doing research. She is part of the machine, a Hemingway representative.

At a conference presentation, Taylor’s colleague stood up and asked a question and introduced herself as an employee of Hemingway. The presenter engaged Taylor’s colleague in a vibrant back and forth. “I would love to chat with you more about this.” “That would be great. When the happy hour starts, let’s find each other.”

In fact, they did. They went over and were standing next to each other in line for food. And a very senior academic came up to the presenter, presumably did not see her colleague, “Oh, don’t let these Hemingway people convince you,” or something like that.

She’s not even thought as an individual with a capacity for individual thoughts and rational discussion. She’s a Hemingway person – that’s it.

This critique is not about me. When Tate hears critique from the outside, he honestly does not feel like it is directed at him. It’s directed at upper management, the founders. He feels so distant from those people, doesn’t feel any allegiance toward those people at all.

Critiques are a joke. Critiques didn’t really get to Jaime, either. But this is because she knew they were typically not true. It becomes more of a daily joke at work (though she realized the PR team

had to deal with these). Jaime thinks these critiques do tend to get to other employees, but she doesn't really have an emotional attachment to the workplace – she can always change companies!

That person is always a critic. A critique that did bother Jaime a little more was from Peter, a student in her lab. Most people just congratulated her without saying too much when she got the job. But she was at a meal once with Peter and her advisor, and he was trying to share the incidents that had happened with her company with her advisor, like gossip! It was extremely awkward for her and frankly felt disrespectful, like he was saying something bad about her decision-making. Jaime started to see him as a critical personality – someone who is critical of everything. That helped.

Skin like scales. Dakota has dealt with a lot. When his family first moved to Florida from the Caribbean, it was really, really racist. It was the '90s. He was the only person of color in the class and had a Trinidadian accent. They called him the N-word and told him to go back to where he came from. People singled him out.

At his previous company, he got vitriolic critiques. "I can't believe you work at Fish." "*You guys are the worst.*" He was personifying the company to them.

Before joining his current company, his closest friends, colleagues, and family members questioned his choice. "Are you sure you want to work at this company that is in the news? People will judge you." But he did his homework, learned about Koala's mission, spoke with the people there.

He told us that you can look at it chronologically – dealing with race as a kid, then as a grown adult at Fish and then Koala – it's building on each other. It starts to toughen your skin like scales. Not that you don't care about the critique, not that it doesn't hurt, but it does toughen one up.

It's not personal. Critique also *bounces* off Charlie, also because of his past experiences with critique. During his tenure at the Air Force, he experienced the spectrum of very positive to very negative reactions when wearing a military uniform. Internally, he reasoned, it didn't have anything to do with me. It was more about that person's perception of military in general.

This has toughened him up. Now he can work in tech and not feel bad about it.

YEARNING FOR AN ALTERNATIVE HABITUS

Some tech workers take another path, forged by influences from their past and around them. They are not satisfied with the repertoire of emotions permitted by the emotional habitus of tech. They seek new attitudes for feelings that don't quite fit the norm. Instead, they "unmake and transform" [26, p.39] habitus to defy feeling rules [32]. They don't necessarily toe the line. They grow willing to push boundaries by bringing in outside ideas, by stirring things up, and even becoming adversarial to change how the company works.



With a little help from my friends. If you had asked Tate what he thought about tech industry critiques when he first started grad school, he probably would be much closer to the average worker. But he met people in grad school who were vocal in their critique and describes himself as a product of being won over by critique. Tate is now critical of exploitative companies and capitalism more broadly. At work, he is open about his views and speaks his truth.

Getting it wrong. Riley was in her car driving to work listening to her usual podcast, which had an episode about Westlake – where she works. Westlake had been in the news for some issues related to gender diversity and harassment. She said that it seemed like they had some "men rule the roost" narrative that they were trying to push without having done much research – the story had only come out two days before! They were trying to talk about her experience, and they were getting it wrong.

Her only experience with gender issues was that people were giving her too much – being too nice, too many opportunities because they wanted to see women promoted. When she compared this with her time in investment banking, it was completely different.

She feared that these callouts would lead the company to stop trying to be better, and it was frustrating as she had been trying so hard to create an inclusive workspace as a new manager. She participated in walkouts and spoke among her team about these kinds of things all the time. This narrative was exactly the kind of thing that would deter young women from joining the company.

Being constructive. A couple years ago Casey had watched this guy's videos online and loved them. Since then, he had met him a couple times and followed him on Twitter. He tweeted a lot about the tech industry. Casey was on the fringe of a covert organizing group at his company and some of the issues he brought forth in his company were those that this guy had brought up as important, like companies contributing to political funding.

Recently, this guy started getting a bit more accusatory, borderline bullying, toward employees themselves. It felt like a personal affront to Casey – he admired him, and it was hard to feel like there was no mutual respect there. This guy's tone has since gotten better, more constructive – "Employees, do something, you can make it happen!"

Doing your homework. Coming from a hippie, activist, liberal arts college, Sidney and other students spent a lot of time discussing where they were going to apply for jobs. But a lot of people from her school still went to Google and Amazon. Even the guy she was dating at the time, with whom she had lots of conversations about their shared leftist attitudes, went to Amazon. But she tries hard not to judge. She wants to support her friends in the job search – I want you to get a job!

But Sidney nixed the Big Four, despite the money and prestige. She did her homework and interviewed at companies she found to be relatively harmless. Someone gave her a tip to search for "[Company Name] controversy" and see if anything comes up – sexist stuff, internal stuff, questionable work like drones, ICE (the US Immigration and Customs Enforcement agency), facial recognition, etc.

She went ahead with her company, Hazel, because, with their product, it's hard to make a strong argument that they're ruining the world. She liked everyone she talked to at Hazel. They were all nice. She liked that it was a pretty solid, publicly traded, stable company that's not going to go under. It was good for her career and her mental health and happiness.

Sidney told us that, of course, she sometimes feels insecure about her choice. Hazel is a fine choice, but maybe career-wise other more "prestigious" companies would've opened up more opportunities.

Mother knows. "No, that's BS," Frankie's mom told her.

Frankie was touched by a globally coordinated walkout across Hummingbird's various locations. The walkout protested sexual harassment cases at Hummingbird that were surfacing where the perpetrator was protected but not the victims. It was sort of a #MeToo moment. Even more, she was happy that the top C-level people at Hummingbird had sent out an email the night before the walkout, "We approve this walkout. Everyone should go do it."

But, "it defeats the purpose of your walkout!" her mom said. "If it's approved by your leaders, it takes away the point that you're trying to make. They're trying to take the narrative from you."

Frankie did feel a little *weird*. Would people have participated without that eleventh-hour email?

She doesn't think her mom's wrong. Her mom grew up in a different generation from her where fighting for these things was much more common; as a young adult, she volunteered for civil rights and workers' right organizations, participating in peaceful marches and boycotts. Her mom had seen a lot of the kinds of moves that Hummingbird was doing.

Finding Other Spaces

Despite the camaraderie of teamwork engendered by companies, the tech work habitus makes some feelings shameful or risky. Some tech workers longed to step out of their company, to seek alternative spaces, both online and offline. They nervously wondered if others felt how they felt. Could someone have their back? Could someone be here for them, no matter what they were feeling? Their paranoia about their companies didn't allow them to relax with families and friends.



Roses and Thorns. When shit hit the fan for Kris, the company initiated meetings. In *Roses and Thorns*, everyone goes around the table and talks about how everyone hates them and coming into work sucks now. What he really wanted to hear was that the company is on their side.

Kris could not really commiserate with his friends. In his iMessage with his closest friends from band they were egging him on, talking about how he's destroyed democracy and is in cahoots with the Russians. But he was in no mood to joke around about it. He was actually really scared that he wasn't safe, even in that text message chat. They might fire him for what he says, he worried.

Maybe someone will notice me. Pat longed for support that she did not ask for directly. Pat had one article up her computer for a very long time. At first, she told us it was weird of her to do that because someone might see it — but then she said that maybe that is why she did it, so someone like-minded might see it, and they could have a “we're in this boat together” conversation.

Friends now hold back. Unlike some informants, Alex feels like his friends are holding back from sharing their thoughts on the company where he is interning. He has friends who are very engaged in issues like gentrification. Part of him wants to be like, “What should I do?” His friends don't bring anything up when he talks to them. He thinks that maybe they don't want to be rude.

5 DISCUSSION

The methodological approach of this paper strives to engage with texts in a way that opens up new understandings. Via scenes inspired by Stewart's writing style, we come closer to tech worker affects without premature reduction or overzealous unpacking. Affective writing presents an additional approach to alternative writing styles in CSCW and HCI, which have included vignettes that interleave description and interpretation [18] and confessional writing [33]. Our aim with affective writing is for readers to discover their own interpretations — ones that may conflict, complicate, and confound our scenes and their discussion in this paper. Readers may find something coming together after flipping back and forth between pages, rereading scenes, and slowly digesting — alone or with others — to discern meaning. This paper's “design” affords multiple interpretations [58]. Therein lies a key contribution of this work — to produce new works upon each reading [37]. Below, we provide one such reading, our own, on how critique's now ordinary nature exhausts the emotional habitus of tech work — an analysis of which shines light to new political horizons.

5.1 The Emotional Habitus of Tech Work

Through our reading of the above scenes, we propose an understanding of critique not only as analysis, but as an affective process tempered by the emotional habitus cultivated in tech companies. Gould [26, p.34] describes how emotional habitus “provides members with an emotional disposition, with a sense of what and how to feel, with labels for their feelings, with schemas about what feelings are and what they mean, with ways of figuring out and understanding what they are feeling.” The unconscious force of tech work's emotional habitus is powerful precisely because it can “generate

the sense that what one is feeling is entirely one's own" (p.35). In our study, emotional habitus gives way to inclinations toward how to feel about critique.

The structuring potential of emotional habitus is intimately tied with its political horizons – the “attitudes within a social group...about what is politically possible, desirable, and necessary” [26, p.3]. Without being all determining,² emotional habitus gives affective charge – an emotional force – to desired political actions. Emotional habitus, when dealing with critique, orients tech workers to particular political actions *and* inactions. We can get closer to emotion as a way of confronting ethics, technologies in the public interest, and even wider aspirations toward “the good.”

The tech worker habitus appears to privilege a select repertoire of emoting – those that cohere with the Silicon Valley ethos of rationality, hope, and technological utopianism. We saw workers fill with pride when describing the validation others provided on the exclusive status of their occupation. Workers described feeling assured that those around, all good and talented people, are trying their best. These feelings of goodwill engendered by emotional habitus drove tech workers to particular kinds of action. For instance, workers cited a proper “flow” to address critique internally – ally with co-workers and representative data (not “edge cases”) to bolster your case, avoid attacking others, and don't bring up a problem without thinking of a solution first.

Some tech workers were skeptical of critiques that were not easily handled through the internal processes supported by the reigning emotional habitus. One worker's response to concerns about child surveillance by voice assistants was to argue that it is not “technically doable” for a device to exclude children's voices. Thus, the merits of a critique were judged from an engineering perspective. Another worker worried that relentless critique could halt company efforts to do better.

This prevailing habitus bears similarity to what Stark described as “discursive pragmatism” – an ethos he and Girard observed in new media startups. Discursive pragmatism called for constructive rivalries based on principled justifications that stop just short of allowing arguments to displace action [65]. This ethos emerges when companies require adaptable employees who can respond to technical, legal, or competitive changes and evaluate new possibilities from the many perspectives market actors might have. The concept of habitus, however, is a set of dispositions that mask and legitimize the operations of hierarchy, power, and violence [77]. When we analyze Stark's discursive pragmatism as an emotional habitus, we notice that it legitimates the fundamental assumption that tech companies must build, operate for private profit, and a number of other assumptions that fuel what techlash recognizes as an exploitative and profit-driven system of technology production. We turn to describing the now ordinary character of critique, partially due to ubiquitous technologies, that gives it the power to challenge and thus crack this emotional habitus.

5.2 The Ordinary Power of Critique

Critiques are ordinary things that matter to tech workers. “Things that matter in the ordinary,” according to Stewart [22], “have a peculiar materiality – one that is at once abstract and concrete, ephemeral and consequential.” Though she does not elaborate, Stewart alludes to the “strangely connective tissue produced by handheld devices and social media” [67]. For tech workers in our study, critique was particularly powerful because it pervaded work, the home, and any moment that could be interrupted by a phone, computer, or ambient screen notification. Tech workers could neither anticipate nor escape critique, virtually or physically.

Critique manifests in multiple mediums and is delivered by many messengers – pundits, scholars, coworkers, friends, and family. In our scenes, tech workers receive the products of written criticism not only through journalism or academia, but also through links shared by loved ones, Twitter

²Like Gould [26, pp.163–164], we do not argue that one's emotions *determine* their political action. Rather, they orient one to attitudes and imaginaries of action.

streams in which other tech workers recirculate and legitimate written materials, and panels that discuss and resynthesize written work and embodied knowledge. Critique, then, became utterly ordinary. Tech workers could encounter it any time. Some learned to be paranoid, to expect critique in every corner – of their web browser, workplace, transportation, or local city.

We highlight the asymmetric character of critique. Some critiques caricature a tech worker. Recall when tech workers from academia felt suddenly robbed of their individuality and respect, now labeled as a mindless follower of a company. In one scene, workers sat fuming, listening to antiquated critiques from academics (products iterate quicker than publication cycles). The public does not see the work employees do of killing potentially damaging projects before they launch. Critics have a powerful mouthpiece in part because tech workers must suffer in silence as they are accountable to company non-disclosure and trade secrecy. Some critiques stung more than others. One tech worker described critiques of her work – from family, *while* she was at work. The result was that she felt demoralized and cynical.

The source and temporality of a critique matters. Is the critique made by someone trusted and who can be spoken back to? Is it made by one's own occupational communities [73]? Is it made by people who are also willing to take risks to collectively do something about it? Does the critique recognize the tech workers not only as complicit but also as having a stake in the critique? Is the critique delivered at a pace and distance that allows tech workers to build up defenses or rationalize it? These properties of critique can affect whether they lead to familiar ruts or new political horizons.

5.3 Prying Open Cracks in the Habitus

Despite the durability of emotional habitus, the prevailing manner of emoting can start to feel inadequate, overdone, or unsatisfactory. These strong affective states can crack open the dominant habitus, shifting it to new emotional postures. A useful case demonstrating such a shift can be seen in Gould's [26] work on AIDS activists. AIDS activists were initially influenced by the prevailing emotional habitus of the United States that elevates "feelings like stoic nobility and gratitude toward the government" [26, p.98]. Impermissible emotions such as anger were at first suppressed, closing off militant styles of activism. Then a *crisis* shifted the dominant emotional habitus. A transformation in material conditions in the world can make it so a particular emotional habitus no longer simply makes sense. These moments of crisis are when heretical discourses can enter the scene to offer a new way of making sense of the world [15, p.170]. For the AIDS movement, the crisis was moral shock over the US Supreme Court's decision to deny the right to consensual homosexual sex [26, pp.134–136]; this shifted the political horizon from conciliatory to defiant activism.

For tech workers, a change in law that creates liability for computer technology companies or workers might be one such crisis. The 2016 election may have been another; after the election, the Tech Workers Coalition (TWC) grew exponentially. Legal shifts like the Muslim Ban [1] jolted a US tech industry owned and staffed by immigrants [52]. Debates about social media-powered election manipulation shattered the image of the internet as an empowering public square. Google employees working shoulder to shoulder with contractors with fewer benefits and protections for the same work might jar some into questioning not only the inequities within the campus, but also in tech-fueled platform labor [41]. But such habitus-jarring crises do not happen every day. For critics, the implication is that a critique might be transformative at one time and fail to pierce mass consciousness at another.

Techlash may be the precipice of a crisis because we heard tech workers emoting in ways that impugn the established emotional habitus of their organizations. Roses and Thorns conversations that once generated a feeling of camaraderie came to be seen as toothless or flat. Some tech workers,

unable to demonstrate ways of feeling that butt up against their peers, instead build up skin like scales – emotional strategies honed elsewhere in their biographies (e.g., containing experiences with racism or misogyny in the workplace). Others take a stoic attitude, framing critiques as jokes or just something a critical personality always says.

Others, we heard, seek respite from the ordinary power of critique in spaces where they can express emotions – fear, anger, despair – outside of the confines of company sociality. Vaast and Levina [71] describe how online communities serve as a safe space for employees to vent and seek social support when their occupation is under mainstream moral scrutiny. In those spaces, emotional life need not lead toward solutions. Yet for tech workers who build the communication systems on which they socialized, we heard fears that employers could police emotions beyond the workspace on social media platforms. Tech workers were cognizant of non-disclosure agreements and wary of how and with whom they could reflect on their feelings. The policies that prohibit workers from openly discussing critique and their experiences of work means that tech workers rely on public relations (PR) to dictate their replies – PR presents highly polished, measured responses, reproducing on-brand optimism and good intentions for the world to see. The implications here are that alternative spaces for feeling should be legitimate safe spaces.

5.4 Creating Solidarity between Critics and Tech Workers

How might we empower those who yearn for an alternative habitus, to amplify critique within the company? How might solidarity exist not only among tech workers in industry, but between academic workers and tech workers? When tech workers are blamed for their companies' actions, we see an opportunity missed to elaborate a systemic analysis of the problem and imagine many ways tech workers could be enlisted in addressing it. Whistleblowing about ethical concerns, however, is not protected in the US unless falling within a specific regulatory framework such as the Environmental Protection Act or the Occupational Safety Act. Neither are workers acting alone, forwarding messages of critique to company lists for example, protected.³ As the public asks tech workers to defy managerial directives in the name of ethics, we might ask public institutions and advocates whether enough has been done to safeguard these workers.

Further, by taking a systems view, we can see not just tech workers and democracy, but tech workers, public relations, product development processes, business models, legal frameworks, and even trade agreements. This presents more points of intervention. This also suggests a wider scope of relevant voices on technology, from scholars to affected communities who organize, speak, and write to reveal aspects of technology poorly understood by tech companies [47]. Critics might ask how they can enlist tech workers as allies in affecting a targeted part of the system. Tech workers might ask how they can translate critiques they receive into systems analyses that can help critics better target their energies. An insider/outsider collaboration could transform how each side speaks, listens, and even works to imagine interventions beyond the critical declaration or the actionable change request. This approach of systems and solidarity between critics and tech workers (and some tech workers are critics) can challenge the emotional habitus that demands “constructive critiques only.” It can produce a new set of repertoires that can respond to the crisis.⁴ Moreover, a habitus takes a lifetime to form. Educators also have a role in training tech workers-in-the-making with a different repertoire of emotional and action strategies (this work is already underway [53, 61]).

Just as organizations create routines and rituals to shape culture [42], we observe how organizations like TWC can also rework rituals to direct affects toward shifted practices. We venture

³Organizations like legal aid clinics and worker centers can answer questions about the legal protections [43] for workers engaged in such efforts.

⁴This aligns with the arguably fourth wave movement to a systems-level thinking occurring across a number of CSCW and HCI subdisciplines, such as health [50] and sustainability [30].

that shifts in habitus can then emerge. TWC has developed a practice that recognizes the power of affective habits and reorganizes them through new kinds of language rituals. “Workers’ inquiry” is a practice of putting tech workers at community meetings into small groups and having them describe their work, their grievances, and the connection of that work to the production of value. Networking events are a common ritual in a tech industry marked by high turnover [48] and partnership-driven work [80]. Workers’ inquiry adapts the habits of talking with industry people one doesn’t know or venting among coworkers, but directs the conversation toward reflexive analysis of one’s work with others. “Some people have appreciated just having a space where people can openly vent frustrations and gripes about the tech industry,” TWC explained in a collectively authored piece, “as opposed to more mainstream networking spaces where the expectation is that you are very cheerful and optimistic and enthusiastic” [69]. Workers’ inquiry offers tech workers one place to go to make sense of the techlash and develop a new set of experiences that can transform habitus over time. Perhaps the Roses and Thorns that rang hollow too can be transformed as a ritual.

It may be more difficult to create spaces that join tech workers across the spectrum from lower paid workers such as gig, clerical, and care workers on tech campuses with designers and programmers. These workers develop different habituses through their education and work. Coalitions are organizational forms that allow for groups to coordinate in pursuit of common goals while allowing groups to maintain distinctive organizational cultures and values. Coalition work can also require some groups undoing aspects of their habitus that create harm for other groups (e.g., more elite workers rely on outsourcing work at low wages [25, 34]). Nevertheless, coalitions with shared goals allow for work in solidarity among groups with distinct habituses [62]. Rideshare Drivers United enlisted TWC tech workers to pursue the shared goal of worker power in the tech industry.⁵ Drawing on the exemplars above, future work can redirect organizational forms distinct to Silicon Valley companies [65] – which channel creativity for innovative profit (e.g., via teamwork or hackathons [35]) – to make critiques more possible and impactful.

6 CONCLUSION

The techlash is an event in which powerful emotions circulate publicly, transforming the conditions in which tech workers work and understand their vocation. We began this project because of our shifting affects – ones we felt unable to make sense of in our more familiar social spaces. We took the experiences of tech workers amidst the techlash as a case to see beyond our own experiences and examine how affects constitute knowledge work and organizational action. In the process, we sought to illuminate longstanding questions of interest to HCI and CSCW: What is the relationship of critique to technology practice? In this moment, tech companies and their workers are facing anxieties, critique, and calls for redesign from the public. It is an opportune time to ask how tech workers respond to this wider engagement in their work and how those responses might motivate revisions and a revisioning of our fields’ approaches to research, education, community building, and critique. We offer portraits of everyday affects of tech work but conclude our work with no easy answers. Our hope is to stimulate more experiments and emergent strategies [16] for ethical, critical, and political engagements with design, systems building, analysis, policy work, and political engagement from this field.

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⁵The campaign was called Tech Worker for Tech Worker (#tw4tw): <https://www.drivers-united.org/tw4tw-donate>

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REFERENCES

- [1] 2017. Executive Order Protecting The Nation From Foreign Terrorist Entry Into The United States. <https://www.whitehouse.gov/presidential-actions/executive-order-protecting-nation-foreign-terrorist-entry-united-states-2/> (accessed 2021-01-15T02:11:46Z).
- [2] 2018. Open Letter in Support of Google Employees and Tech Workers | ICRAC. <https://www.icrac.net/open-letter-in-support-of-google-employees-and-tech-workers/>
- [3] Dinislam Abdulgalimov, Reuben Kirkham, James Nicholson, Vasilis Vlachokyriakos, Pam Briggs, and Patrick Olivier. 2020. Designing for Employee Voice. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. Association for Computing Machinery, Honolulu, HI, 1–13. <https://doi.org/10.1145/3313831.3376284>
- [4] Philip E. Agre and Douglas Schuler (Eds.). 1997. *Reinventing Technology, Rediscovering Community: Critical Explorations of Computing as a Social Practice*. Ablex Publishing Corporation, Greenwich, CT.
- [5] Morgan G. Ames. 2019. *The Charisma Machine: The Life, Death, and Legacy of One Laptop Per Child*. MIT Press, Cambridge, MA.
- [6] Sareeta Amrute. 2019. Of Techno-Ethics and Techno-Affects. *Feminist Review* 123, 1 (Nov. 2019), 56–73. <https://doi.org/10.1177/0141778919879744>
- [7] Liam J. Bannon and Pelle Ehn. 2013. Design Matters in Participatory Design. In *Routledge International Handbook of Participatory Design*, Jesper Simonsen and Toni Robertson (Eds.). Routledge, New York, NY, 37–63.
- [8] Shaowen Bardzell. 2018. Utopias of Participation: Feminism, Design, and the Futures. *ACM Trans. Comput.-Hum. Interact.* 25, 1 (Feb. 2018), 6:1–6:24. <https://doi.org/10.1145/3127359>
- [9] Shaowen Bardzell and Jeffrey Bardzell. 2007. Docile Avatars: Aesthetics, Experience, and Sexual Interaction in Second Life. In *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCL...but Not as We Know It - Volume 1 (BCS-HCI '07)*. BCS Learning & Development Ltd., Swindon, GBR, 3–12.
- [10] Greta R. Bauer, Jessica Braimoh, Ayden I. Scheim, and Christoffer Dharma. 2017. Transgender-Inclusive Measures of Sex/Gender for Population Surveys: Mixed-Methods Evaluation and Recommendations. *PLOS ONE* 12, 5 (May 2017), e0178043. <https://doi.org/10.1371/journal.pone.0178043>
- [11] Eevi Beck. 2002. P for Political: Participation Is Not Enough. *Scandinavian Journal of Information Systems* 14, 1 (Jan. 2002), 77–92. <https://aisel.aisnet.org/sjis/vol14/iss1/1>
- [12] Genevieve Bell and Paul Dourish. 2007. Yesterday's Tomorrows: Notes on Ubiquitous Computing's Dominant Vision. *Personal and Ubiquitous Computing* 11, 2 (Feb. 2007), 133–143. <https://doi.org/10.1007/s00779-006-0071-x>
- [13] Ruha Benjamin. 2019. *Race after Technology: Abolitionist Tools for the New Jim Code*. Polity, Medford, MA.
- [14] Mark Blythe and Andrew Monk (Eds.). 2018. *Funology 2: From Usability to Enjoyment* (second ed.). Springer International Publishing, Cham, Switzerland. <https://doi.org/10.1007/978-3-319-68213-6>
- [15] Pierre Bourdieu. 2010. *Outline of a Theory of Practice* (25th printing ed.). Number 16 in Cambridge Studies in Social and Cultural Anthropology. Cambridge Univ. Press, Cambridge, UK.
- [16] Adrienne M. Brown. 2017. *Emergent Strategy*. AK Press, Chico, CA.
- [17] Kathy Charmaz. 2006. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Pine Forge Press, Thousand Oaks, CA.
- [18] Marisa Leavitt Cohn. 2016. Convivial Decay: Entangled Lifetimes in a Geriatric Infrastructure. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing (CSCW '16)*. ACM, New York, NY, 1511–1523. <https://doi.org/10.1145/2818048.2820077>
- [19] Sasha Costanza-Chock. 2018. *Design Justice: Towards an Intersectional Feminist Framework for Design Theory and Practice*. SSRN Scholarly Paper ID 3189696. Social Science Research Network, Rochester, NY. <https://papers.ssrn.com/abstract=3189696>
- [20] Robin J. DiAngelo. 2018. *White Fragility: Why It's so Hard for White People to Talk about Racism*. Beacon Press, Boston, MA.
- [21] Lynn Dombrowski, Ellie Harmon, and Sarah Fox. 2016. Social Justice-Oriented Interaction Design: Outlining Key Design Strategies and Commitments. In *Proceedings of the 2016 ACM Conference on Designing Interactive Systems (DIS '16)*. ACM, New York, NY, 656–671. <https://doi.org/10.1145/2901790.2901861>
- [22] Maria Fannin, Mark Jackson, Philip Crang, Cindi Katz, Soren Larsen, Divya Praful Tolia-Kelly, and Kathleen Stewart. 2010. Author Meets Critics: A Set of Reviews and a Response. *Social & Cultural Geography* 11, 8 (Dec. 2010), 921–931. <https://doi.org/10.1080/14649365.2010.529659>
- [23] Rita Felski. 2015. *The Limits of Critique*. The University of Chicago Press, Chicago, IL.

- [24] James Ferguson. 1994. *The Anti-Politics Machine: "Development," Depoliticization, and Bureaucratic Power in Lesotho*. University of Minnesota Press, Minneapolis, MN.
- [25] Timothy Ferriss. 2009. *The 4-Hour Workweek: Escape 9-5, Live Anywhere, and Join the New Rich* (expanded and updated ed., 1st revised ed.). Crown Publishers, New York.
- [26] Deborah B. Gould. 2009. *Moving Politics: Emotion and Act up's Fight against AIDS*. The University of Chicago Press, Chicago, IL.
- [27] Daniel Greene. 2016. Discovering the Divide: Technology and Poverty in the New Economy. *International Journal of Communication* 10, 0 (Feb. 2016), 20. <https://ijoc.org/index.php/ijoc/article/view/3969>
- [28] Ellie Harmon and M. Six Silberman. 2019. Rating Working Conditions on Digital Labor Platforms. *Computer Supported Cooperative Work (CSCW)* 28, 5 (Sept. 2019), 911–960. <https://doi.org/10.1007/s10606-018-9313-5>
- [29] Steve Harrison, Phoebe Sengers, and Deborah Tatar. 2011. Making Epistemological Trouble: Third-Paradigm HCI as Successor Science. *Interacting with Computers* 23, 5 (Sept. 2011), 385–392. <https://doi.org/10.1016/j.intcom.2011.03.005>
- [30] Mike Hazas, A. J. Bernheim Brush, and James Scott. 2012. Sustainability Does Not Begin with the Individual. *Interactions* 19, 5 (Sept. 2012), 14–17. <https://doi.org/10.1145/2334184.2334189>
- [31] Stefan Helmreich. 2000. *Silicon Second Nature: Culturing Artificial Life in a Digital World* (updated edition with a new preface, first paperback printing ed.). University of California Press, Berkeley, CA.
- [32] Arlie Russell Hochschild. 2012. *The Managed Heart: Commercialization of Human Feeling* (updated with a new preface ed.). University of California Press, Berkeley, CA.
- [33] Dorothy Howard and Lilly Irani. 2019. Ways of Knowing When Research Subjects Care. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, Glasgow, UK, 1–16. <https://doi.org/10.1145/3290605.3300327>
- [34] Lilly Irani. 2015. Difference and Dependence among Digital Workers: The Case of Amazon Mechanical Turk. *South Atlantic Quarterly* 114, 1 (Jan. 2015), 225–234. <https://doi.org/10.1215/00382876-2831665>
- [35] Lilly Irani. 2019. *Chasing Innovation: Making Entrepreneurial Citizens in Modern India*. Princeton University Press, Princeton, NJ.
- [36] Lilly C. Irani and M. Six Silberman. 2013. Turkocticon: Interrupting Worker Invisibility in Amazon Mechanical Turk. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. ACM, New York, NY, 611–620. <https://doi.org/10.1145/2470654.2470742>
- [37] Wolfgang Iser. 1972. The Reading Process: A Phenomenological Approach. *New Literary History* 3, 2 (Jan. 1972), 279–299. <https://doi.org/10.2307/468316>
- [38] Hans Joas, Wolfgang Knöbl, and Alex Skinner. 2009. Between Structuralism and Theory of Practice: The Cultural Sociology of Pierre Bourdieu. In *Social Theory: Twenty Introductory Lectures*. Cambridge University Press, Cambridge, UK.
- [39] Jen Kagan. 2019. Mainframe, Interrupted: Joan Greenbaum on the Early Days of Tech Worker Organizing. *Logic Magazine Play*, 6 (Jan. 2019). <https://logicmag.io/play/joan-greenbaum-on-the-early-days-of-tech-worker-organizing/>
- [40] Seny Kamara. 2020. Crypto for the People, Invited Talk at Crypto 2020 by Seny Kamara. <https://www.youtube.com/watch?v=Ygq9ci0GFhA>
- [41] Parul Koul and Chewy Shaw. 2021. Opinion | We Built Google. This Is Not the Company We Want to Work For. *The New York Times* (Jan. 2021). <https://www.nytimes.com/2021/01/04/opinion/google-union.html>
- [42] Gideon Kunda. 2006. *Engineering culture control and commitment in a high-tech corporation*. Temple University Press, Philadelphia, PA.
- [43] Staughton Lynd and Daniel Gross. 2011. *Labor Law for the Rank & Filer: Building Solidarity While Staying Clear of the Law* (second ed.). PM Press, Oakland, CA.
- [44] John McCarthy and Peter Wright. 2004. *Technology as Experience*. MIT Press, Cambridge, MA.
- [45] Jacob Metcalf, Emanuel Moss, and danah boyd. 2019. Owning Ethics: Corporate Logics, Silicon Valley, and the Institutionalization of Ethics. *Social Research: An International Quarterly* 86, 2 (2019), 449–476. <https://muse.jhu.edu/article/732185>
- [46] Alan D. Meyer. 1991. Visual Data in Organizational Research. *Organization Science* 2, 2 (1991), 218–236. <https://www.jstor.org/stable/2635194>
- [47] Yeshimabeit Milner. 2020. Databite No. 129: Yeshimabeit Milner. https://www.youtube.com/watch?v=z-_ARP8m4Fg
- [48] Gina Neff. 2012. *Venture Labor: Work and the Burden of Risk in Innovative Industries*. MIT Press, Cambridge, MA. <http://public.eblib.com/choice/publicfullrecord.aspx?p=3339426>
- [49] Severo M. Ornstein and Lucy A. Suchman. 1985. Reliability and Responsibility. *ACM SIGACT News* 16, 4 (1985), 53–55.
- [50] Andrea Grimes Parker. 2013. Designing for Health Activism. *Interactions* 20, 2 (March 2013), 22–25. <https://doi.org/10.1145/2427076.2427082>
- [51] David N Pellow and Lisa Sun-Hee Park. 2002. *The Silicon Valley of Dreams Environmental Injustice, Immigrant Workers, and the High-Tech Global Economy*. New York University Press, New York, NY.

- [52] Alex Press. 2018. Code Red. <https://nplusonemag.com/issue-31/politics/code-red/>
- [53] Matt Ratto, Daniela Rosner, Yana Boeva, and Alex Taylor. 2019. Special Issue on Hybrid Pedagogies Editorial. *Digital Creativity* 30, 4 (Oct. 2019), 213–217. <https://doi.org/10.1080/14626268.2019.1699576>
- [54] Toni Robertson and Ina Wagner. 2013. Engagement, Representation and Politics-in-Action. In *Routledge International Handbook of Participatory Design*, Jesper Simonsen and Toni Robertson (Eds.). Routledge, New York, NY, 64–85.
- [55] Douglas Rushkoff. 2016. *Throwing Rocks at the Google Bus: How Growth Became the Enemy of Prosperity*. Portfolio/Penguin, New York, NY.
- [56] Eve Kosofsky Sedgwick and Adam Frank. 2003. Parnaooid Reading and Reparative Reading, or, You're So Paranoid, You Probably Think This Essay Is About You. In *Touching Feeling: Affect, Pedagogy, Performativity*. Duke University Press, Durham, NC, 123–151.
- [57] Phoebe Sengers, Kirsten Boehner, Shay David, and Joseph 'Jofish' Kaye. 2005. Reflective Design. In *Proceedings of the 4th Decennial Conference on Critical Computing: Between Sense and Sensibility (CC '05)*. ACM, New York, NY, 49–58. <https://doi.org/10.1145/1094562.1094569>
- [58] Phoebe Sengers and Bill Gaver. 2006. Staying Open to Interpretation: Engaging Multiple Meanings in Design and Evaluation. In *Proceedings of the 6th Conference on Designing Interactive Systems (DIS '06)*. ACM, New York, NY, 99–108. <https://doi.org/10.1145/1142405.1142422>
- [59] Katie Shilton. 2018. Values and Ethics in Human-Computer Interaction. *Foundations and Trends® Human-Computer Interaction* 12, 2 (July 2018), 107–171. <https://doi.org/10.1561/11000000073>
- [60] Christo Sims. 2017. *Disruptive Fixation: School Reform and the Pitfalls of Techno-Idealism*. Princeton University Press, Princeton, NJ.
- [61] Christo Sims. 2017. The Politics of Design, Design as Politics. In *The Routledge Companion to Digital Ethnography* (first ed.), Larissa Hjorth (Ed.). Routledge, New York, NY, 439–447. <https://www.taylorfrancis.com/books/9781315673974>
- [62] Barbara Smith (Ed.). 1983. *Home Girls: A Black Feminist Anthology* (first ed.). Kitchen Table–Women of Color Press, New York, NY.
- [63] Rebecca Solnit. 2013. Rebecca Solnit · Diary: Google Invades · LRB 7 February 2013. *London Review of Books* 35, 03 (Feb. 2013). <https://www.lrb.co.uk/the-paper/v35/n03/rebecca-solnit/diary>
- [64] Katta Spiel, Oliver L. Haimson, and Danielle Lottridge. 2019. How to Do Better with Gender on Surveys: A Guide for HCI Researchers. *Interactions* 26, 4 (June 2019), 62–65. <https://doi.org/10.1145/3338283>
- [65] David Stark and Monique Girard. 2011. Creative Friction in a New-Media Startup-Up. In *The Sense of Dissonance: Accounts of Worth in Economic Life* (2nd pr., 1st paperback pr. ed.), David Stark and Daniel Beunza (Eds.). Princeton Univ. Press, Princeton, NJ, 81–117.
- [66] Kathleen Stewart. 2007. *Ordinary Affects*. Duke University Press, Durham, NC.
- [67] Kathleen Stewart. 2017. In the World That Affect Proposed. *Cultural Anthropology* 32, 2 (May 2017), 192–198. <https://doi.org/10.14506/ca32.2.03>
- [68] Norman Makoto Su and Erik Stolterman. 2016. A Design Approach for Authenticity and Technology. In *Proceedings of the 2016 ACM Conference on Designing Interactive Systems (DIS '16)*. ACM, New York, NY, 643–655. <https://doi.org/10.1145/2901790.2901869>
- [69] Tech Workers Coalition. 2018. Tech Workers, Platform Workers, and Workers' Inquiry. <https://notesfrombelow.org/article/tech-workers-platform-workers-and-workers-inquiry> (accessed 2021-01-15T02:00:53Z).
- [70] Kentaro Toyama. 2015. *Geek Heresy: Rescuing Social Change from the Cult of Technology* (first ed.). PublicAffairs, New York, NY.
- [71] Emmanuelle Vaast and Natalia Levina. 2015. Speaking as One, but Not Speaking up: Dealing with New Moral Taint in an Occupational Online Community. *Information and Organization* 25, 2 (April 2015), 73–98. <https://doi.org/10.1016/j.infoandorg.2015.02.001>
- [72] John Van Maanen. 1995. Style As Theory. *Organization Science* 6, 1 (1995), 133–143. <https://www.jstor.org/stable/2635247>
- [73] John Van Maanen and Stephen R. Barley. 1982. *Occupational Communities: Culture and Control in Organizations*. Technical Report. Alfred P. Sloan School of Management, Cambridge, MA.
- [74] John Van Maanen and Gideon Kunda. 1989. "Real Feelings": Emotional Expression and Organizational Culture. *Organizational Behavior* 11 (1989), 43–103.
- [75] Ana Viseu. 2015. Caring for Nanotechnology? Being an Integrated Social Scientist. *Social Studies of Science* 45, 5 (Oct. 2015), 642–664. <https://doi.org/10.1177/0306312715598666>
- [76] Kalindi Vora. 2015. *Life Support: Biocapital and the New History of Outsourced Labor*. University of Minnesota Press, Minneapolis, MN.
- [77] Loïc Wacquant. 2008. Pierre Bourdieu. In *Key Sociological Thinkers*, Rob Stones (Ed.). Palgrave Macmillan, New York, NY, 215–219. <http://catalog.hathitrust.org/api/volumes/oclc/187417729.html>
- [78] Shoshana Zuboff. 1988. *In the Age of the Smart Machine: The Future of Work and Power*. Basic Books, New York, NY.

- [79] Shoshana Zuboff. 2019. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (first ed.). PublicAffairs, New York, NY.
- [80] Sharon Zukin. 2020. *The Innovation Complex: Cities, Tech, and the New Economy*. Oxford University Press, New York, NY.

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