Conclusion: Now Let's Multiply

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On November 1, 2018, at 11:10 a.m. local time, workers at Google offices in fifty cities around the world closed their browser tabs, shut their laptops, and walked off their jobs.[1] The walkout included both full-time employees and freelancers. It was women-led at a company that, despite years of lip-service to inclusion, only has 31 percent women employees.[2] And it was massive—more than twenty thousand workers participated (figure 8.1). Why did workers at one of the most powerful companies on the planet take to the streets?

One week earlier, the *New York Times* broke a story about the $90 million exit package that Andy Rubin, the creator of Google's Android mobile operating system, had received after he was accused of sexual misconduct (and after an internal investigation had found the claim to be credible).[3] The story mentioned two other executives accused of sexual misconduct whom Google had similarly protected. As journalists Daisuke Wakabayashi and Katie Benner wrote, "In settling on terms favorable to two of the men, Google protected its own interests." Evidently, Rubin's package had been paid out in installments of $2 million per month over the course of four years. His final payment was scheduled for later that month.

As soon as the *New York Times* article was published, additional stories of discrimination faced by women, as well as men and nonbinary people, began pouring out on company email lists and chat channels and in face-to-face forums. The stories pointed to patterns of toxic behavior.[4] Within a week, the massive walkout—initially floated as an idea on a Google moms list—had been planned. "Tech industry business as usual is failing us," said Meredith Whittaker, the founder of Google's Open Research Group. "Google paying $90M to Andy Rubin is one example among thousands, which speak to a company where abuse of power, systemic racism, and unaccountable decision-making are the norm. … It's clear that we need real structural change, not adjustments to the status quo."[5]

Figure 8.1: The Sunnyvale, California, Google campus during the Google Walkout for Real Change on November 1, 2018. Employees turned out en masse to protest the company's handling of sexual misconduct cases. Courtesy of Wikimedia Commons user Grendelkhan.

A group of seven core organizers, including Whittaker, came together to craft five concrete demands, including ending forced arbitration in cases of discrimination and sexual harassment and promoting the chief diversity officer to report directly to the CEO.[6] When November 1 arrived, employees congregated first in indoor atriums, and then in courtyards and on streets. They carried signs that said, "Not OK, Google," "I Reported, He Got Promoted," and "Happy to Quit for $90 Million, No Sexual Harassment Required." Google management started paying attention.

Although the Google Walkout for Real Change, as the protest was formally known, was framed in the media as a milestone for big tech, there are clear precedents for white-collar tech organizing. Historian Mar Hicks has connected the Google walkout to a strike among computer workers—then a workforce that was comprised mainly of women—that took place in the United Kingdom in the 1970s. The strike took down twenty-six government computer centers and disrupted the work of nine others. These were the centers that enabled the government to process its value-added tax (VAT), and without the computers online, the tax couldn't be collected. The government was required to pay attention. Writes Hicks, "Even though many of these workers were women, and limited in their pay, promotion, and work opportunities due to sexism, their proximity to the literal machinery of government gave them a great deal of power."[7]

The organizers of the Google walkout recognized their proximity to another source of power: Google itself. A single worker might have limited power, but their collective organizing drew attention to the proximity of a relatively small number of people—Google employees—to the global digital infrastructure of everyday life. Part of the reason that data and computation have proved to be so lucrative is their ability to

scale. As journalist Moira Weigel points out, "This kind of scale means these companies can make extraordinarily high profits. But it also means the core workers they rely on have an extraordinary amount of bargaining power."[8] They also have messaging power, interruption power, and subversion power.

How might tech workers marshal these strengths to mass-occupy digital infrastructure? To teach algorithms to "work to rule" in the style of assembly-line slow-downs? To slow the flow of everyday capitalism to gather attention? To channel digital solidarities back into physical spaces and human relationships?

There are already many examples that point to how these questions might begin to be answered. In an article about tech organizing in the magazine *n+1*, for instance, an anonymous software developer points out, "If the developers from Slack decided to strike, they could, without too much difficulty, push out a change that made it so that any message that got sent would push a message about the purpose of the strike" to its ten million daily users.[9] And just for a minute, imagine if they did.

Although Slack developers haven't hacked their own platform (yet), collective organizing around data and technology has already taken a range of powerful forms. Groups like the Tech Workers Coalition are building bridges between the programmers who code the search engines and the cafeteria workers who prepare their food. They have also helped popularize the hashtag #TechWontBuildIt to indicate a collective refusal to work on ethically compromised software.[10] Platforms like Coworker.org are helping gig-economy workers, like Uber drivers, get organized. Other organizations, such as Tech Solidarity, are focusing on electoral politics. Some projects are taking explicitly political stands; the Lerna JavaScript library briefly added a clause to its license prohibiting entities that collaborate with US Immigration and Customs Enforcement (ICE) from using it.[11] Individuals are forming worker-owned tech cooperatives in the United States and around the globe and drafting values statements, such as the Design Action Collective's Points of Unity, that guide their work together and help them decide which projects to take on.[12] Other collective organizing efforts are working to draft codes of ethics like the Toronto Declaration[13] and statements of values like those guiding the Canadian government's action plan for open government.[14] Note that these efforts are not limited to white-collar workers, nor to employees of the big five technology companies, nor to large-scale events.

Some groups are using movement-building strategies to effect change across entire industries. For example, Una Lee, Wesley Taylor, Victoria Barnett, Ebony Dumas, Carlos (L05) Garcia, and Sasha Costanza-Chock are coordinating a networked

community of practice called *design justice*.[15] The idea for design justice emerged from a workshop at the Allied Media Conference in Detroit in 2015, where thirty people assembled to challenge the idea of "design for good." As co-organizer Una Lee put it, "How could we redesign design so that those who are normally marginalized by it, those who are characterized as passive beneficiaries of design thinking, become co-creators of solutions, of futures?"[16]

Since then, the design justice group has produced dozens of workshops, pop-up educational forums, and scholarly texts. One of its central projects is a set of ten Design Justice Network Principles, which guide designers in navigating inequality and achieving justice through design.[17] Principle 1, for example, reads: "We use design to sustain, heal, and empower our communities, as well as to seek liberation from exploitative and oppressive systems." Principle 5 reads: "We see the role of the designer as a facilitator rather than an expert." The Design Justice Network promotes these principles through its workshops and other events at which designers meet, discuss, and co-conspire. To date, more than 350 additional designers have signed on.

Data for Black Lives (D4BL) is another example of inspired organizing and movement building at a national scale. Founded by veteran organizer Yeshimabeit Milner, who was herself trained by Black Lives Matter organizers, D4BL is "a network [of] over 4,000 scientists and activists working to harness the power of data and technology to make real change in the lives of Black people."[18] D4BL organizes annual conferences, runs online communities, and helps connect people in its network. The group pursues two simultaneous strategies: pushing back against the harmful impacts of data as they are currently deployed, and creating new spaces for organizers, data scientists, and engineers to come together to generate meaningful research questions. The group's emphasis on abolition and liberation, rather than a generic form of social good, leads it to design projects that actively work to overturn the data-driven discrimination experienced in Black communities. Milner's vision is "to make data a tool for profound social change instead of a weapon of oppression."[19]

The vision of D4BL will take time to realize, as is true of all visions that motivate transformative work. The organizers of the Google Walkout for Real Change are discovering this as we write. When they first assembled, they envisioned a world in which executives would listen to the demands of their workers and would undertake immediate measures for change. Although Google publicly expressed support for the workers involved, and the CEO issued a memo that read, "We are taking in all their feedback so we can turn these ideas into action," that action has yet to transpire.

Claire Stapleton, the woman who originally floated the idea of taking mass action, stated: "We're almost three months out from the walkout and exactly zero of the five demands have been met." The corporation did end forced arbitration—and it led to other tech companies doing the same—but it was only a partial win because it covered cases of sexual misconduct alone, not all discrimination cases. As Amr Gaber, another key organizer, added, "it's also the cheapest thing, the most minor thing they could've done."[20]

These paltry actions, clearly motivated by the bottom line, underscore the unyielding influence of profit and power and the need for a feminism that is intersectional as a matter of course. In this book, we have described *intersectional feminism*—a vibrant body of knowledge and action that challenges the unequal distribution of power—and how it can be applied to the field of data science today. In doing this work, we have drawn heavily from the work of Black feminist theorists and activists, to reflect both their central role in defining and elaborating intersectionality and our own position as white scholars and white women in the United States. Here, we want to reiterate our appreciation for this foundational work, as well as to once again acknowledge that we cannot speak directly from the life experiences that motivate it. We hope that you, our readers, will use this work in order to reflect on your own identities, as well as to examine how power and privilege operate in data science and in the world..

As we write this conclusion, in July 2019, issues of power and privilege continue to loom large. The other four and a half demands issued by the organizers of the Google walkout included "a commitment to end pay and opportunity inequity" at all levels of the corporation and the collection of "transparent data on the gender, race and ethnicity compensation gap, across both level and years of experience," as well as access to extant sexual misconduct reporting mechanisms by all Google employees, including its contract workers (who make up around half of the company's total employees).[21] Yet the public memo stated blandly that Google would continue to work on "creating a more inclusive culture for everyone."[22] Meanwhile, Google's lawyers have been filing legal documents that urge the US National Labor Relations Board to overturn the 2014 ruling that allows workers to use company email to organize without fear of retaliation.[23] If the ruling were overturned, it would seriously impede any efforts to organize future actions at Google, or at any large corporation, because company email lists are the primary way that a distributed workforce can organize across office locations and time zones.

Further complicating future organizing efforts, numerous Google employees, including lead organizers Whittaker and Stapleton, have faced retaliation and even demotion in the months following the walkout. These internal actions have been documented by *Wired* magazine, *Bloomberg News*, and the tech news site Packt, among other news outlets. For example, Stapleton was told to go on medical leave even though she was not sick, and the decision was only reversed after she hired a lawyer; and Whittaker was told that she would be required to "abandon her work" with the AI Now Institute, an independent research group focused on issues of AI and ethics.[24] Stapleton left Google in June 2019 and Whittaker left in July of that year, two high-profile departures that the *Guardian* surmised would "have a chilling effect" on tech workplace activism.[25]

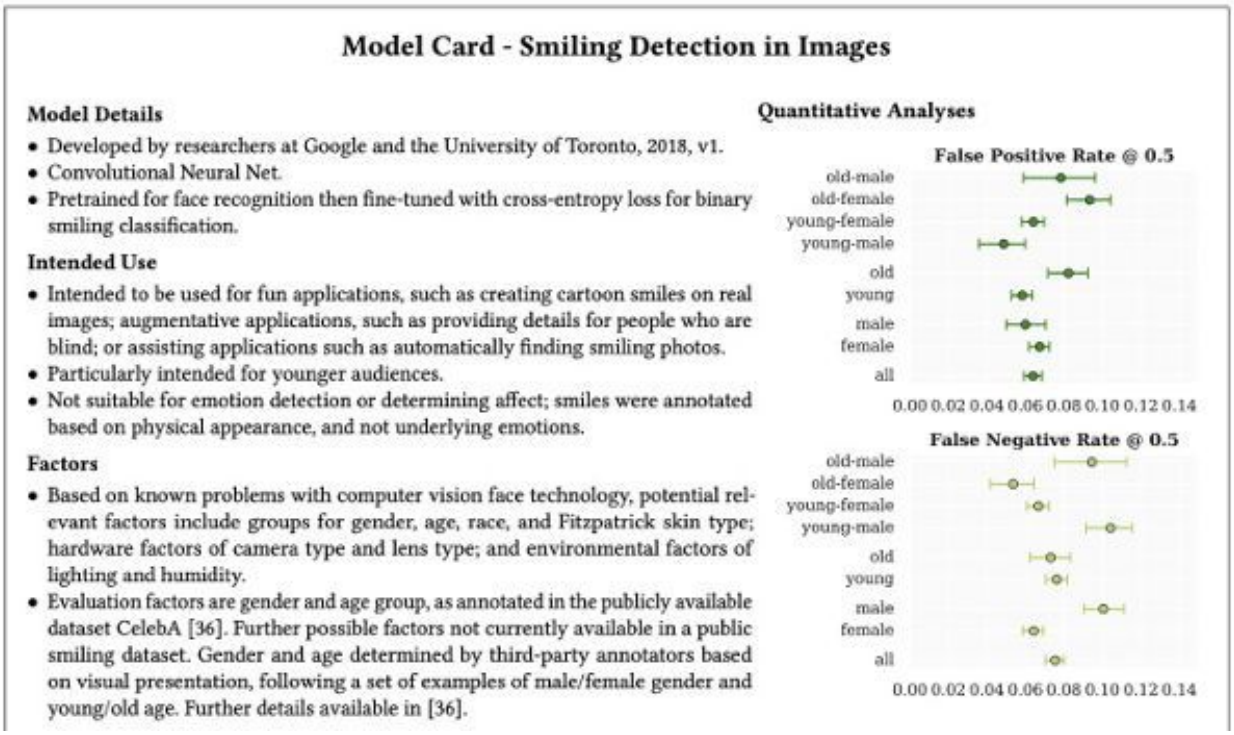
This is the deployment of the structural and disciplinary domains of the matrix of domination, which we introduced in chapter 1. Google's legal team is well-resourced and has the power to shape both federal laws and company policies. This confirms the need to monitor dominant groups and institutions that wield outsized power in the world (and tend to use it to secure their positions). It also affirms the need to collaborate with the groups most impacted by differentials of power. In chapter 2, and throughout this book, we have attempted to heed our own advice, featuring the voices and ideas of those with direct experience of injustice. In so doing, we have sought to feature the sites of energy that have inspired us in our work—ranging from new activist networks to data journalism startups, from librarians authoring data user guides to engineers interrogating human-reporting bias. We've drawn from the work of sociologists who theorize digital power, artists who challenge technological neutrality, educators who teach statistics in real-world settings, and individuals who are single-handedly compiling spreadsheets of missing data. It is from all these locations, using all these methods, and including all these people—and more—that we can challenge the matrix of domination in data science at its source.

As should now be clear, our definition of data science includes more than quantitative methods, more than "big" data, more than "artificial" intelligence, and more than "neutral" displays. We explored the limitations of such a narrow view of data science and its communication in chapter 3. There and throughout the book, we have argued that an expansive conception of data science is essential if we are to work toward our goal of remaking the world.

Enabling this feminist data science to flourish and thrive will require deliberate interventions in each phase of data work, and in our received ideas about the people

and communities who perform it. In chapter 4, we showed how the decisions that are made when first collecting data go on to impact future results. In chapter 5, we debunked the myth that data science is a solo enterprise, undertaken by genius wizards working alone. Data science involves collaboration and community, as well as deep context, as we discussed in chapter 6. Equally important is the acknowledgment, as explored in chapter 7, that data science is the work of many hands.

Figure 8.2: *Reported Internally Displaced People*, a 2016 map of internally displaced people in Colombia from 1985 to 2015. From the project *Conflict Urbanism: Colombia* by the Center for Spatial Research at Columbia University, which looked at land-use patterns and displacement in Colombia over thirty years of armed internal conflict. The researchers worked with the organization Unidad para la Atención y Reparación Integral a las Víctimas, a massive data collection effort that documented millions of individuals. Courtesy of the Center for Spatial Research, Columbia University.



Model Card - Smiling Detection in Images

Model Details

- Developed by researchers at Google and the University of Toronto, 2018, v1.
- Convolutional Neural Net.
- Pretrained for face recognition then fine-tuned with cross-entropy loss for binary smiling classification.

Intended Use

- Intended to be used for fun applications, such as creating cartoon smiles on real images; augmentative applications, such as providing details for people who are blind; or assisting applications such as automatically finding smiling photos.
- Particularly intended for younger audiences.
- Not suitable for emotion detection or determining affect; smiles were annotated based on physical appearance, and not underlying emotions.

Factors

- Based on known problems with computer vision face technology, potential relevant factors include groups for gender, age, race, and Fitzpatrick skin type; hardware factors of camera type and lens type; and environmental factors of lighting and humidity.
- Evaluation factors are gender and age group, as annotated in the publicly available dataset CelebA [36]. Further possible factors not currently available in a public smiling dataset. Gender and age determined by third-party annotators based on visual presentation, following a set of examples of male/female gender and young/old age. Further details available in [36].

Quantitative Analyses

Figure 8.3: Detail of a model card, from a 2019 paper titled "Model Cards for Model Reporting" by AI researcher Margaret Mitchell and coauthors that proposes short documents called *model cards* that would accompany machine learning models as a form of documentation. Model cards detail who developed the model, for what purpose, and how the model performs, including intersectional identity metrics. Model cards would also specify known limitations of a model and use cases for which the model is not suitable. Courtesy of Margaret Mitchell.

Figure 8.4: Feminindex is a civic media project that documents and visualizes where all Argentine political candidates stand on gender and LGBTQ+ issues, including reproductive rights, femicides, and trans rights. The first version was released in 2017 and the second in 2019. Courtesy of Economía Femini(s)ta, including Mercedes D'Alessandro, Andrés Snitcofsky, Lina Castellanos, Aldana Vales, and the Economía Femini(s)ta team. See http://economiafeminita.com/activismo/feminindex/.

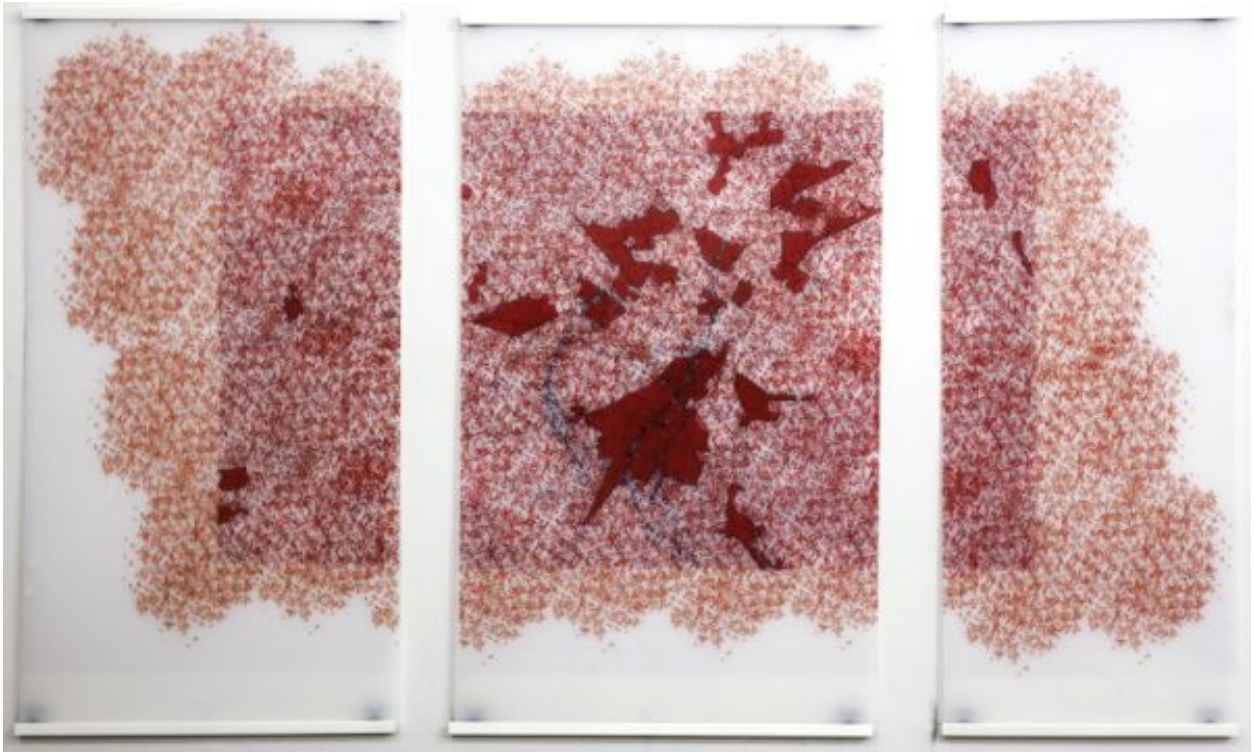


Figure 8.5: *Decoding Possibilities* (2017) by Ron Morrison and Treva Ellison, is an artistic examination of redlining's effects in the landscape as well as a celebration of creative resistance to redlining. (a) Contemporary maps of Boston are combined with historic redlining maps, as well as maps created from the Combahee River Collective's writings. (b) The installation includes quotes on the enduring effects of redlining in the landscape. Courtesy of Ron Morrison and Treva Ellison.

Throughout the book, we have described our seven principles of data feminism: *examine power*, *challenge power*, *elevate emotion and embodiment*, *rethink binaries and hierarchies*, *embrace pluralism*, *consider context*, and *make labor visible*. We derived these principles from the major ideas that have emerged in the past several decades of intersectional feminist activism and critical thought. At the same time, we welcome the notion that there are many other possible starting points that share the end goal of using data (or refusing data) in order to end oppression.[26]

Those other starting points might come from within the academy. For example, the work of the Center for Spatial Research at Colombia, led by Laura Kurgan, uses a uniquely transdisciplinary approach that includes data science and AI, the humanities, geography, and design to investigate complicated phenomena like urban/rural

displacement due to conflict (figure 8.2). Scholars like Dean Spade are using queer theory to challenge the institutions that wield data. And media studies scholars are examining the intersections of race, gender, sexuality, and data, as Shaka McGlotten does through their Black data project.[27] Researchers are writing books about Indigenous statistics and Indigenous data sovereignty,[28] developing decolonial design methods,[29] and leading dynamic conversations about decolonizing data in both the Global North and the Global South.[30] Computer scientists and AI researchers are conducting important studies on bias, as well as developing new ways to promote transparent and responsible use of AI. For example, Margaret Mitchell and her coauthors have recently proposed *model cards* (figure 8.3), a form of documentation that would accompany machine learning models to detail their intended uses and their technical and ethical limitations.[31]

There are many other possible starting points for challenging oppression in data that come out of the arts, activism, community organizing, and consciousness-raising. Cartographer Margaret Pearce's next mapping project indigenizes the Mississippi River map to make new spaces for public dialogue about flood management. Mimi Onuoha and Mother Cyborg's *People's Guide to AI*, designed for newcomers, provides an accessible introduction to the ideas behind artificial intelligence. The activist group Economía Femini(s)ta in Argentina has an ongoing civic accountability project called Feminindex in which the group visualizes where each candidate stands in relation to a range of gender and LGBTQ+ issues (figure 8.4). The group has even produced digital trading cards for politicians, which it circulates on social media. And artist-researchers Ron Morrison and Treva Ellison disrupt Boston redlining maps from 1935 with overlays of "black queer, trans, and feminist geographies" created by the Combahee River Collective (figure 8.5). These require viewers to put on special glasses called Racialized Space Reduction Lenses (RSRL) to see beneath the surface.[32]

These projects are not intended to be exhaustive, and the list could go on. What is most important is not that we all share the same starting point, but rather that we nurture all of these emerging ecosystems and build links between them. We will need all of them for mobilizing resistance to the differentials of power embedded in our current datasets and data systems. And we will also need them for mobilizing courage and creativity—to imagine what data science and artificial intelligence beyond the matrix of domination might look like. The best time for resistance and reimagination is before the norms and structures and regulations of the data economy have been fully determined.

So now let's multiply. Let's multiply now.

Footnotes

1. Google Walkout for Real Change, "Google Employees and Contractors Participate in Global 'Walkout for Real Change,'" Medium: Technology, November 2, 2018, https://medium.com/@GoogleWalkout/google-employees-and-contractors-participate-in-global-walkout-for-real-change-389c65517843. ↩
2. The women that are hired into Google are not compensated equally to their male counterparts. The corporation is facing a class-action lawsuit about gender pay equity after the Department of Labor found "systemic compensation disparities against women pretty much across the entire workforce." The 31 percent figure is from Alex Morris, "When Google Walked: Rage Drove the Protests Last Year, but Can It Bring About Lasting Change at Tech Companies?," *New York Magazine*, February 5, 2019, http://nymag.com/intelligencer/2019/02/can-the-google-walkout-bring-about-change-at-tech-companies.html. See also Sam Levin, "Google Gender Pay Gap: Women Advance Suit that Could Affect 8,300 Workers," *Guardian*, October 26, 2018, https://www.theguardian.com/technology/2018/oct/26/google-gender-pay-gap-women-class-action-lawsuit. ↩
3. Daisuke Wakabayashi and Katie Benner, "How Google Protected Andy Rubin, the 'Father of Android,'" *New York Times*, October 25, 2018, https://www.nytimes.com/2018/10/25/technology/google-sexual-harassment-andy-rubin.html. ↩
4. Wakabayashi and Benner, "How Google Protected Andy Rubin." ↩
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6. Morris, "When Google Walked." ↩
7. Mar Hicks, "The Long History Behind the Google Walkout: Tech Companies Ignore Labor History at Their Own Peril," *Verge*, November 9, 2018, https://www.theverge.com/2018/11/9/18078664/google-walkout-history-tech-strikes-labor-organizing. ↩
8. Moira Weigel, "Coders of the World, Unite: Can Silicon Valley Workers Curb the Power of Big Tech?," *Guardian*, October 31, 2017, https://www.theguardian.com/news/2017/oct/31/coders-of-the-world-unite-can-silicon-valley-workers-curb-the-power-of-big-tech. ↩

9. Alex Press, "Code Red: Organizing the Tech Sector," *n+1*, no. 31 (Spring 2018), https://nplusonemag.com/issue-31/politics/code-red/. ↩
10. See https://twitter.com/hashtag/TechWontBuildIt?src=hash. ↩
11. The change was short-lived and caused an uproar in the open-source software development community, with prominent open-source advocates claiming that this constituted discrimination (against US Immigration and Customs Enforcement—which, to remind you, was separating young children from their parents at the border and putting them in jails). The case is a fascinating collision between the rising political consciousness of the tech sector and the libertarian values that drove the 1990s internet and rise of open-source software. See Daniel Oberhaus, "Open Source Devs Reverse Decision to Block ICE Contractors From Using Software," *Motherboard*, August 30, 2018, https://motherboard.vice.com/en_us/article/pawnwv/open-source-devs-reverse-decision-to-block-ice-contractors-from-using-software. ↩
12. See https://www.techworker.coop/, and a partial list of global tech cooperatives can be found here: "Hng/tech-coops," GitHub, April 11, 2019, https://github.com/hng/tech-coops. The Design Action Collective's Points of Unity are available at https://designaction.org/about/points-of-unity/. ↩
13. The Toronto Declaration was written by a coalition of technology and human rights groups. It advocates for standards to ensure that machine learning systems respect basic principles of human rights, including equality and non-discrimination. It was published on May 16, 2018, by Amnesty International and Access Now, and launched at RightsCon 2018 in Toronto, Canada. See https://www.accessnow.org/cms/assets/uploads/2018/08/The-Toronto-Declaration_ENG_08-2018.pdf. ↩
14. Canada's principles for open government include commitments to gender equity, accessibility, and reconciliation. The last of these resolves to design all services and programs in collaboration and consultation with Indigenous communities. See Government of Canada, "Canada's 2018–2020 National Action Plan on Open Government," accessed July 31, 2019, https://open.canada.ca/en/content/canadas-2018-2020-national-action-plan-open-government#toc3-5. ↩
15. See http://designjusticenetwork.org/network-principles/. ↩

16. Una Lee, "Generating Shared Principles for Design Justice," *And Also Too*, July 13, 2016. Costanza-Chock is writing a longer book-length work called *Design Justice* (Cambridge, MA: MIT Press, 2020). ↩
17. Una Lee et al., "Design Justice Network Principles," *Design Justice*, accessed April 23, 2019, http://designjusticenetwork.org/network-principles/. ↩
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20. As quoted in Morris, "When Google Walked." ↩
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22. Leah Fessler, "Google CEO Sundar Pichai's Full Memo Outlining Updated Sexual-Harassment Policies," *Quartz at Work*, November 8, 2019, https://qz.com/work/1456530/google-ceo-sundar-pichais-full-memo-to-employees-on-sexual-harassment. ↩
23. Nick Bastone, "Google Has Publicly Stated That It Supports Employee Walkouts, But Its Latest Actions Say Otherwise," *Inc.*, January 24, 2019, https://www.inc.com/business-insider/google-asked-us-to-reconsider-rules-that-allow-employees-to-organize-without-fear-of-punishment.html. ↩
24. See Kyle Wiggers, "How Google Treats Meredith Whittaker Is Important to Potential AI Whistleblowers," *Venture Beat*, April 24, 2019, https://venturebeat.com/2019/04/24/how-google-treats-meredith-whittaker-is-important-to-potential-ai-whistleblowers/. ↩
25. See Julia Carrie Wong, "'I've Paid a Huge Personal Cost': Google Walkout Organizer Resigns over Alleged Retaliation," *Guardian*, June 7, 2019, https://www.theguardian.com/technology/2019/jun/07/google-walkout-organizer-claire-stapleton-resigns; Sugandha Lahoti, "#NotOkGoogle: Employee-Led Town Hall Reveals Hundreds of Stories of Retaliation at Google," *Packt* (blog), April 27, 2019, https://hub.packtpub.com/notokgoogle-employee-led-town-hall-reveals-hundreds-of-stories-of-retaliation-at-google/; and Meredith Whittaker, "Onward! Another #GoogleWalkout Goodbye," Medium, July 16, 2019,

https://medium.com/@GoogleWalkout/onward-another-googlewalkout-goodbye-b733fa134a7d. ↩

26. In her 2019 talk "Abolish Big Data," Yeshimabeit Milner discusses how certain applications of AI and big data need to be outright abolished. As she defines it, "to abolish Big Data would mean [to] put data in the hands of people who need it most," as well as to name the "data-industrial complex." From UCIBrenICS, "Abolish Big Data." ↩

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31. See Margaret Mitchell, Simone Wu, Andrew Zaldivar, Parker Barnes, Lucy Vasserman, Ben Hutchinson, Elena Spitzer, Inioluwa Deborah Raji, and Timnit Gebru, "Model Cards for Model Reporting," in *Proceedings of the Conference on Fairness, Accountability, and Transparency* (New York: ACM, 2019), 220–229. ↩

32. Clarity should not always be the goal of data communication. Confusion and disorientation can be extremely effective emotions for producing a new seeing of the world. For more about the *Decoding Possibilities* project, see https://elegantcollisions.com/decoding-possibilities. ↩