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# Design Justice

## Community-Led Practices to Build the Worlds We Need

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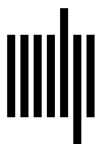
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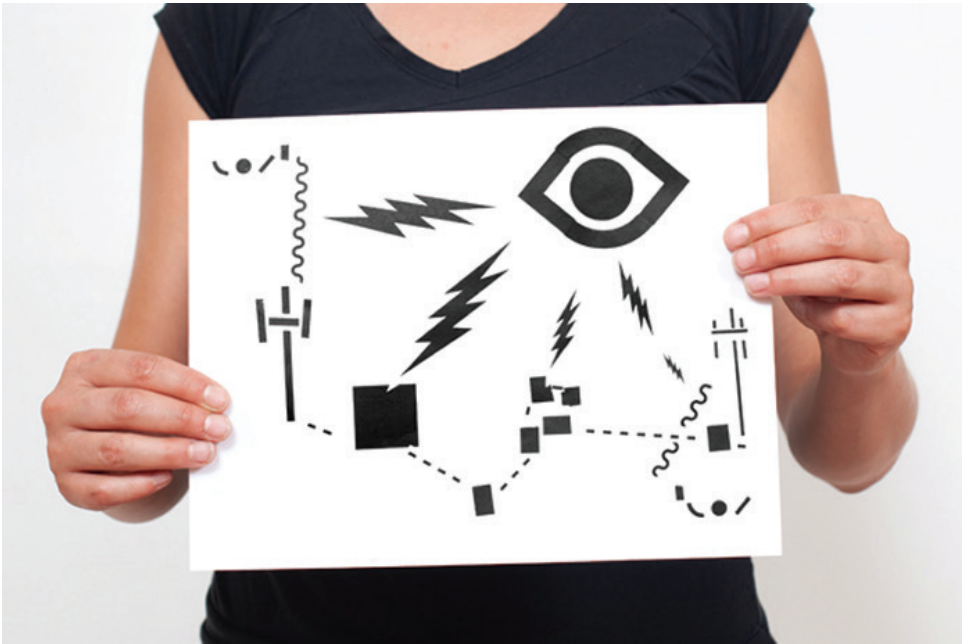
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## 5 Design Pedagogies: “There’s Something Wrong with This System!”



**Figure 5.1**

*Surveillance.* Collage by the author, used as the poster image for the 2013 MIT Code-sign Studio. Image produced at the Name That Tech workshop by the Work Department at the Allied Media Conference in 2011. Photo by Nina Bianchi.

Critical pedagogy seeks to transform consciousness, to provide students with ways of knowing that enable them to know themselves better and live in the world more fully.

—bell hooks, *Teaching to Transgress*

I insist that the object of all true education is not to make [people] carpenters, it is to make carpenters [people].

—W. E. B. Du Bois, *The Talented Tenth*

Oppressed people, whatever their level of formal education, have the ability to understand and interpret the world around them, to see the world for what it is, and move to transform it.

—Ella Baker

“Are you ready to fight?” The question rings out across the room. It resonates in the strong, clear voice of one of the community organizers from City Life/Vida Urbana (CL/VU), a Boston-area housing rights group. “Yes!” declares a Black woman in her mid-thirties, holding City Life’s signature symbolic sword and shield high above her head. “Then we’ll fight with you!” responds the roomful of about fifty community members, some standing, many with fists raised in the air. Most have themselves come to CL/VU for help stopping their own evictions, or those of their friends, family, and neighbors. The shield represents the power of collective community action to defend against evictions and foreclosures; the sword represents the weapons of legal and media action that CL/VU has repeatedly used to bring banks, predatory lenders, and unscrupulous landlords to the negotiating table and to keep hundreds of families in their homes.

This is no easy task, in the context of ascendant neoliberal federal, state, and municipal policies that prioritize attracting business and investors to urban cores, and that “sanitize” cities to make them “safe” for young (mostly white) professionals to live in after decades of disinvestment and white flight.<sup>1</sup> Indeed, since the mortgage crisis and financial collapse of 2008, Black families in particular have been particularly hard-hit: Black people lost over 240,000 homes in the crisis;<sup>2</sup> Black homeownership rates are still 6.6 percentage points below their mid-2000s peak; and the majority (51 percent) of Black families still live in high-poverty areas.<sup>3</sup> Housing rights organizing is especially

important in this context. Since 1973, CL/VU has successfully organized in the Boston area to create over four hundred units of affordable housing, form tenant associations in over forty buildings, and keep more than eight hundred families in their homes, through comprehensive strategies of eviction defense, legal action, and group renegotiation with lenders, banks, and landlords.<sup>4</sup> The organization is a cofounding anchor of the national Right to the City Coalition, a network of community-based organizations (CBOs) that works across the United States to fight the displacement of low-income people, the majority Black, Indigenous, and/or people of color (B/I/PoC), from their historic urban neighborhoods.<sup>5</sup>

I am there with a group of twenty MIT students, both undergraduate and graduate, from the Civic Media Collaborative Design Studio, a course I have taught at MIT since 2012. In the course catalog (<https://codesign.mit.edu>), the Codesign Studio (as it is known) is described as follows:

We will be working to design and develop real world projects, grounded in the needs of CBOs. As a student in the course, you will be part of a co-design team led by a partner organization. ... The studio is also a space for shared inquiry into the theory, history, best practices, and critiques of various approaches to community inclusion in iterative stages of project ideation, design, implementation, testing, and evaluation. The Civic Media Codesign Studio approaches communities not as (solely) consumers, test subjects, "test beds," or objects of study, but instead imagines them as co-designers and coauthors of shared knowledge, technologies, narratives, and social practices. Our goal is twofold: to develop an understanding of the ways that technology design processes often replicate existing power inequalities, while at the same time, moving beyond critique towards community coauthorship, as much as possible within the constraints of any given project.

This semester, one of the student teams has partnered with CL/VU to design a media project that will meet an organizational need while connecting to the skills and interests of the students. They work closely with Mike Leyba, communications director for CL/VU. Together with Mike, and with feedback from CL/VU members, they have decided to develop a set of modified carnival games that illustrate inequality in Boston-area housing markets. Their project, titled *Change the Game*, remixes popular carnival games like whack-a-mole, cornhole, and the shell game. These modified games are designed to be played in public places where they will attract attention, help educate people about



**Figure 5.2**

Cover art for the Change the Game toolkit, by Ed Cabrera and Triana Kazaleh Sirdenis, for City Life/Vida Urbana.

housing rights, and engage new potential members and allies. The design team has produced a pamphlet about the games to hand out to players and spectators; the pamphlets contain key facts and information about housing, gentrification and displacement, and community organizing for the right to the city in Boston. The games are also designed to shift the narrative around the housing crisis, challenge the idea that the crisis is over, and highlight CL/VU's three ongoing campaigns: fight eviction and foreclosures, resist gentrification, and shed light on real estate investors who turn a profit on foreclosed homes.<sup>6</sup>

After the CL/VU organizing meeting, our class gathers to debrief, discuss what we've learned, and share our feelings. One student, a sophomore studying computer science, describes a moment that they found particularly moving: when the new CL/VU member narrated her personal story, she described how she and her young daughter were evicted from their apartment, ran out of family and friends' couches to crash on, and spent several months sleeping in her car. The MIT sophomore, with a slightly bewildered, slightly angry tone, says: 'There just must be something wrong with a system that would make that woman

and her child have to sleep in her car!’ When she says “system,” from previous conversations I and the whole class understand that she is thinking quite literally in terms of systems design. She wants to find the design errors that result in such a blatant injustice.

This experience provided a key learning moment for participants in the Codesign Studio. I recount it here to ground this chapter’s call for *pedagogies of design justice* in concrete experience, with all its attendant messiness, rather than in abstract theories about education. Fundamentally, this chapter asks us to reflect on the following question: “How might we teach and learn design justice?” I don’t believe there is only one way to answer this question, which is why I use “pedagogies” in the plural form.

### Popular Education: Foundation for Design Justice Pedagogies

That said, I do believe that pedagogies of design justice must be based firmly upon the broader approach known as *popular education* (*educación popular*, in Spanish), or *pop ed*, as it is often called by practitioners in the United States. Pop ed was originally developed by the radical Brazilian educator and philosopher Paulo Freire. During the years of military rule in Brazil, Freire was a political prisoner and then lived in exile; after democratization, he returned to become the secretary of education for the city of São Paulo. In his widely influential book *Pedagogy of the Oppressed*, Freire denounces what he calls the *banking model* of education, in which an educator, positioned as the expert, attempts to deposit knowledge in the mind of their students. Instead, he encourages critical pedagogy, where the role of the educator is to pose problems, create spaces for the collective development of critical consciousness, help to develop plans for action to make the world a better place, and develop a sense of agency among learners.

Freire focuses on developing critical thought together with action, in a cycle he refers to as *praxis*, a Greek term originally referring to “practical knowledge for action.”<sup>7</sup> Freire defines it as “reflection and action upon the world in order to transform it.”<sup>8</sup> In other words, for Freire and for popular educators inspired by his work, the goal of education is to transform oppressed individuals into subjects who engage in collective action to transform their conditions of oppression. In Brazil and across

Latin America, popular educators, many using Freirian methods of critical pedagogy and praxis, taught millions of rural peasants and urban poor people how to read and write while working together to develop a collective analysis of political oppression and to organize powerful social movements that helped end military dictatorships across the region.<sup>9</sup>

Pop ed has also long played an important role in US social movements, especially the Civil Rights movement. For example, the Highlander Research and Education Center, founded in 1932 by educator Myles Horton, is a social justice leadership training school and cultural center that has used pop ed for decades to build grassroots leadership within movements for civil rights, organized labor, and environmental justice, among others. At Highlander, Horton taught and worked with Civil Rights luminaries including Martin Luther King, Jr., Rosa Parks, and John Lewis. Highlander articulates the key principles of pop ed as follows:

1. Education is never neutral: it either maintains the current system of domination, or it is designed to liberate people;
2. Relevance: Pop Ed engages with issues that people care deeply about;
3. Problem-posing: all participants have the capacity to think, question, and act, and Pop Ed is about identifying the root causes of problems that people want to change;
4. Dialogue: no one knows everything, but together we know a lot, if we listen to each other;
5. Praxis: real learning takes places through the cycle of reflection and action to transform the world;
6. Transformation: Pop Ed is about engaging communities to transform individuals, communities, the environment, and the broader society.<sup>10</sup>

I believe that rethinking design education so that it is underpinned by these principles will be crucial to the larger project of design justice. Happily, this is already beginning to take place.

### **Pop Ed Takes on Technology and Design**

In the spring of 2017, a gathering of social movement technologists (mostly PoC, half women and femmes, and many queer and trans\* identified) met at the Highlander Center to strategize about how to use technology for liberation. One of the outcomes was a joint statement

that included the following: "Currently technology is being developed, controlled, and owned by the ruling class and used in their interests to maintain a brutal system of superexploitation and oppression. We want a shift in the underlying logic of how technology is created and used. Instead of being used as a tool to divide and conquer, we believe technology must be taken back by the people and used as a tool of liberation."<sup>11</sup> Coauthors and signatories include movement technology organizations like May First/People Link, Progressive Technology Project, Aspiration Tech, Palante Technology Cooperative, and the Detroit Community Technology Project, as well as groups that work at the intersection of technology and other areas, like 18MR.org, Equality Labs, Data for Black Lives, the Stop LAPD Spying Coalition, the Center for Media Justice, and Project South. How are these (and other) organizations putting pop ed principles into practice in the design of new technologies?

Project South, based in Atlanta, Georgia, is a social movement organization that, like Highlander, has used pop ed to build community power for decades.<sup>12</sup> Since 1986, Project South has used pop ed to organize people in the struggle against poverty, violence, and racial injustice. Recently, it has also developed a focus on community control of communications, media, design, and technology. Beginning in 2015, it worked with Global Action Project, Research Action Design, and the Transformative Media Organizing Project to design and develop the Movement History Timeline Tool, an interactive timeline generator for documenting social movement history and for facilitating workshops that link people's personal struggles to historical developments.<sup>13</sup> Project South has also helped gather social movement technologists to build shared analysis and goals at convenings such as the Highlander meeting, the United States Social Forum, and the Allied Media Conference.

Pop ed has also been influential in West Coast community organizing histories. In Los Angeles, the Institute of Popular Education of Southern California (IDEPSCA) is a community-based organization with over thirty years of experience organizing immigrant communities through pop ed methods. IDEPSCA, whose motto is "reading reality to write history," is an anchor member of both the National Day Labor Organizing Network (NDLON) and the National Domestic Workers Alliance (NDWA), two nationwide networks that have managed to advance



labor rights and quality of life for some of the most marginalized people in the United States. IDEPSCA and both of these national networks have applied pop ed approaches to technology design for years. For example, while I was a graduate student in Los Angeles, I worked with IDEPSCA for five years on VozMob, a popular education and participatory design project focused on appropriating mobile phones to amplify the voices of immigrant workers.<sup>14</sup> Most recently, NDWA used participatory design methods with home cleaning workers to develop and launch Alia, a platform for portable benefits that is enabling some of these workers to access health insurance and paid time off for the first time in their lives.<sup>15</sup>

A pop ed approach to technology design also includes efforts to develop shared understanding of ICT infrastructure. For example, the Center for Urban Pedagogy in New York City worked with VozMob, the Media Mobilizing Project, People's Production House, and the Center for Media Justice to develop *Dialed In: A Cell Phone Literacy Toolkit*: a set of pop ed materials and design workshops to help people learn about how mobile technology works. *Dialed In* includes units about cellular towers, multimedia messaging, and gateways between the mobile telephony system and the internet. It also includes learning modules about mobile surveillance technologies and examples of how social movements use mobile technology for emancipatory ends.<sup>16</sup>

The Detroit Community Technology Project (DCTP), guided until very recently by community technologist, educator, and artist Diana Nucera (also known as Mother Cyborg) uses pop ed methods to build community capacity to understand, design, build, and maintain wireless internet infrastructure and other technologies. DCTP was founded in 2012 as a project of Allied Media Projects and the Open Technology Institute (OTI). DCTP's digital stewards, themselves community residents, work with other residents, local businesses, and anchor institutions to design, install, and maintain wireless mesh networks and to develop policies to govern those networks. By 2018, DCTP's work had grown to five Detroit neighborhoods, seven New York City locations (starting in Red Hook, Brooklyn), and eleven sites around the world. The organization had secured federal funding to scale up its work through the Equitable Internet Initiative. Its pedagogy, and many of the pop ed workshops that it has developed, is extensively documented

in the *Teaching Community Technology Handbook*, a series of zines, and other educational materials that are available on the project website.<sup>17</sup>

These organizations, and many others like them across the United States and around the world, already use pop ed to organize their communities and to engage everyday people in the design and development of new technologies. They have been influential not only in the social struggles of previous generations, but also in the new wave of intersectional social movements that are building power today and that are poised to reshape our world for generations to come.

### Multiple Liberatory Frameworks for Design Pedagogies

In addition to those who explicitly use a pop ed framework for teaching and learning about design, there are many other pedagogical approaches that use different terms but are closely aligned with pop ed principles. These include critical community technology pedagogy, participatory action design, data feminism, and certain aspects of constructionism, as well as some strands within digital media literacy.<sup>18</sup> The growing call to decolonize design pedagogy is also aligned with the design justice principles. Although I don't have space here to explore each of these approaches in depth, hopefully the following brief summaries will help locate design justice pedagogies within a broader and rapidly developing constellation of allied efforts.

Designer, educator, and former MIT Codesign Studio participant Maya Wagoner developed the concept of *critical community technology pedagogy*, an approach that "demystifies systemic power inequalities, involves a multi-directional learning process, results in transferable skills, and constructs a new world as it constructs knowledge."<sup>19</sup> In her masters' thesis at MIT, Wagoner posits critical pedagogy as fundamental to the ongoing development of liberatory design practice. She describes examples of this approach in the real world and develops case studies of the Civic Lab for Environmental Action Research, the Detroit Digital Justice Coalition Data DiscoTechs, and the Center for Urban Pedagogy's Urban Investigations.<sup>20</sup>

Alongside the many community-based pop ed design projects mentioned earlier and those analyzed by Wagoner, there is an extensive history of self-organized design workshops, schools, and mutually supportive spaces for learning graphic design entirely outside of

educational institutions. In a blog post for the Walker Art Center titled “Never Not Learning,” João Doria documents recent workshops of this nature, including A Escola Livre and Escola Aberta (Brazil), Asterisk Summer School (Estonia), Maybe a School, Maybe a Park (California), the Registration School (United Kingdom), the Van Eyck Summer Design Academy: Digital Campfire Series (the Netherlands), and the Parallel School (instances have been organized in Brno, São Paulo, Cali, Leipzig, Lausanne, and London, among other places).<sup>21</sup> Design justice is an approach that already finds resonance in many of these workshops, but its principles might help strengthen them and make them more intentional about the communities that they include.

Another kindred framework is participatory action design (PAD). In a 2007 article about the PAD method, scholars Ding, Cooper, and Pearlman trace its roots to participatory design in the 1970s, led by software developers who worked together with the Iron and Metal Workers Union in Norway (as described in chapter 2). The authors discuss how the University of Pittsburgh’s Quality of Life Technology Engineering Research Center<sup>22</sup> uses PAD to develop systems to enhance the quality of life of people with disabilities. The approach brings together people with disabilities (the term used by the authors), engineers, social scientists, family members, and caregivers, and they emphasize the inclusion of end users throughout the product development process.<sup>23</sup> They also describe their efforts to teach PAD through a ten-week intensive program where engineering students interact with end users in product and systems design, as well as a course in Quality of Life Technology Ethnography that provides students with an opportunity to break design out of the lab early on in their careers.<sup>24</sup>

In their 2019 book *Data Feminism*, data scientists, artists, researchers, and educators Catherine D’Ignazio and Lauren Klein include a section titled “Teach Data Like an Intersectional Feminist.”<sup>25</sup> They describe how current approaches to teaching data science reproduce oppression when they model a world where elite men lead; data science is abstract and technical; there is little (if any) room for considering the ethics and values of data collection, cleaning, and use; and the learning goal is individual mastery of concepts and technical skills. In contrast, they propose an intersectional feminist approach to the pedagogy of data science, grounded in values of equity and co-liberation. The authors

present a compelling argument, grounded in real-world classroom examples. They outline key elements for a feminist pedagogy of data science as follows:

1. Listen to and engage with those most affected by a problem, as in the work of EquityXDesign, anti-oppressive design, and the Design Justice Network;<sup>26</sup>
2. Teach data science in a way that honors context, respects situated knowledge, and makes it clear that data is never “raw,” as in the work of Data Basic, data biographies, and data user guides;<sup>27</sup>
3. Emphasize the use of data to create shared meaning over individual mastery, as in the Detroit DiscoTechs or the Data Culture Project;<sup>28</sup>
4. Address, rather than mask, the politics of what gets counted and what does not, as in OpenStreetMap, the Public Laboratory for Open Technology and Science, or Princesa Bathory’s ongoing mapping of femicides, Gwendolyn Warren’s map of children killed by white commuters in Detroit, BlackLivesMatter’s map of police violence, Mimi Onuoha’s list of Missing Data Sets, or ProPublica and NPR’s crowdsourced reporting on maternal mortality;<sup>29</sup>
5. Teach data science that values ethics, emotions, and reason, not only reason, as in Tahir Hemphill’s Rap Research Lab or Rahul Bhargava’s Data Murals.<sup>30</sup>

These principles are closely aligned with the principles of popular education, as articulated by the Highlander Center (discussed earlier), as well as with the Design Justice Network Principles, as described in this book’s introduction.

**Constructionism** Another strand of design pedagogy that has been somewhat influential in computing pedagogy is constructionism. Although not explicit about race, class, gender, or disability politics, this is a pedagogical approach that centers context, situated knowledge, and learning by doing. Constructionist learning theory and pedagogy was developed by Seymour Papert, a mathematician, computer scientist, and educator who contributed to the development of artificial intelligence and was one of the creators of the Logo programming language for children. Papert built atop child development psychologist Jean Piaget’s work.<sup>31</sup> Piaget rejected the idea that learning takes place

when an educator transmits a piece of information to the learner's brain—in Freirian terms, the *banking method* of education. Instead, for Piaget, learning is experiential: it takes place through an active process where the learner develops the ability to modify or transform an object or idea. Papert took Piaget's theories and synthesized them into constructionism's two central concepts: first, that learning is a reconstruction, rather than a transmission, of knowledge; second, that "learning is most effective when part of an activity the learner experiences as constructing a meaningful product."<sup>32</sup> Based on these ideas, Papert helped create Logo, LEGO Mindstorms, and the (problematic) One Laptop per Child (OLPC) project.

In constructionist pedagogy, similar to pop ed, teachers act as facilitators to help students achieve their own learning goals using problem-based learning.<sup>33</sup> Problem-based learning works best when problems are part of larger, ideally real-world tasks; learners are supported to take ownership of the problem; the task is appropriate to the learner's level of understanding and ability; the learner must reflect on what is being learned and how they learned it; and the educator encourages the learner to test their ideas in various contexts.<sup>34</sup>

Mitchel Resnick, a professor at the MIT Media Lab's Lifelong Kindergarten (LLK) group who studied with Papert, continues to develop these ideas and has applied them to the creation of several widely used pedagogical tools. Resnick's work includes, among other things, key contributions to the development of LEGO Mindstorms, meant to teach the principles of robotics, and Scratch. Scratch is a programming language designed for kids, as well as a growing community of thousands of young people who use the software to create interactive projects. Scratch was designed according to constructionist principles to be a language with a low floor (easy for new entrants), wide walls (supports many kinds of projects), and high ceiling (more advanced users can create very complex projects). Ultimately, for Resnick and other creators of Scratch, "there needs to be a shift in how people think about programming, and about computers in general. We need to expand the notion of 'digital fluency' to include designing and creating, not just browsing and interacting."<sup>35</sup>

Resnick and many of his students at LLK are also deeply concerned with persistent educational inequality that disadvantages girls,

low-income youth, and/or youth of color and blocks the democratization of computing skills and knowledge. For example, in "The Computer Clubhouse: Technological Fluency in the Inner City," Resnick et al. narrate the history of the Computer Clubhouse, a joint effort between the MIT Media Lab and the Computer Museum to bring computing and software literacy to Boston-area youth who might otherwise not have access to computers. The authors note that many efforts to address digital access inequality focus on providing computers to schools and on teaching children basic computing skills such as word processing. Instead, Resnick et al. argue that the goal should be technological fluency, or young people's ability to fully incorporate computers and digital technology into their own creative practices. They describe how in the 1990s, young people at the Computer Clubhouse learned how to digitally photograph their artwork, import photos into the computer, manipulate the images with software, and design and print out comic books. From this experience, Resnick describes four principles for technology educators: support learning through design experiences, help youth build upon their own interests, cultivate "emergent community," and create an environment of respect and trust.<sup>36</sup> Resnick also maintains that design activities are crucial to learners' experience in the Computer Clubhouse. Design activities encourage creative problem solving, nonbinary (as opposed to right vs. wrong) thinking, problem and solution ownership by the designer, a sense of audience, and a context for reflection and discussion.<sup>37</sup>

Resnick summarizes the core of constructionism in the following two principles: first, "people do not get ideas, they make them." Second, "people construct new knowledge with particular effectiveness when they are engaged in constructing personally meaningful products."<sup>38</sup> Accordingly, in a constructionist pedagogy of design justice, learners should make knowledge about design justice for themselves and do so through working on meaningful projects. Ideally, these should be developed together with, rather than for, communities that are too often excluded from design processes.

**Decolonizing Design Pedagogies** Along with the shifts in design pedagogy toward community-led processes, intersectional feminist principles, and learning by doing described here so far, the idea of decolonizing

design pedagogy is gaining steam. Decolonizing design involves decentering Western approaches to design pedagogy, while centering design approaches, histories, theories, and practices rooted in indigenous communities. For example, Dori Tunstall, the new dean of the Design School at OCAD Toronto, is explicitly working to decolonize the design school curriculum.<sup>39</sup> Sadie Red Wing, a Lakota/Dakota graphic designer best known for her work designing visual materials for the *Mni Wiconi/* Water Is Life struggle at Standing Rock, teaches a course on decolonizing design at the University of Redlands. Others currently focused on decolonizing design pedagogy (in the North American context) include Pouya Jahanshahi at Oklahoma State University, Kali Nikitas at Otis College of Art and Design, Ian Lynham at Vermont College of Fine Arts, Steven McCarthy at the University of Minnesota, and Elizabeth Chin at the ArtCenter College of Design. Designers, scholars, and activists involved in this approach are gathering resources at the site [decolonisingdesign.com](http://decolonisingdesign.com).<sup>40</sup>

In a similar vein, design historian and scholar Victor Margolin, in an influential article titled “Teaching Design History,” advocates a shift away from Eurocentric, modernist approaches to design history and toward a truly global approach that includes design practices from Latin America, Africa, and Asia. He cautions against sprinkling “non-Western” design objects on top of an already existing Eurocentric curriculum, and argues that “design is no less than the conception and planning of the artificial world. Its products include objects, processes, systems, and environments; in short, everything.”<sup>41</sup> Margolin feels that an emphasis on rethinking historical narratives to center formerly marginalized or erased design practices, rather than simply including designed objects from more cultures, can help avoid this pitfall.<sup>42</sup>

**Teaching to Technologically Transgress** In Black feminist author and educator bell hooks’s classic text *Teaching to Transgress*, she argues for feminist, antiracist, class-conscious education as the practice of freedom. For hooks, the primary goal of education is for both teacher and students to develop our capacities to think critically, and to take action to transgress boundaries of race, class, and gender. Educators, hooks argues, must recognize ourselves as embodied subjects in the classroom, rather than pretend that we speak from a disembodied place. This

acknowledgment of the body brings race, gender, class, and disability explicitly into the pedagogical environment. For hooks, teachers can become aware of, and challenge, our own positions in the classroom and our own tendencies to reproduce relationships of domination. She also calls on educators to discuss and work through racism and sexism in the classroom, rather than plaster over tensions that emerge in student conversations about race, class, and gender, in mistaken efforts to focus on the "real" learning goals of the course material. She emphasizes that curricular revisions are not the only component of liberatory pedagogy: "Once again, we are referring to a discussion of whether or not we subvert the classroom's politics of domination simply by using different material, or by having a different, more radical standpoint. Again and again, you and I are saying that different, more radical subject matter does not create a liberatory pedagogy, that a simple practice like including personal experience may be more constructively challenging than simply changing the curriculum."<sup>43</sup> Thus, design justice pedagogies are not only about revising design curriculum to include more texts by women and femmes, by Black, Indigenous, and other people of color, by LGBTQ and Two-Spirit folks, and/or by Disabled people, although such revisions are certainly necessary. Nor is it sufficient to simply include critical texts about how design often reproduces racism, sexism, or other aspects of the matrix of domination. Instead, design justice pedagogies must support students to actively develop their own critical analysis of design, power, and liberation, in ways that connect with their own lived experience. Educators also must find methods to help students challenge their own ideas about themselves, their relationship to design partners, and the role of design in the world.

What does all this look like in practice? In the next section, I draw from my own teaching experience to explore key challenges to design justice pedagogies.

### **Lessons from the Codesign Studio**

This chapter opened with a vignette of students reflecting on systemic inequality after attending a community organizing meeting at City Life/Vida Urbana in the context of the MIT Codesign Studio.<sup>44</sup> The



topical focus of the Codesign Studio, and the community partner organizations, changes each time I teach it.

For example, in 2014, the course focused on surveillance and privacy. Teams worked to design countersurveillance projects, grounded in the needs of communities most heavily targeted by state, military, and corporate surveillance. Projects and partner organizations included *SpideyApp*, an Android-based Stingray detector, with the American Civil Liberties Union of Massachusetts and the Guardian Project; graphics for the *Surveillance Self-Defense Guide*, with the Electronic Frontier Foundation; *I Am Not A Dot*, a project about the sex offender registry, with Citizens United for Rehabilitation of Errants; IPVTech, a research portal about the use of mobile technology by perpetrators of intimate partner violence, with Transition House and The Tor Project; the *UYC SMS Survey Initiative*, an SMS survey system to gather data about students and their experiences of surveillance and police abuse inside New York City high schools, with Urban Youth Collaborative; *Infiltrated*, an interactive, web based documentary about federal infiltration of social movements in the United States, with SoMove (the Social Movements Oral History Tour); and *Bedtime Stories*, an interactive documentary micro-site that raises awareness about the injustices of the US immigration detention and deportation system by focusing on the detention bed quota, with Detention Watch Network.

In 2016, inspired by the growing conversation about platform cooperativism,<sup>45</sup> the course focused on partnering with CBOs in the cooperative economy. We wanted to help create a pipeline for triple-bottom-line start-ups, built on free and open-source software, cooperatively owned by their workers, to disrupt exploitative models of work in current low-wage sectors. We partnered with four worker-owned cooperatives in the Boston area. With CERO, a cooperatively owned commercial composting company based in Dorchester, we conducted experiments in sales and marketing and produced a social media campaign about the environmental impacts of food waste and the benefits of composting. With Vida Verde, a cooperative of Brazilian housecleaners, we developed an online price quote calculator, an internal calendar system for scheduling cleanings, and an upgrade to the cooperative's website to make it more easily navigable and search engine optimized. With Loconomics, a freelance jobs platform that is like a cooperatively owned

version of TaskRabbit, we collaborated on user testing and prototyped improved interfaces for various tasks. With Restoring Roots, a landscaping coop based in Jamaica Plain, we codesigned a transmedia marketing campaign to promote the cooperative's services, as well as the ideas of urban gardening, permaculture, and worker-owned cooperatives.<sup>46</sup>

In 2017, our partners were youth media organizations across the Boston area, and the projects were related to young people's experience of Boston's housing crisis, gentrification, and displacement. We partnered with ZUMIX and the Urbano Project, two youth arts and media organizations in the Boston area, and NuVu Studio, an innovation school for middle and high school students in Cambridge. Codesign Studio students, ages eleven to twenty-six, gathered weekly at the MIT Center for Civic Media to work together while discussing topics central to design justice, gentrification, and transformative media organizing. Projects included *Open Book/Libro Abierto*, a printed and online book containing handwritten and printed texts along with photos of community members; a series of audio interviews about displacement and community in Egleston Square; *East Boston Voices*, a podcast about gentrification and displacement in East Boston; *Homesticker*, a geolocative media project about home and displacement; and *Rainbow*, an interactive art installation in Central Square's graffiti alley about Cambridge residents' experiences of gentrification.

All the Codesign Studio project teams produce case studies; these can be found at <https://codesign.mit.edu/projects>. In the case studies, design teams are responsible for reflecting on and critically evaluating their own work. They describe the project context, analyze their design process and the designed object that they produce, and end by discussing key challenges. Over the past six years, in their self-evaluations the codesign teams repeatedly identified the following common challenges: structural inequality can be identified, but not solved through a design process; it's very difficult to define *community* and to operationalize community accountability; it's important to consider various kinds of impact, including how to "do no harm"; it's important to prototype early, and get those prototypes into the hands of community members; broader power dynamics continue to exist within design justice teams; there are significant coordination and logistical challenges to effective community participation; community-facing events are key sites for an

inclusive process; it can be hard to ensure clarity about project ownership; and there are sociotechnical constraints on project implementation outside of harmful existing systems. Below, I have organized a discussion of each challenge, with examples drawn from student case studies. I have placed them in dialogue with the Design Justice Network Principles that were introduced at the beginning of this book.

### **Principle 1: We Use Design to Sustain, Heal, and Empower Our Communities, as Well as to Seek Liberation from Exploitative and Oppressive Systems**

The first principle of the Design Justice Network encourages designers to not only critique oppressive systems but also participate in active healing and community empowerment. In practice, student design teams wrestle with the fundamental tension that structural problems identified during design justice research cannot be easily designed away.

Especially in an educational setting, this tension can easily leave student designers feeling overwhelmed, hopeless, or paralyzed by the seeming futility of design work. Although true for all design approaches, it is especially crucial in design justice to find specific ways for participants to feel a sense of completion. Otherwise, the approach may dissuade, rather than encourage, people in marginalized positions within the matrix of domination from participating in design. For example, chapter 3 focused on the need to change exploitative narratives as part of the design process. The CL/VU Change the Game project team, described at the beginning of this chapter, noted tension between deep engagement with questions of structural inequality and the production of concrete product deliverables. They found that a “major challenge was balancing a nebulous concept like ‘changing the housing narrative’ with needing to produce a concrete product deliverable.”<sup>47</sup>

Master narratives, by definition, are very powerful and are difficult to disrupt. The SpideyApp team felt that their biggest challenge was “overcoming people’s preconceived ideas about privacy and educating them about the problem and why they should care.” This team was frustrated by state narratives about the necessity of surveillance, as well as by many people’s sentiments that they “have nothing to hide.”<sup>48</sup>

Design justice is a method that centers structural and institutional analysis of power inequality and is interested in root causes, unlike

many design approaches. However, even while recognizing that design often can only contribute in limited ways to challenging oppression, it is also a method that's meant to produce real designed objects, interfaces, services, and so on. There is thus an important tension within a design justice approach between dealing with the larger, long-term forces of structural inequality and the need to make something concrete in the here and now that can contribute to sustaining, healing, or empowering a community.

### **Principle 2: We Center the Voices of Those Who Are Directly Impacted by the Outcomes of the Design Process**

Although it is important to be guided by the principle "nothing about us without us," in practice design teams often wrestle with real-world implementation of the second design justice principle. In chapter 2, we discussed the crucial question of "Who gets to do design work?" Especially in design teams that include students, many ask some version of questions like: What is the community in this project? Who gets to speak for the community? How do we make our design process truly accountable?

In the Codesign Studio, the teaching team provides scaffolding to address these questions, primarily by seeking out CBOs that have established track records of doing good work in their communities. We also secure resources to enable CBOs to fully participate in the design process. Organizations typically choose one or two staff members and/or highly engaged community members to participate in the Codesign Studio as project leads; these individuals attend weekly course meetings as well as design workshops and project team meetings. In this way, we work to break down the traditional expert/client relationship, as well as the walls of the classroom. Project teams include students, MIT staff, and staff and volunteers from community partner organizations who all work to design projects together. This approach avoids the dynamic of student designers entering a community that is not their own in search of individual community members to participate in a design process that they (the students) have initiated and conceived.

If at all possible, educators who teach or facilitate design justice courses should find ways to resource community partners. It takes a lot of time and energy to remain engaged in a design process, time

that nonprofit staff or social movement organizations may not have. Although community partners may express desire to participate fully in the design process, they are often strapped for resources and understaffed, and staff may have multiple roles and responsibilities. If the design process unfolds over any significant length of time, early enthusiasm may give way to the realities of ongoing work, shifting priorities, and the need to respond to larger developments, crises, and/or political opportunities in the broader landscape.<sup>49</sup> Finding ways to compensate community partners for their time on the project can help mitigate these challenges.

Although bringing CBOs into the design process from the beginning is a key accountability strategy, in the Codesign Studio we also know that a team that is trying to practice design justice needs to develop very clear, transparent, and explicit decision-making processes. One way to do this is to require a written working agreement or memorandum of understanding among all team members. This kind of document describes who is participating, what their respective roles will be, how decision-making will work, ownership of any outputs, and so on.<sup>50</sup> The point is to make the process explicit and clear to all participants. A written agreement is a key starting point, but teams also often need to check in about how their decision-making process is working, as well as about how they feel about the design product(s). This approach is also recommended by the Boston Civic Media Consortium, which examined community-academic partnerships across Greater Boston in 2016 and found that such agreements are often crucial to help mitigate the asymmetrical power relationships between universities and CBOs.<sup>51</sup>

For example, the ZUMIX Codesign Studio team members reflect on this dynamic extensively in their case study. They note that in the process of developing a written MOU, they were “forced to think about not only what was feasible for the end-product, but also to think critically and openly about the planning, decision-making, and implementation processes that this project entails. Who gets to decide which project we choose? Who participates in designing and building the final product?” However, they go on to say that although they had clarity on paper, in practice, representation and accountability became more complicated: “According to our MOU, decision-making powers lie with the

'the project partnership team, composed of ZUMIX staff, the ZUMIX youth representative, and CMS.362 students.' However, our youth representative was never officially selected, leaving this spot empty and, should conflict have arisen, could have left the youth DJ voice silent in the decision-making process. This lack of follow-through was likely the result of inexperience, a desire to 'get things done,' and unrecognized ageism on the part of the core design team."<sup>52</sup>

The team members go on to describe a conflict about what form factor to use in the physical housing for an internet radio device that they built together. The students wanted to laser-cut an acrylic casing in the shape of a giant Z, to represent ZUMIX; the organization staff wanted to house the internet radio in a repurposed wooden old-time radio, to represent the values of remix and sustainability. The students pushed back and created the laser-cut casing, and ultimately, the organization was not satisfied by the project outcome. In their evaluation of challenges, team members reflected that it might have helped to check in regularly about how the decision-making process was working out, rather than just sign a written MOU at the beginning, and then move on to focus primarily on product discussions during team meetings.<sup>53</sup>

### **Principle 3: We Prioritize Design's Impact on the Community Over the Intentions of the Designer**

In design justice pedagogies, educators need to consider not only the learning outcomes for students, but also individual, organizational, and community-level impacts on partners. It's hard to overstate the importance of honestly asking: "What will community members get out of the process?" In particular, community members who live at the intersection of multiple forms of oppression often don't have free time to dedicate to a design process. Ideally, they will be paid for their time, but even so, community partners can sometimes be, and feel, used by the design process. In the worst case, community partner organizations are used by student design teams primarily as a way to access vulnerable populations in order to test student project ideas.<sup>54</sup>

Mistakes and failure are part of learning. However, the start-up discourse that valorizes failure can be particularly harmful in design justice processes. Start-up ideology, such as "move fast, break things" and "fail hard, fail fast," can become a justification for working styles that

replicate broader structural inequality, when privileged student designers get to have a learning experience that involves making mistakes in the real world at the expense of community partners.

In the Codesign Studio we have learned that it is important for design teams to think concretely about the kinds of impact they want their projects to have beyond raising awareness.<sup>55</sup> Issue visibility is not enough; project teams also have a responsibility to point people to specific actions they can take, and especially to connect them with existing organizations. For design projects to have large-scale impact, if that is one of the goals of the team (and it need not always be), institutional partnerships are often necessary. In addition to CBOs and networks, government, educational, arts, and media institutions are all possible partners that can bring additional resources to the table, heighten visibility, and scale impact. However, anything that requires institutional approval takes place in a time frame that doesn't usually fit well within an academic calendar. For example, team NuVu wanted to install a public interactive sculpture, but needed to do so without passing through a lengthy process of city approval.<sup>56</sup> Institutional partnerships also introduce additional challenges for design justice work, such as project attribution, control, and ownership.

One key mandate for design justice practitioners is to *do no harm*. Operationalizing this principle in a learning environment can be complex and challenging. In some cases, educators and/or community partners may need to veto student ideas because they would potentially place people from a vulnerable community at risk of harm. For example, in the Urban Youth Collaborative project, design candidates initially included public social media campaigns to document police abuse against high school students in New York City schools. However, UYC organizers reminded MIT students that this approach would place high school students at risk of retaliation from in-school police officers, with whom they have to engage daily.<sup>57</sup>

**Principle 4: We View Change as Emergent from an Accountable, Accessible, and Collaborative Process, Rather than as a Point at the End of a Process**

Codesign Studio participants often reflect that decision-making in any design project involves a delicate balance between the desire to be

inclusive, collaborative, and accountable, and the need to get things done. In many cases, perhaps counterintuitively, most participants feel better about the process if decision-making is constrained to a limited and specific number of moments. For example, especially in early-stage design projects, where the goal is to go from ideation to a prototype, everyone may feel better if feedback is limited to particular rounds rather than constant, ongoing back-and-forth about small requested changes. Limiting the number of rounds of feedback (say, to three) can function to help focus and prioritize the most essential changes between one iteration and the next. This is also the case from my experience across many different kinds of design processes, including projects with a traditional client/designer relationship. For example, Design Action Collective, a worker-owned cooperative that does graphic design and website development, includes a detailed process roadmap that specifies the number of feedback rounds in its boilerplate contracts.

Getting a prototype in front of real-world users early on in the design process is fundamental to making design more accessible. This is crucial because it helps to validate assumptions, reveal faulty thinking, and allow the team to iterate on the selected concept. This is widely understood across many approaches to design. When student teams spend too much time researching, theorizing, analyzing, and ideating, but fail to move quickly enough to mock-ups or prototypes (depending on the type of project), they lose invaluable opportunities to iterate on the project based on user testing and feedback.<sup>58</sup>

It's very easy for design teams operating on a semester schedule to run out of time. To take another example, *Open Book*, developed with Urbano Project to "share the stories of the activists and residents who are intervening in the gentrification of Boston neighborhoods and the displacement of its denizens," produced a compelling prototype object but ran out of time to implement the community partner's ideas about how to use the object to spark public dialogue. They had hoped to bring the book to Boston City Hall for a public event and gather more organizations from across the city to collaborate on content production, but never did so due to time constraints.<sup>59</sup> The Urban Youth Collaborative team had a similar experience: "Too much time was spent investigating options, rather than settling on a platform and tailoring it as needed."<sup>60</sup> Narrowing down from big concepts to working prototypes within



the available time can be very difficult. Part of the educator's role is to guide teams through this process with clear expectations and firm deadlines.

Because design justice pedagogies emphasize a balance of process and product, rather than simply valuing "final" products, regular assessments of student work and of the design process can help improve the overall experience for everyone. Leaving assessment to the end of the process, or just to one or two key moments (such as a midterm and the end of the semester), is a mistake. To further complicate matters, students do not always appreciate pedagogy that emphasizes process, real-world contexts, challenges, and partnership; instead, many desire a design studio that allows them to freely explore the limits of their creativity, with evaluation based on a final product.<sup>61</sup>

### **Principle 5: We See the Role of the Designer as a Facilitator Rather than an Expert**

Broader power dynamics do not magically disappear within design teams just because everyone involved is committed to design justice principles. Gender, race, class, disability, education, language, and other forms of structural inequality are always active in educational environments. These forces are in play between students from different backgrounds, between students and educators, between students and community members, and so on. These are complex dynamics that can be difficult to navigate.

Privilege and power never go away, but a design justice studio can become a place where they are explicitly recognized, acknowledged, and discussed. In developing a critical pedagogy of design justice, the facilitator must work to ensure that participants discuss privilege and power, introduce team working agreements that make these dynamics explicit and specify how they will be dealt with, and otherwise make the design process a place for mutual learning and growth around how to challenge the reproduction of structural oppression. There are specific training resources, such as the AORTA anti-oppression training manuals, that can be very helpful with this aspect of design justice work.<sup>62</sup>

It's very difficult to break down the walls between students and community members, although this is one of the goals of design justice pedagogies. At the same time, while we want to destabilize othering

and encourage shared connection across various kinds of difference, we don't want to "erase" differences or pretend that they do not exist. To hold these two goals in balance—to break down barriers and create a space of mutual empathy and solidarity, while recognizing and respecting the validity of different standpoints and life experiences—is one of the core challenges of any pedagogy of design justice. Additionally, many students subscribe to a liberal democratic theory of *multi-stakeholderism*, a concept that has been carefully critiqued by feminist ICT scholar and activist Paula Chakravarty.<sup>63</sup> For example, rather than work closely with a community partner organization that was already actively fighting displacement, one group of students expressed a desire to include people involved in promoting gentrification, such as developers, landlords, and gentrifiers, in their design process.

Besides the different standpoints of people on the design team, most people, including students and community partners, also are used to operating within a client/designer relationship. Students in the process of professionalization who have certain kinds of skills, especially software development, graphic design, or industrial design skills, are often unreceptive to the idea that in a codesign process, they might not be the only "expert" at the table. Although they may have specialized knowledge that the community partner does not, some students are unable to fully respect that the community partner also has specialized knowledge. Some kinds of knowledge are valued much more than others, and students often have internalized a value system that places their own skillset and experiences above those of community organizers and community members.

These dynamics are even more prominent in professional design contexts. In other words, many designers have a highly specialized skillset and value their own skills and opinions more than those of a community partner (or a client). That said, it is worth questioning whether in any particular design justice process it makes sense to challenge the fundamental idea of the client/designer relationship to attempt to create a shared and mutually accountable codesign team, or whether it in fact makes sense to have very clearly articulated client and designer roles.<sup>64</sup> Either way, it is crucial to spell out all roles, responsibilities, and decision-making processes. As feminist scholar Jo Freeman notes in her classic article "The Tyranny of Structurelessness," too often the pretense

of a flat structure serves primarily not to truly flatten power dynamics, but simply to mask them.<sup>65</sup>

Even when teams are explicit about their decision-making process, most people are not used to democratic decision making. Throughout our lives, and especially when we are still young people, we are socialized into authoritarian decision-making structures. Most classrooms, workplaces, and families are structured with hierarchical power. Because design justice focuses on fair and meaningful participation in design decisions, one of the goals of design justice pedagogies is to explore the possibility of more democratic decision making within design processes. Student teams usually need significant scaffolding and support for how to do this. For example, team CERO said, “The decision making process was messy because we wanted everyone to sign off on a project before we dove in. ... Ultimately we believe that muddling through ideas in this way was useful despite being time-consuming, because we were able to hone our priorities together as a team.”<sup>66</sup>

To summarize: privilege and power do not magically disappear in a design justice process. Student designers often expect to operate within a client/designer relationship; also, like most people, they are not used to democratic decision making. Students often subscribe to mainstream ideas about design, and constantly make assumptions about communities that may or may not be true. Some strategies to mitigate these challenges include creating clear, written agreements about project ownership and decision-making processes, as well as validating assumptions early and often.

### **Principle 6: We Believe that Everyone Is an Expert Based on Their Own Lived Experience and that We All Have Unique and Brilliant Contributions to Bring to a Design Process**

The principle that everyone is an expert based on their own lived experience is a crucial element of design justice, but in a design class composed of students, community partners, and support staff, the logistics of inclusion are often quite challenging.

Diverse design teams present special difficulties. It’s hard enough to match students with each other, let alone with community partners; it’s important to find a good way to match student skills and interests with community projects. One approach, perhaps the most effective for

doing real design work, is for students in such a class to already have relationships with the community partner organizations. On the other hand, that approach is limited to those students who already have such relationships, but fostering these relationships is itself an important goal of critical design pedagogy, as noted by scholars, artists, and data scientists Catherine D'Ignazio and Lauren Klein in their approach to teaching feminist data visualization.<sup>67</sup>

Also, teams change: participants often shift during the course of the project for a variety of reasons. This is true for any design process that extends for any length of time but is especially likely when partnering with smaller CBOs. For example, team CERO had a new cooperative worker join at midterm, and that shifted the focus of their project "to collecting more information ... instead of developing an MVP related to the information we already had." For the Loconomics team, one member dropped out, while another was hospitalized with a broken leg.<sup>68</sup>

Even when teams are solid, coordination is tricky. For example, the *Claro Que Si* team found that it was very difficult to coordinate when some team members were students, some were nonprofit staff, and some were working-class people.<sup>69</sup> Scheduling time to work out of class can be "a nightmare";<sup>70</sup> the CERO team constantly struggled to find meeting times that were accessible to both students and CERO workers/owners.<sup>71</sup> In the Codesign Studio, we find that teams need to be reminded specifically to organize a persistent communication channel, whether an email list, chat group, or something else. Teams also need to choose tools for project work. In some cases, it may be best to let teams choose their own working toolset; in others, the educator may want to standardize the tools across the class. The benefit of using the same toolset is that class participants may provide informal peer-to-peer support with the tools; however, teams working on very different types of projects, or with very different kinds of communities, may find a particular tool an imposition. Digital tool selection also tends to privilege the most tech-savvy team members.

Language may also be a barrier. Team Vida Verde experienced difficulties because the home cleaners they worked with were native Portuguese speakers, while the students were mostly monolingual English speakers.<sup>72</sup>

Geographically distributed teams are especially hard to work with. For example, the Urban Youth Collaborative team found communication and coordination very difficult within a team distributed among Cambridge, Boston, Wellesley, and New York City.<sup>73</sup> The Detention Watch Network team noted that when possible, it works best to organize times for distributed teams to meet face to face (ideally) or remotely (if necessary) to sprint on a project together.<sup>74</sup>

Regardless of the amount of scaffolding provided by the educator/facilitator(s), as the CERO project team says, “design processes can be messy and confusing.”<sup>75</sup> Indeed, education scholar Brent Mawson has argued that the linear design process models so frequently taught in design classes generally fail to reflect the nonlinear strategies that are actually employed by learners.<sup>76</sup> Learning how to successfully navigate the “messiness” of an inclusive design process that takes everyone’s lived experience seriously is ultimately one of the key goals of design justice pedagogies.

### **Principle 7: We Share Design Knowledge and Tools with Our Communities**

Part of the facilitator/educator’s role is to support students to engage with community members beyond the classroom walls. As discussed in chapter 4, the physical sites where we choose to engage in design processes have important implications for who is able to participate. For example, it may be possible to participate in existing community events, to move ongoing design meetings to community spaces, and/or to organize community design workshops related to the project.

Often, design teams can piggyback on existing community events to test ideas, gather feedback, and produce content. This was the case for the *Bedtime Stories* codesign project with Detention Watch Network. The design team used a #Not1More immigrant rights event in Jamaica Plain as a site to seek volunteers and shoot key video content for the microsite: “We showed up to this event with our camera gear and a cheap bed, unsolicited, and asked the organizers if they’d be interested in posing for our GIFs. We were able to produce 7 GIFs that day.”<sup>77</sup> Another team, Peas in a Podcast, said that they wished they had moved their entire podcast production process into a community radio station.<sup>78</sup> Moving aspects of the design and production process out of the

professional design studio, university, or lab and into accessible community sites is a key component of a design justice approach.

Design teams may also organize fun, engaging events, like the DiscoTechs discussed in chapter 4, to bring more community members into the process. However, too often such events are framed as places to make or hack new things, not as places where community members can help generate ideas, make decisions, guide the design process, test out prototypes, or provide meaningful feedback. For example, the Locoeconomics team members struggled all semester to find appropriate users for testing prototypes, until finally they were able to test with many people at once in the co-op DiscoTech event. Overall, events organized by community partners can be excellent opportunities for many aspects of design, including ideation, testing, validating assumptions, decision making, and more.<sup>79</sup>

### **Principle 8: We Work toward Sustainable, Community-Led, and Controlled Outcomes**

In my experience, many students have been socialized into entrepreneurial neoliberal subjectivity, as articulated so lucidly by scholar, designer, and digital worker advocate Lilly Irani.<sup>80</sup> They often arrive to the classroom primed to believe in and desire individual intellectual property, product ownership, and patents on their work. Universities also increasingly provide support to their students (and faculty) to take the outputs of shared design processes and use them to launch start-up for-profit companies. Students may not have been exposed to conversations about why the commons is important, why free software is important, or why it may make sense for a community-based organization to have ownership of design outcomes. Therefore, in addition to ongoing conversations about these ideas within the space of the classroom, within design justice pedagogies it's essential to create concrete agreements about project ownership and handoff.

Clear, signed agreements about ownership are key. Design projects produce a wide range of outputs: from physical and digital artefacts and objects to working code, from applications installed on particular servers to images and representations of what the project was about, from slide decks, zines, and academic papers to data produced by community partners and community members. All of these are ideally covered in

written MOUs. For example, if a project generates data, that data must be shared back with the community partner. However, even when such written agreements exist, it is unfortunately entirely possible that end-of-project transfer of relevant materials never takes place. This typically happens not out of intentional noncompliance, but because after the end of the school year, students move on. For example, in the Codesign Studio, community partner DS4SI had this experience with a student design project meant to capture neighborhood resident views about the possible future of urban planning: “Directly following the project ending, we were all in good spirits. The [Upham’s Corner Input Collector (UCIC)] had been made and made beautifully, matching the design and feel of the exhibit and had been there to collect necessary data. Even though it broke down and only worked for about half of the week-long exhibit, we felt positive feelings. A month later however, with none of the data synthesized or even sent back to us in a raw format for us to work through, this project seems much less beneficial.”<sup>81</sup> This project partner went on to suggest that it may be crucial to include project handoff to the community partner within the time frame of the semester and to link it to student grades. Also crucial here is the lesson that, when student design teams deploy projects in the real world, they often forget about the need to plan for project maintenance after the semester’s end.

### **Principle 9: We Work toward Nonexploitative Solutions that Reconnect Us to the Earth and to Each Other**

This principle may be one of the hardest to realize in practice, in part because of the extensive sociotechnical constraints on its implementation. Design teams always face technical challenges on the path toward realization of their ideal vision; indeed, as discussed in chapter 1, this is a key part of the nature of design. Design justice practitioners who hope to avoid solutions that damage the Earth or that rely on exploitative labor relations face additional layers of constraint on the range of possible options. Of course, no solution is ever perfect, regardless of the criteria, and design can be seen as a permanent *striving toward*, an ongoing process of ideation, iteration, and revision toward the ideal. In design justice pedagogies, understanding this can help mitigate disappointment.

Even when the design team hopes to develop nonexploitative solutions, organizations and individuals are often locked in to particular infrastructures, tools, platforms, or ways of working. For example, Facebook is seen by many design justice practitioners as highly exploitative of user data and as potentially harmful to social movements, but it is also used by most community-based organizations as a key element of communicative practices, so it cannot be ignored by design teams working on a communication campaign.

In some cases, a design project may provide impetus for organizations to shift away from suboptimal or harmful tools and platforms. However, more frequently the design team will have to respect this constraint and adapt the project accordingly. For example, for the EFF Surveillance Self-Defense project, the organization chose to use a content-management system that has a notoriously steep learning curve and that the design team had no familiarity with; this left them dependent on theme-integration work from a third-party developer.<sup>82</sup>

**Principle 10: Before Seeking New Design Solutions, We Look for What Is Already Working at the Community Level, and We Honor and Uplift Traditional, Indigenous, and Local Knowledge and Practices**

Finally, in design justice pedagogies, it is often the educator/facilitator's role to encourage design teams to first consider what already works at the community level, and to steer students away from the pitfalls of tech solutionism and technochauvanism, as described with such clarity and wit by scholar and data journalist Meredith Broussard.<sup>83</sup> This includes exploring whether the design team might be able to amplify, remix, or otherwise repurpose existing projects, practices, applications, or tools, rather than build something new. Creatively repurposing freely or cheaply available elements is useful for rapid prototyping, idea validation, cost reduction, long-term sustainability, and more. However, there is no magic bullet. Building something new, on the one hand, or repurposing existing tools or products, on the other, both bring their own challenges. The desire to build something new may keep project teams from using existing tools that might be "good enough" to implement the project, if not a perfect fit. At the same time, limitations of existing products may make it very difficult to implement the project



vision, and existing tools, platforms, and infrastructure often violate Principle 9.

One good way to navigate these challenges is for the educator/facilitator to guide the project team to implement a mockup or rough prototype of their top design candidate, using already existing tools, early on in the process. For example, the Urbano team case study describes the twists and turns of trying to implement a stop-motion animation studio and screening room in a small suitcase, using a prepaid mobile hotspot, Vine, and dual Kindles: “We spent significant time trying to find a way through the walled garden of Vine ... we quickly found that the only tablets that run Vine are Kindles.”<sup>84</sup>

Finally, one of the most crucial, if seemingly obvious, lessons here is the value of students spending time with the community. In a design justice process, it is crucial for the whole team to physically spend time with the community that is supposed to lead the process. As DS4SI noted, “We realized the importance of the students coming to Uphams Corner too late.”<sup>85</sup> The Neighbormedia team also felt it was very important to meet in the community partners’ space,<sup>86</sup> as much and as early as possible in the design process.

### **Conclusions: Learning to Code as Liberatory World-Making, or Workplace Preparedness under Neoliberal Technoculture?**

In 2016, the Obama administration announced a Computer Science for All initiative and proposed \$4 billion for states, \$100 million for school districts, and \$135 million for the National Science Foundation and the Corporation for National and Community Service to train computer science teachers. President Obama announced the program with the following statement:

We live in a time of extraordinary change—change that’s affecting the way we live and the way we work. New technology replaces any job where work can be automated. Workers need more skills to get ahead. These changes aren’t new, and they’re only going to accelerate. So the question we have to ask ourselves is, “How can we make sure everyone has a fair shot at success in this new economy?” ... I’ve got a plan to help make sure all our kids get an opportunity to learn computer science, especially girls and minorities. It’s called Computer Science For All. And it means just what it says—giving every student in America an early start at learning the skills they’ll need to get ahead in the new economy.<sup>87</sup>

Most of the money never materialized,<sup>88</sup> but the underlying assumptions have only gained power. Teaching people how to code is increasingly presented as a key goal—perhaps *the* key goal—for the education system under late-stage informational capitalism. Producing a workforce with software development skills or otherwise ensuring a sufficient supply of workers with the ability to code has become a key national project for many countries.

However, the US educational system exists under conditions of prolonged imposed resource scarcity. Funding for public education is under constant attack, and children are funneled into a two-tier educational system. The lower tier is a warehousing and feeder system for the prison industrial complex, known as the *school-to-prison pipeline*.<sup>89</sup> In the broader context of rising wealth inequality, a winner-take-all dynamic is at play, with wealthy white people withdrawing their children and tax dollars from schools that used to serve mixed-income and multiracial populations. Forty-three percent of Black and/or Latinx students attend schools with poverty rates above 80 percent, compared to 4 percent of whites.<sup>90</sup>

Schools in low-income communities of color are rarely allocated the resources they need to provide high-quality STEM education. As a result, Black, Latinx, and/or low-income students are more likely to be taught by less experienced teachers, receive less funding per student, face lower expectations, and score lower on standardized STEM tests, and are less likely to enter STEM fields in higher education.<sup>91</sup> School pushout and in-school abuses faced by LGBTQ and GNC youth, especially LGBTQ youth of color,<sup>92</sup> are additional factors that militate against more women, POC, and LGBTQI people gaining STEM education and thereby moving into coding, design, and technology professions. What's more, under the austerity conditions of radically underfunded public education, in public schools learning to code ends up positioned against other skills, especially humanities and the arts. Budget cuts come first for subjects that emphasize creativity and critical thinking.

Meanwhile, private and wealthier schools increasingly provide a plethora of computation and design courses. At the same time, as sociologist Tressie McMillan Cottom documents in her book *Lower Ed: The Troubling Rise of For-Profit Colleges in the New Economy*, for-profit universities that promise to teach coding skills and secure jobs for their

graduates proliferate both on and offline.<sup>93</sup> Many of the most visible for-profit coding schools and boot camps are expensive, inaccessible, and have dubious placement outcomes.<sup>94</sup>

Unsurprisingly, given this context, digital learning among young people remains structured by race, class, and gender. In a recent study of digital learning, education researchers Mimi Ito and Justin Reich find that, in many cases, digital learning technologies such as MOOCs and online courses, in-school computing classes, and other interventions actually exacerbate inequalities in learning outcomes between low-income and wealthier students, between students of color and white students, and between male and female students. In addition, they note that the use of digital technology in education often unintentionally reproduces inequality, in large part due to “institutionalized and unconscious bias and social distance between developers and those they seek to serve.”<sup>95</sup>

Ultimately, as more and more production processes are digitized and as design becomes primarily dependent on software, there is a growing design education gap. In other words, although the digitization of design theoretically democratizes design education, in practice it disproportionately benefits already powerful groups. The benefits of design education remain structured by the matrix of domination.

### **Democratizing Design Education**

Even under these extremely difficult conditions, there is no paucity of brilliant, innovative individuals and organizations from marginalized communities who focus on the democratization of design education. Largely due to their efforts, some of the goals of pop ed and other liberatory design pedagogies presented in this chapter are arguably becoming mainstreamed.

For example, learning to code is increasingly taught in ways that emphasize diversity, creativity, and critical thinking. This is especially taking place in K-12 education. Educators Jane Margolis and Joanna Goode, authors of *Stuck in the Shallow End*, received NSF funding to develop the Exploring Computer Science curriculum, a year-long introduction to computer science for high schoolers, as well as a teacher professional development program with an emphasis on increasing equity in computing.<sup>96</sup> This curriculum has been widely adopted. Code.org,

a large nonprofit that focuses on expanding computer science education in schools and reaches 30 percent of K–12 students in the United States, explicitly works to increase the participation of women and underrepresented minorities in computer science, with some promising outcomes in high school CS course participation rates.<sup>97</sup> The MIT Teaching Systems Lab has developed a research-based approach to dealing with bias in teaching, and some of their findings have been incorporated into Code.org’s approach.<sup>98</sup> Scratch, the widely used platform for computational literacy that was developed at the MIT Media Lab’s Lifelong Kindergarten group, is entirely focused on creative computing.<sup>99</sup> There is also a new wave of attention in higher education to teaching computer science in ways linked to social and ethical concerns.<sup>100</sup>

There has also been a recent increase in attention to (and funding to address) the lack of diversity in STEM education, as well as continued efforts by many organizations that have long worked toward gender parity and racial equity in STEM. For example, the National Center for Women and Information Technology (NCWIT), a community of several hundred companies, universities, government agencies, and nonprofit organizations, was founded in 2004 by the National Science Foundation to advance women and girls’ participation in ICTs.<sup>101</sup> Alongside longstanding initiatives, newer organizations that focus on building the design, tech, and media skills of girls and women, B/I/PoC, and LGBTQ folks also continue to emerge. Media scholar Christina Dunbar-Hester describes Debian Women, Geek Feminism (geekfeminism.org), PyLadies, Genderchangers (<https://www.genderchangers.org>), and other groups that, since the early 2000s, have focused on increasing the participation of women in free software development, within Python, Debian, and Linux communities.<sup>102</sup> Black Girls Code, launched in 2011, teaches young African American women the basics of computer science and software development.<sup>103</sup> Girls Who Code, launched in 2012, focuses on eliminating the gender gap in the technology and engineering sectors.<sup>104</sup> Code2040, based in San Francisco, works “to ensure that by the year 2040—when the US will be majority Black and Latinx—we are proportionally represented in America’s innovation economy as technologists, investors, thought leaders, and entrepreneurs.”<sup>105</sup>

These kinds of organizations (and there are many more) are doing crucial work. Undoubtedly, design justice requires a broad democratization of software development capabilities. In a world structured by software, dismantling the matrix of domination requires that people from more diverse backgrounds learn coding skills. However, design justice principles impel us to also ask: Will all this coding education necessarily advance our collective liberation? How can we ensure that it does?

### **Make All People Good Coders, or Make All Coders Good People?**

A century ago, sociologist, historian, and Black liberation activist W. E. B. Du Bois famously engaged in a sustained debate with educator, author, and presidential advisor Booker T. Washington over the nature of the education system that was to be put in place for Black people after the end of slavery, the collapse of Reconstruction, and the rise of Jim Crow. At the turn of the century, Washington created a system of vocational schools that focused on teaching Black people marketable skills for employability in agriculture and industry. Du Bois, on the other hand, argued for the creation of Black liberal arts colleges to foster a new generation of Black leaders, critical thinkers, cultural luminaries, and (above all else) teachers, who would be able to bring the benefits of education to all Black people.<sup>106</sup> For Du Bois, in a phrase that he would repeat in multiple speeches and writings, “The object of education was not to make [people] carpenters, but to make carpenters [people].”<sup>107</sup> Following Du Bois, we might ask of the recent emphasis on learning to code: Is the ultimate object to make people good coders, or to make coders good people?

The ability to design new technologies, platforms, and systems is undoubtedly a key skill in today’s economy, and the democratization of this ability is one key goal of design justice. However, are we satisfied with everyone learning to code, if the end game is to produce (admittedly more “diverse”) coders who will primarily work to ensure the continued profitability of capitalist start-ups and technology giants? Or, like Du Bois, might we advocate that people learn to code in ways that also push them to think more critically about software, technology, and design and that prepare them to help reshape technology in the service of human liberation and ecological sustainability, rather than the matrix of domination?

Hopefully, both are possible: design pedagogies that promote critical thinking are not incompatible with the development of practical design skills. Design justice is a framework that can help guide us as we seek to teach computing, software development, and design in ways that support, rather than suppress, the development of critical consciousness and that provide scaffolding for learners' connections to the social movements that are necessary to transform our world.



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