



A Living Framework for Abolitionist Teaching in Computer Science

Leah Namisa Rosenbloom
leah_rosenbloom@brown.edu
Brown University
Providence, Rhode Island, USA

ABSTRACT

Institutions of learning are deeply entangled with, and often reproduce, dominant hierarchies. Shielded by normative conceptions of scientific legitimacy, objectivity, and benevolence, computer science (CS) education-produced technologies have been shown to facilitate systemic oppression. Abolition, or the theory and practice of seeking freedom from oppression, provides a powerful lens with which to reveal and replace dominant practices in CS education with those that sustain human lives and livelihoods. The following organizational framework synthesizes the work of abolitionist teachers toward confronting and changing the role of CS education-produced technologies in strengthening systems of oppression.

CCS CONCEPTS

• **Applied computing** → **Education; Sociology.**

KEYWORDS

abolition, abolitionist teaching, computer science education, liberatory pedagogy

ACM Reference Format:

Leah Namisa Rosenbloom. 2023. A Living Framework for Abolitionist Teaching in Computer Science. In *Proceedings of the ACM Conference on Global Computing Education Vol 1 (CompEd 2023)*, December 5–9, 2023, Hyderabad, India. ACM, New York, NY, USA, 7 pages. <https://doi.org/10.1145/3576882.3617923>

1 INTRODUCTION

Abolition refers to an integrated theory and practice, or praxis [29], of seeking freedom from oppression. Modern abolitionist praxis began in 1619 as a movement against chattel slavery in what British colonizers would later name the United States (U.S.) [34]. Sojourner Truth was among the first to form a rigorous analysis of the intersections of racialized and sexualized capitalist exploitation in 1851 [76], and W.E.B. Du Bois theorized abolition in 1935 as the “abolition democracy” practiced by Black people during Black Reconstruction in the U.S. South [26]. In particular, Du Bois framed abolition democracy as a struggle for freedom against racialized capitalism, which commodifies human labor and upholds systems that define Whiteness as subjectified property in opposition to Blackness as objectified commodity [2, 9, 35, 49, 83].

This freedom struggle continues today against institutions and practices that uphold the prison-industrial complex (PIC), or the “overlapping interests of government and industry that use surveillance, policing, and imprisonment as solutions to economic, social and political problems” [65]. While many abolitionist movements seek to dismantle the PIC [2, 21, 22, 64], abolition praxis is rooted more widely as freedom-seeking not only from incarceration itself, but also from incarceration-entangled systems of oppression such as the school-to-prison pipeline [21, 50, 67, 84] and the New Jim Code [2, 10]. Freedom also extends into the immaterial realms of spiritual, emotional, and psychological well-being [42, 53, 68, 71, 84], realms in which the datafication of injustice [10, 11, 42, 57, 85] is de-emphasized in favor of human-centered ways of knowing such as song, story-telling, poetry, and speculative fiction [9, 16, 52, 60, 70].

Abolition does not merely imply a destructive process, but also a generative process of imagining and creating ways of knowing and being that center the freedom dreams of people who have been marginalized by interlocking systems of oppression [17, 21, 42, 53, 54, 65, 71]. *Abolitionist teachers* work to undo the structural role of education in reproducing these systems, and reimagine schools as learning communities with foundations of love, justice, joy, respect, well-being, and radical Black subjectivity [37, 39, 42, 53, 73]. Highlighting the abolitionist interweaving of destruction and new life, Crystal T. Laura conceives of abolition as both the “deliberate, intentional removal of imprisonment, isolation, [and] punitive institutionalization as the foremost way that we address issues of harm and healing” as well as our ability to *replace* those systems by “utilizing our imagination” toward building strong relationships, communities, and accessible wells of material resources that “sustain happy and healthy ways of living” [73]. Laura seeks to “live the principles of abolition by beginning...from spaces of love, of justice, of joy.” The praxis of *abolition science*, as described by Abolition Science Project creators LaToya Strong and Atasi Das, has the potential to undermine interlocking systems of oppression that STEM fields facilitate, imagine alternative technological futures, build community, honor and learn from history, and become a resource for, rather than a threat to, human life [72].

Computer scientists and technologists, who learn from CS teachers, often create knowledge and technologies that reproduce and reinforce interlocking systems of oppression [10, 13, 28, 43, 59]. Surveillance technologies, predictive and risk assessment algorithms, facial recognition, biometric and genetic fingerprinting, and remote monitoring technologies reduce friction at every stage of the “corrections” [10, p. 165] pipeline [10, 13, 43], and make it easier for institutions of power to police, incarcerate, and control minoritized populations all over the world [10, 24]. Computer vision, machine learning, and search algorithms reinforce race, gender, and



This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike International 4.0 License.

CompEd 2023, December 5–9, 2023, Hyderabad, India
© 2023 Copyright held by the owner/author(s).
ACM ISBN 979-8-4007-0048-4/23/12.
<https://doi.org/10.1145/3576882.3617923>

class-based stereotypes and oppression [14, 28, 43, 44, 59] by creating systems of technological redlining, or algorithmic decisions that “reinforce oppressive social relationships and enact new modes of racial profiling” [59, p.1]. In the hands of people looking to challenge and subvert systems of oppression, however, CS-produced technologies can be wielded as tools of liberation [10, 33, 40, 59].

In *We Tell These Stories to Survive: Towards Abolition in Computer Science Education*, Stephanie T. Jones and natalie araujo melo draw on BlackCrit theory [27], speculative fiction [9, 16, 60], and counter-storytelling [70] to develop CS teachers’ collective critical consciousness about the role of CS education in reproducing systems of oppression, as well as its liberatory potential [42, p. 305]. Front and center in Jones and melo’s work is a critique of “efforts to broaden participation in computer science,” since these efforts are “heavily driven by industry, government, and military interests” [42, p. 290] and serve to “advance the goals of militarism, occupation, surveillance, and expansionism” [78]. Echoing the critical self-interrogation of CS education scholars [63, 77, 80], Jones and melo invite CS teachers to consider “why, for whom, and towards what ends” we teach CS [42, p. 300].

As people whose day-to-day work consists of curating, sharing, and (re)producing technical knowledge, CS teachers are uniquely positioned to begin the work of revealing and replacing the oppressive sociotechnical codes [10] that are invisibly embedded into CS knowledge production. Grounded in the praxis of contemporary abolitionist teachers [10, 18, 19, 21, 27, 30, 39, 42, 50, 53, 56, 62, 68, 72, 80], and especially in Jones and melo’s transformative reimagining of CS education [42], this work seeks to develop a *living organizational framework* for abolitionist teaching in CS.

As Danny Morales-Doyle notes, it is difficult for students (and teachers, who are also students of their students and of abolitionist praxis) to engage with the totality of complex issues without *organizational structure*, which can “develop their capacity in a focused and thoughtful way over time” [74]. Like systems of oppression, however, abolitionist praxis finds strength in flexibility and adaptability [10, p. 46], and therefore the contents of the framework are not meant to be tenets [27, p. 429], but *living praxis*—theories and practices that grow and change depending on the individual needs and challenges of those who wield them. Moreover, the framework is not intended to be used as a fixed or rigid tool in isolation from—or as a substitution for—the many existing resources on abolitionist teaching. Rather, it is meant to serve alongside those resources as a scaffolding tool [74, 81] that can help CS teachers 1) evaluate their teaching pedagogy and practice from an abolitionist perspective, and 2) generate new pedagogy that seeks to dismantle and replace systems of technological oppression.

2 ABOLITIONIST TEACHING FRAMEWORK

In *We Want To Do More Than Survive: Abolitionist Teaching and the Pursuit of Educational Freedom*, Bettina L. Love builds on the intersecting critical frameworks of critical pedagogy [29, 39], critical race theory [8, 49, 82], and intersectional feminism [17–19, 76] to develop an abolitionist teaching praxis [53]. Under the heading “Reform Ain’t Justice,” Love articulates the spirit of abolitionist teaching: teachers working in solidarity with community organizations and activists, writing curricula that highlight both examples

and strategies of resistance, protecting those who are most vulnerable, learning about sociopolitical landscapes through the “historical, intersectional justice lens” developed by Black feminist and critical race theorists, confronting racism and oppression, and embracing joy to create spaces of “love, solidarity, and resiliency” [53, p.10–12]. The following framework and accompanying reflection questions aim to integrate aspects of Love’s praxis with perspectives and examples from abolitionist efforts in CS education.

2.1 Community Organizing

“Community-based organizations...can help new teachers to see the communities in complex ways, to see their strengths and their conditions of struggle and their victories and successes in fighting for social justice over the years...And the community-based organizations do that in a way that we at the University just can’t.”

—Danny Morales-Doyle [74]

Abolitionist teaching praxis recognizes the classroom community as inherently intertwined with local and global communities, and that students and teachers bring the totality of their lived experiences into the classroom [39, 42, 53, 74]. Inspired by Ella Baker, Love emphasizes the importance of building classroom communities “on the cultural wealth of students’ communities” and “in parallel with those communities” [53, p. 68]. Abolitionist pedagogy, like justice-centered pedagogy [56, 78], emphasizes action and participation by insisting that teachers and students develop concrete and sustained partnerships with local community organizations.

It is vital for CS teachers to distinguish community organizing toward the abolition of oppressive systems from standardized “diversity and inclusion” initiatives, which have largely emerged from a superficial, performative, tokenizing, and neoliberal treatment of multiculturalism [30, 38, 39, 41, 61]. Such programs push for “diversity” while doing nothing to unpack or address the harms that CS education-produced knowledge and technology do to “diverse” communities [27, 41, 42, 62, 74]. Instead, they expect newly-recruited students and faculty to assimilate into White supremacist, technocolonial ways of knowing and being that “dispose of them, their communities, and the nature around them” [42], such that they feel like they need to “make white people comfortable” [62, p. 17] and “sell out” [41, 79] in order to succeed.

The Young People’s Race, Power, and Technology Project (YPRPT) is a transdisciplinary project organized by the Tree Lab that brings together high school and undergraduate students, researchers, community organizers, teachers, filmmakers, and researchers in Chicago to “explore, engage, critique, and reimagine the role of technology in their neighborhoods, schools, and communities” [48]. All of the participants work together to “understand the impact, limitations, harms, and possibilities that new technologies offer, particularly for historically marginalized communities of color” [48]. Students are then empowered through the act of documentary film-making to speak their knowledge, experiences, and ideas in a format that is engaging and accessible to other students and to their communities. Similar projects, such as those under the umbrella of “youth participatory science” [56], which combines Youth Participatory Action Research [5, 15] and Citizen Science [11, 74], exemplify the importance of connecting science education praxis to the knowledge, wisdom, experience, and expertise of communities.

Reflection Questions. *Who are the people and communities most impacted by the CS concepts and technologies that I teach? How might I go about listening to the self-articulated perspectives, experiences, and needs of those people and communities? How might I reimagine my lessons, assessments, and curricula to center the above testimony? How might my students and I work with local community organizations toward social, political, economic, and environmental justice?*

2.2 History, Civics, and Resistance

“All too often, we have been seduced into forgetting (or have chosen to do so), given the weight and power of our memories and the often radical act of (re)membering in our present lives and work, that is (re)membering as an act of decolonization.”

—Cynthia Dillard [23] via Bettina L. Love [53, p. 99]

James Baldwin asserts that history lives in the present—that it is a “great force” by which people are “unconsciously controlled” [3, 10]. Deeply intertwined with and manifest from the histories that form the foundations of language and everyday experience [19, 37, 42] are civic affairs—especially the legal frameworks that govern human rights, freedoms, and opportunities—and our collective *resistance* to oppressive systems [53]. In the context of history, civics, and resistance, education is inherently political [39]. As such, it is up to CS teachers to decide whether to help create a sociotechnical “politics of domination” [37] and forgetfulness, or to embrace and teach a “politics of refusal” [53, p. 52] and radical remembering [37, 53] that resists domination and empowers students to become transformative intellectuals [56]. This process requires providing students with “not only examples of resistance, but strategies of resistance” [53, p. 11].

Abolitionist teachers draw upon methods of historical analysis and resistance from critical theories that position the perspectives and experiences of historically marginalized groups as the keys to understanding contemporary systems of oppression. For example, Ruha Benjamin grounds *Race After Technology: Abolitionist Tools for the New Jim Code* in critical race and science and technology studies [10, p. 34], adding the interpretation of race as technology [10, p. 36], which frames the mutual co-arising of race, capitalism, and technology as a foundation for understanding how modern systems of racial and technological oppression are reproductions—and extensions—of historical sociotechnical systems [10, p. 76].

Students in Seny Kamara, Kweku Kwegyir-Aggrey, and Lucy Qin’s course *Algorithms for the People* [43] learn about Operation Vula, the encryption protocol used by activists in the African National Congress (ANC) to fight apartheid in South Africa. Telling and engaging with this story not only centers an important historical movement for racial justice, but also demonstrates the ways in which technology can be leveraged to help liberatory movements succeed. As part of the class discussion, students read and listen to first-person testimony from ANC activists—one of whom articulated difficulty with accessing and applying the “arcane science” of cryptography—and come to recognize the importance of designing technology and technology education with activists’ needs in mind.

Reflection Questions. *What is the social, historical, political, economic, and environmental context of the CS material that I teach? How might this material help to create technologies that reproduce interlocking systems of technological oppression (for example by making*

it easier for powerful institutions and dominant hierarchies to inflict physical, psychological, emotional, or spiritual harm on marginalized people)? In what ways have people resisted the systems of technological oppression identified above? How might I develop these examples and strategies of resistance with my students?

2.3 Intersectional Strength

“the major systems of oppression are interlocking. The synthesis of these oppressions creates the conditions of our lives.”

—The Combahee River Collective [17]

“Nobody’s free until everybody’s free.”

—Fannie Lou Hamer [32]

This work follows Black and intersectional feminists in defining oppression as an interlocking system [17–20, 33, 37, 52, 53] that can only be seen and confronted by adopting an intersectional lens of analysis [19]. An intersectional lens asks people to consider the impact of oppression on the totality of the human experience—in other words, without flattening people or commodifying their identities [37, p. 7–8]. Drawing on the positioning of both race and technology as codes, or tools, of oppressive systems, Benjamin notes that in sociotechnical spaces, “multiple axes of domination typically converge in a single code” [10, p. 74]. These convergences have been mapped and explored in foundational work such as Safiya Umoja Noble’s analysis of the disproportionately negative impact of search algorithms on young Black women and Women of Color [59] and Virginia Eubanks’ documentation of how risk and welfare assessments further stigmatize and disadvantage people at the intersections of race, class, and gender [28].

In order to prevent sociotechnical systems from not only reproducing but constructing “new methods of social control” [10, p. 76], CS teachers must closely analyze the interlocking nature of technological oppression. In order to *uproot* and *replace* these systems, they must recognize the intersectional nature of identity as a *strength*—a “fund of necessary polarities between which our creativity can spark like a dialectic” [52] in order to create coalitions [19] and ways of “relating across differences” [52]. Audre Lorde continues, “Only within that interdependency of different strengths, acknowledged and equal, can the power to seek new ways of being in the world generate, as well as the courage and sustenance to act where there are no charters” [52, p. 112].

High school students at the Workshop School learn about how risk assessment algorithms reproduce interlocking systems of oppression by listening to LaTonya Myers, a Bail Navigator at the Defender Association of Philadelphia, speak about her personal experience with the criminal justice system [12]. When she was twelve years old, Myers was arrested for pushing her step-father out of her apartment during a domestic dispute and was coerced into pleading guilty, triggering a cycle of detention. Despite years of work in service of the City of Philadelphia that drew special commendation from the Mayor, a risk assessment algorithm “barely more accurate than a coin flip” [58] classified Myers as high risk, and she was denied freedom from parole. Though Myers’ story is one of many, hearing the details gives algorithmic oppression a living texture that is impossible to convey with statistics [10, 11, 42, 57, 85]. Myers’ story also highlights the ignorance of algorithms to the interlocking nature of oppression—their inability to understand

that Myers' original "crime" was to be punished by the criminal justice system for her race, class, age, and gender.

Reflection Questions. *How might the systems of technological oppression related to the CS concepts I teach negatively impact people with particular intersections of identity (for example race, caste, class, gender, age, ability, ethnicity, etc.)? In what ways might the same systems "overserve" [11] those with opposing intersections of identity? How might my students and I leverage the strengths of our intersecting identities toward understanding technological oppression—and freedom from it—on a deeper level? How might we apply our deepened understanding of the interlocking nature of technological oppression to our practices of community organizing and resistance?*

2.4 Confronting Whiteness

"Whiteness is addicted to centering itself, addicted to attention, and making everyone feel guilty for working toward its elimination. Whiteness will never allow true solidarity to take place. Those who cling to their Whiteness cannot participate in abolitionist teaching because they are a distraction, are unproductive, and will undermine freedom at every step, sometimes in the name of social justice."

—Bettina L. Love [53, p. 159]

Love defines "Whiteness" as a force that is "obsessed with oppressing others, centering itself, and maintaining White supremacy" [53, p. 160]. In the context of CS-produced knowledge and technologies, Whiteness manifests systematically in the hyperconnected, normative, and therefore largely invisible [3, 10, 27, 42, 53] White supremacist techno-complexes: techno-imperialism and techno-colonialism (tech-facilitated exploitation of land, culture, and economy) [55], techno-saviorism, techno-solutionism, and techno-optimism (the idea that tech can fix anything) [10, 59], techno-determinism and techno-nihilism (the idea that tech advances are predetermined and we are powerless to stop them) [10], and techno-objectivism (the idea that tech can be truly objective, or "fair") [10, 14, 28, 44, 59]. Continuing the tradition of embedding White supremacist ideology into the foundations of modern Western science, the techno-complexes center Whiteness as superior, while simultaneously stealing, exploiting, and appropriating ways of knowing and being from the people they marginalize [11]. Benjamin connects the willful blindness of Whiteness to the hegemonic and capitalist interests of the tech industry, noting that CS-produced technologies afford institutional powers an even greater capacity to "track, addict, and manipulate the public" [10, p. 31].

In order to dismantle Whiteness as an instrument of domination, it is necessary to "make whiteness visible" [53, p. 130], and for White people to become *coconspirators* in liberatory movements—to actively leverage their privilege in the service of dismantling White supremacy [53, p. 117]. For CS teachers, confronting Whiteness and becoming coconspirators means exploring the impact of the techno-complexes on CS learning and curricula, and making space for solutions to oppressive systems that may involve dismantling or abandoning existing aspects of CS pedagogy.

Reflection Questions. *Whom do I consider to be the knowledgeable "experts" in CS? Why? How might my language, actions and interactions, priorities, and teaching style reflect and reproduce the techno-complexes? How might I have dismissed or thwarted students' or colleagues' efforts to disrupt oppressive systems in the past, and*

how might I join those efforts in the future? How might I leverage my intersections of privilege to support people and movements for social, political, economic, and environmental justice?

2.5 Love, Joy, and Well-Being

"Finding joy in the midst of pain and trauma is the fight to be fully human. A revolutionary spirit that embraces joy, self-care, and love is moving toward wholeness. Acknowledging joy is to make yourself aware of your humanity, creativity, self-determination, power, and ability to love...Joy makes the quest for justice sustainable."

—Bettina L. Love [53, p. 119]

"revolution begins with the self, in the self."

—Toni Cade Bambara [4] via Patricia Hill Collins [18]

Lawrence C. Soley [69], Ruth Wilson Gilmore [30], Lorgia García Peña [62], Ruha Benjamin [11], and many others have meticulously documented the rampant commodification and exploitation of people, teaching, learning, research, and care work in academic spaces. Therefore, if CS teachers are to pursue personal well-being, they must acknowledge, confront, and refuse abusive capitalist doctrines like grind culture [11, 36] and "publish or perish" [11, p. 141-181], choosing instead to *rest* [36] and "teach in a manner that respects and cares for the souls of our students" and ourselves [39]. While difficult, there is joy in struggle [27, 37, 53], in the act of sitting with difficult feelings, understanding their origins, and accepting them as necessary precursors to change. To seek and to teach this struggle is to honor the transformative practice of radical subjectivity and self-actualization through self-love and self-care [11, 37, 42, 53, 62].

In *Take space, make space: how students use computer science to disrupt and resist marginalization in schools*, Ryoo, Tanksley, Estrada, and Margolis tell the stories of young people who learn to wield technology as a tool of liberatory self-expression. Four of those students, Heaven, Jordyn, Khia, and Tatiana, made space for themselves in the CS classroom to grieve the loss and celebrate the life of rapper and community organizer Nipsey Hussle [66, p. 346-349], who cared deeply for the lives and education of young people in their shared community of Crenshaw, Los Angeles. By encouraging the students to "center topics, issues, and interests of personal importance" [66, p. 347], the students' CS teacher empowered them to use technology as a vehicle for healing and resistance to "teachers' policing of Black culture and grief" [66, p. 349].

Reflection Questions. *What are my priorities in life? Why are they priorities? How might the "grind" of CS be impacting my health? When might I set aside time to truly get to know my students, their interests, and their communities? How might I help my students understand and develop their goals and priorities in a healthy way? How might we honor and celebrate the scientific contributions of people who are not cisgendered White men from the Global North?*

2.6 Freedom Dreaming and Revolutionary Spirit

"How do we create an oppositional worldview, a consciousness, an identity, a standpoint that exists not only as that struggle which also opposes dehumanization but as that movement which enables creative, expansive self-actualization? Opposition is not enough. In that vacant space after one has resisted there is still the necessity to become—to make oneself anew."

—bell hooks [37]

The act of freedom dreaming employs “radical imagination” [53, p. 100] and “liberatory fantasy” [27, p. 431] to *envision* and *express* what abolition—both the destruction of oppression and the growth of new life—might look like [53, p. 101–103]. In CS education spaces, freedom dreaming empowers CS students and teachers to reclaim agency over and reimagine the role of CS-produced knowledge and technology in society, while revolutionary spirit drives the effort to *actualize* that vision.

Jones and Melo reimagine the CS learning space in their speculative fiction story as a multipurpose “thriving community centre” called the Ubuntu centre [42, p. 302–304]. Once an engineering school, the Ubuntu centre “has become a central resource for everyone in the community” [42, p. 303], partnering with community elders to run a Computing and Sustainability workshop at the local community garden, hosting an overnight shelter, organizing community meals, mutual aid, and technical resources, holding space for community dialogue, and paying reparations and land tax to local Black and Indigenous families. Jones and Melo’s vision proposes revolutionary and multidimensional change in CS education: the Ubuntu centre not only teaches life-sustaining knowledge, it offers life-giving benefits in the form of shelter and material resources to the entire community.

Reflection Questions. How might techno-nihilism or a lack of time and space to dream be holding me back from working toward change? How might my students and I synthesize the perspectives and oppressions discussed above to envision what freedom could look like? If freedom involves destroying an aspect of CS that I teach, research, or develop, how will I work to accept that? How might my students and I work toward realizing collective visions of freedom?

3 APPLYING THE FRAMEWORK

“We must rapidly begin the shift from a ‘thing’-oriented society to a ‘person’-oriented society. When machines and computers, profit motives and property rights are considered more important than people, the giant triplets of racism, materialism and militarism are incapable of being conquered.”

— Martin Luther King, Jr. [47] via bell hooks [39]

The 1993 bell hooks essay *A Revolution of Values* spells out long-standing and ever-relevant challenges of pursuing radical change from within academic institutions [39]. hooks calls out “liberal White folks” [3, 39, 46, 68] who “play at unlearning racism” but give up when they meet “obstacles, rejection, conflict, pain” [39, p. 25]. The act of giving up, hooks argues, is intertwined with denial—with a “collective cultural consumption of and attachment to misinformation” or a form of “social amnesia” that stops people from facing reality and changing oppressive environments [39, p. 28–29]. In their assimilationist fantasy, hooks’ White colleagues longed for a definition of diversity where everyone has a sanitized “have-a-nice-day smile” and nobody challenges them [39, p. 31].

The deep and ongoing commodification of “cosmetic diversity” allows corporations and academic institutions alike to capitalize on a superficial appearance of racial progress, “concealing rather than undoing the racist status quo” [10, p. 62]. These initiatives frequently expect people from minoritized populations, and especially Women of Color, to do the work of educating White colleagues about systems of oppression [30, 33, 40, 51, 62]. Otherwise, they

expect people from minoritized populations to provide innocuous and commodified cultural knowledge and experiences that hooks describes as “eating the other” [10, 38]. When minoritized students and employees do not perform these functions to White supremacist standards—when they explain racism too well or fight against colonizing expansion—institutions neglect and terminate them [1, 7, 42, 62]. Ruha Benjamin further argues that a White “do-gooding ethos” often provides the illusion of a moral high ground, allowing the do-gooder to cover up decisions that further harm and exploit marginalized people [10, p. 61]. “Do-gooding” intention in CS is efficient, publishable, and profitable; *acts* of good are difficult, often undocumented, and of limited financial profitability.

In order to reveal, dismantle, and replace the oppressive ideologies at the root of CS-produced knowledge and design, CS teachers must actively and strategically refuse and resist the normative practices of academic institutions. They must act as coconspirators for change, learning and leveraging their intersections of privilege to help *amplify* and *actualize* the freedom dreams of those who are marginalized by systems of technological oppression. Along with the reflection questions and examples in the previous section, the following high-level considerations are meant to aid CS teachers in applying the framework to their day-to-day work.

Abolition v. Integration. I am often asked how I expect teachers to “integrate” abolitionist principles into existing CS curricula. This question is sometimes followed by skepticism about the feasibility of such an integration, where teachers cite 1) a lack of relationship and mutual relevance between CS concepts and “social justice” material, and 2) institutional pressure to maintain a “rigorous” curriculum that churns out competitive job applicants [41, 79, 80]. The former is easily debunked by a growing body of work [10, 11, 28, 41–43, 59], while the latter surfaces difficult institutional hurdles, discussed in “Occupying the Institution” below.

More importantly, however, the framing of integration itself is antithetical to abolitionist praxis. When the act of integration is undertaken without fundamentally challenging the root cause of apartheid, integration becomes assimilation [6, 27, 37, 42, 53, 75, 84]. Praxis that *does* challenge the root cause of oppressive systems cannot be harmoniously integrated into those systems [41, 42, 78].

Abolitionist praxis requires uprooting such systems, and replacing them with visions of our collective imagination. It requires teachers to break free of mental and material confines of existing curricula, and begin anew with the fundamental question of “who and what works in the academy, for whom, and to what end” [30, p. 27]. As discussed below in “Revealing the Lives of Ideas,” even something as conceptually innocuous as a loop in computing has a rich life of meaning outside the context of a CS classroom, and can be treated rigorously within the context of the framework as an object with material impact on human life. Finally, abolitionist praxis does not suggest uprooting systems without effective replacement [37, 50, 53]; it holds space for the difficulty and slowness of human healing, processing, and change without resorting to incrementalism—for “Starting Where You Are.”

Occupying the Institution. There are many people who take up time and space in academic institutions, from students, faculty, and staff, to wealthy Presidents, industry consultants, and lawyers. There is also the time and space taken up by the institution as a

whole, which then becomes unavailable for public housing, services, and resources [42]. Each person performs a role in upholding the institution, in maintaining the environment of the institution. Many people exist in the time-space of the institution “in a wholly unconscious and unthinking way...without ever asking how on earth we had got there and why it was our destiny” [30, 31].

The act of deliberately *occupying* an institution demands the energy of attention, intention, and action toward what takes up time and space, how, and to what end [30, 42, 80]. It involves building relationships with students and colleagues toward challenging institutional policies and authorities that reinforce oppressive systems and resist change from a position of collective strength [7, 30, 37, 53, 62]. While occupying the institution in a way that truly challenges the foundations of the institution is dangerous, and especially dangerous for people with multiply-marginalized identities [1, 7, 42, 62], Lorgia García Peña describes building community both inside and outside of the institution as a refuge: “We shared our work, provided feedback and support to each other, and most importantly, built a network and a community where we felt safe to rebel...[Communities of freedom] can take the form of writing collectives, of freedom schools, of co-ops of care where political, social, and human actions can be articulated and carried to support one another” [62, p. 10–11, 27]. From within these rebellious communities, drawing on the inspiration of Cedric Robinson, Ruth Wilson Gilmore advises academics: “Don’t think about pipelines, think about front lines...Make unions, not task forces” [30, p. 48]. On the “front lines” of rebellious communities, the everyday work of abolitionist teaching praxis becomes sustainable.

Revealing the Lives of Ideas. Each idea in a CS curriculum has a unique past, present, and future; it is rooted in the histories of the people who developed it, lives today in the text, speech, minds, and designs of teachers, students, and technologists, and will survive and exert impact on human lives through the remnants of these artifacts long into the future. Abolitionist teaching praxis demands that CS teachers dig deep into the lives of ideas, situate them in the context of human systems, and reveal this situation to students through critical interrogation, reflection, and discussion.

Take as an example the rich context of a loop in computing. Ada Augusta King, Countess of Lovelace developed the software loop to calculate Bernoulli numbers on Babbage and Menabrea’s Analytical Engine, which in turn drew inspiration from Jacquard’s mechanical loom [45]. Before presenting her design, King discusses the role of human bias in assessing the impact of the Engine overall. She writes, “It is desirable to guard against the possibility of exaggerated ideas that might arise as to the powers of the Analytical Engine. In considering any new subject, there is frequently a tendency, first, to *overrate* what we find to be already interesting or remarkable; and, secondly, by a sort of natural reaction, to *undervalue* the true state of the case...There are in all extensions of human power, or additions to human knowledge, various *collateral* influences, besides the main and primary object attained” [45, Note G].

Contemporary examples of simultaneously hyper-visible and under-valued [10, 11, 25, 27, 33] collateral influences might include the use of loops in the path-planning algorithms that guide autonomous weapons systems [24], in the machine learning models that misrepresent and further oppress marginalized people

[14, 33, 44, 59], or in the mass surveillance apparatuses that disproportionately target Black, Brown, and Indigenous People of Color [10, 13, 43]. Zooming out yet further, the concept of a loop is firmly situated—both historically and contemporaneously—in the impact of automation on human livelihood [10, 28]. A CS curriculum which presents the idea of a loop as a theoretical concept only—as divorced from the context of automation past, present, and future—flattens it into a vague object that is easily (and mindlessly) wielded as a tool of oppression.

Starting Where You Are. Abolitionist teaching praxis in CS education has the power to redefine the role of technology in society—to afford CS teachers, students, and former students the opportunity to create *abolition technology*: technology with an emancipatory ethos [10], which breaks down oppressive power dynamics and replaces them with liberatory tools of our collective imagination. Work as an abolitionist teacher can start right now. It can start as a personal reflection—imperceptible from the outside, undocumented, yet revolutionary [4, 18]. It can start with Peña’s practice of having everyone in a class learn each other’s names [62, p. 50], or hooks’ practice of asking students to engage in writing, collective listening, and reflection [39, p. 84] on personal experiences or current events. It can start as a conversation with a trusted colleague about aspirations and apprehensions, or as facilitating an abolitionist reading group. There is no “correct” sequence to this living process, there is only organizing—of people, ideas, and collective action.

4 ACKNOWLEDGEMENTS

Deep thanks to the Racial Justice Committee and students of the Workshop School. Thank you to everyone who reviewed this work.

REFERENCES

- [1] J. Khadijah Abdurahman. 2021. Holding to Account: Safiya Umoja Noble and Meredith Whittaker on Duties of Care and Resistance to Big Tech. *Logic Magazine* 15 (2021).
- [2] Michelle Alexander. 2011. The New Jim Crow. *Ohio St. J. Crim. L.* 9 (2011), 7.
- [3] James Baldwin. 1965. *White Man’s Guilt*. Ebony. <https://www.douglasficek.com/teaching/phil-4450-phil-of-race/baldwin.pdf>
- [4] Toni Cade Bambara. 1970. On the issue of roles. *The black woman: An anthology* (1970), 101–10.
- [5] Megan Bang and Shirin Vossoughi. 2016. Participatory design research and educational justice: Studying learning and relations within social change making. *Cognition and Instruction* 34, 3 (2016), 173–193.
- [6] Derrick Bell. 2004. *Silent covenants: Brown v. Board of Education and the unfulfilled hopes for racial reform*. Oxford University Press.
- [7] Derrick A Bell. 1994. *Confronting authority: Reflections of an Ardent Protester*. Beacon Press.
- [8] Derrick A Bell. 1995. Who’s afraid of critical race theory. *U. Ill. L. Rev.* (1995), 893.
- [9] Ruha Benjamin. 2016. Racial fictions, biological facts: Expanding the sociological imagination through speculative methods. *Catalyst: Feminism, Theory, Technology* (2016).
- [10] Ruha Benjamin. 2020. *Race after technology: Abolitionist tools for the new Jim code*. Oxford University Press.
- [11] Ruha Benjamin. 2022. *Viral justice: how we grow the World we want*. Princeton University Press.
- [12] Kirstie Brewer. 2021. ‘I studied law in jail - now I want to change the system’. BBC News. <https://www.bbc.com/news/stories-58311196>
- [13] Simone Browne. 2015. *Dark matters: On the surveillance of blackness*. Duke University Press.
- [14] Joy Buolamwini and Timnit Gebru. 2018. Gender shades: Intersectional accuracy disparities in commercial gender classification. In *Conference on fairness, accountability and transparency*. PMLR, 77–91.
- [15] Julio Cammarota and Michelle Fine. 2008. Revolutionizing education. *Youth participatory* (2008).
- [16] Barbara Christian. 1988. The race for theory. *Feminist studies* 14, 1 (1988), 67–79.

- [17] Combahee River Collective. 1983. The Combahee river collective statement. *Home girls: A Black feminist anthology* 1 (1983), 264–274.
- [18] Patricia Hill Collins. 1990. Black feminist thought in the matrix of domination. *Black feminist thought: Knowledge, consciousness, and the politics of empowerment* 138, 1990 (1990), 221–238.
- [19] Kimberlé Crenshaw. 1990. Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stan. L. Rev.* 43 (1990).
- [20] Angela Y Davis. 1983. *Women, race & class*. Vintage.
- [21] Angela Y Davis. 2003. *Are prisons obsolete?* Seven stories press.
- [22] Angela Y Davis and Cassandra Shaylor. 2001. Race, gender, and the prison industrial complex: California and beyond. *Meridians* 2, 1 (2001), 1–25.
- [23] Cynthia B Dillard. 2016. Learning to remember the things we've learned to forget: Endarkened feminisms and the sacred nature of research. In *Qualitative inquiry and global crises*. Routledge, 226–243.
- [24] Bonnie Lynn Docherty. 2018. *Heed the call: A moral and legal imperative to ban killer robots*. Human Rights Watch.
- [25] W.E.B. Du Bois. 1903. *The Souls of Black Folk: Essays and Sketches*. A. C. McClurg & Co., Chicago.
- [26] W.E.B. Du Bois. 2001. Black reconstruction in America, 1860–1880. *Racism Essential Readings* (2001), 27–34.
- [27] Michael J Dumas and Kihana Miraya Ross. 2016. “Be real black for me” imagining BlackCrit in education. *Urban Education* 51, 4 (2016), 415–442.
- [28] Virginia Eubanks. 2018. *Automating inequality: How high-tech tools profile, police, and punish the poor*. St. Martin's Press.
- [29] Paulo Freire. 1970. Pedagogy of the oppressed (MB Ramos, Trans.). *New York: Continuum* 2007 (1970).
- [30] Ruth Wilson Gilmore. 2022. *Abolition geography: Essays towards liberation*. Verso Books.
- [31] HJ Glock and R Archer. 1989. *Out of apathy. Voices of the New Left thirty years on*. Verso.
- [32] Fannie Lou Hamer. 1971. *Speech Delivered at the Founding of the National Women's Political Caucus*.
- [33] Lelia Marie Hampton. 2021. Black Feminist Musings on Algorithmic Oppression. *arXiv preprint arXiv:2101.09869* (2021).
- [34] Nikole Hannah-Jones and Mary N Elliott. 2019. *The 1619 project*. New York Times.
- [35] Cheryl I Harris. 1993. Whiteness as property. *Harvard law review* (1993), 1707–1791.
- [36] Tricia Hersey. 2022. *Rest is resistance: A manifesto*. Hachette UK.
- [37] bell hooks. 1990. *Yearning: race, gender and cultural politics*. South End Press.
- [38] bell hooks. 1992. *Black Looks: Race and Representation*. South End Press.
- [39] bell hooks. 1994. *Teaching to transgress. Education as a freedom of practice*. Routledge.
- [40] Feminista Jones. 2019. *Reclaiming our space: How Black feminists are changing the world from the tweets to the streets*. Beacon Press.
- [41] Stephanie T. Jones and natalie araujo melo. 2020. 'Anti-blackness is no glitch' the need for critical conversations within computer science education. *XRDS: Crossroads, The ACM Magazine for Students* 27, 2 (2020), 42–46.
- [42] Stephanie T. Jones and natalie araujo melo. 2021. We tell these stories to survive: Towards abolition in computer science education. *Canadian Journal of Science, Mathematics and Technology Education* 21, 2 (2021), 290–308.
- [43] Seny Kamara, Kwaku Kwagyeir-Aggrey, and Lucy Qin. 2021. *Algorithms for the People Course Syllabus*. <https://cs.brown.edu/courses/csci1952-v/>
- [44] Os Keyes. 2018. The misgendering machines: Trans/HCI implications of automatic gender recognition. *Proceedings of the ACM on human-computer interaction* 2, CSCW (2018), 1–22.
- [45] Ada Augusta King and L.F. Menabrea. 1842. *Sketch of the Analytical Engine Invented by Charles Babbage*. <https://www.fourmilab.ch/babbage/sketch.html>
- [46] Martin Luther King. 1963. Letter from Birmingham Jail. (1963). https://kinginstitute.stanford.edu/sites/mlk/files/letterfrombirmingham_wwcw_0.pdf
- [47] Martin Luther King Jr. 2010. *Where do we go from here: Chaos or community?* Vol. 2. Beacon Press.
- [48] The Tree Lab. 2019. *The Young People's Race, Power, and Technology Project (YPRPT)*. The Block Museum of Art + Block Cinema. <https://tree.northwestern.edu/projects/yprpt>
- [49] Gloria Ladson-Billings and William F Tate. 1995. Toward a critical race theory of education. *Teachers college record* 97, 1 (1995), 47–68.
- [50] Crystal T Laura. 2014. *Being bad: My baby brother and the school-to-prison pipeline*. Teachers College Press.
- [51] Audre Lorde. 1979. The Master's Tools Will Never Dismantle the Master's House. *The Personal and the Political Panel* (1979).
- [52] Audre Lorde. 1984. *Sister outsider: Essays and speeches*. Crossing Press.
- [53] Bettina L Love. 2019. *We want to do more than survive: Abolitionist teaching and the pursuit of educational freedom*. Beacon Press.
- [54] Yeshi Milner. [n.d.]. *Abolition means the creation of something new*. Medium. <https://medium.com/@YESHICAN/abolition-means-the-creation-of-something-new-72fc67c8f493>
- [55] Shakir Mohamed, Marie-Therese Png, and William Isaac. 2020. Decolonial AI: Decolonial theory as sociotechnical foresight in artificial intelligence. *Philosophy & Technology* 33, 4 (2020), 659–684.
- [56] Daniel Morales-Doyle. 2017. Justice-centered science pedagogy: A catalyst for academic achievement and social transformation. *Science Education* 101, 6 (2017), 1034–1060.
- [57] Khalil Gibran Muhammad. 2011. *The condemnation of Blackness: Race, crime, and the making of modern urban America*. Harvard University Press.
- [58] Mandy Nace. 2018. *Sentencing Commission's Proposed Risk Assessment Algorithm Will Increase Mass Incarceration*. Defender Association of Philadelphia.
- [59] Safiya Umoja Noble. 2018. *Algorithms of oppression*. New York University Press.
- [60] Fikile Nxumalo and Kihana Miraya Ross. 2019. Envisioning Black space in environmental education for young children. *Race Ethnicity and Education* 22, 4 (2019), 502–524.
- [61] Django Paris. 2012. Culturally sustaining pedagogy: A needed change in stance, terminology, and practice. *Educational researcher* 41, 3 (2012).
- [62] Lorgia García Peña. 2022. *Community as rebellion: A syllabus for surviving academia as a woman of color*. Haymarket Books.
- [63] Thomas M Philip, Megan Bang, and Kara Jackson. 2018. Articulating the “how,” the “for what,” the “for whom,” and the “with whom” in concert: A call to broaden the benchmarks of our scholarship. *Cognition and Instruction* 36, 2 (2018), 83–88.
- [64] Derecka Purnell. 2022. *Becoming abolitionists: Police, protests, and the pursuit of freedom*. Astra Publishing House.
- [65] Critical Resistance. [n.d.]. What is the PIC? What is Abolition? ([n.d.]). <https://criticalresistance.org/mission-vision/not-so-common-language/>
- [66] Jean J Ryoo, Tiera Tanksley, Cynthia Estrada, and Jane Margolis. 2020. *Take space, make space: How students use computer science to disrupt and resist marginalization in schools*. Vol. 30. Taylor & Francis. 337–361 pages.
- [67] Raynard Sanders, David Stovall, and Terrenda White. 2018. *Twenty-first-century Jim Crow Schools: The impact of charters on public education*. Beacon Press.
- [68] Savannah Shange. 2019. *Progressive dystopia: Abolition, antiblackness, and schooling in San Francisco*. Duke University Press.
- [69] Lawrence C Soley. 1995. *Leasing the ivory tower: The corporate takeover of academia*. South End Press.
- [70] Daniel G Solórzano and Tara J Yosso. 2002. Critical race methodology: Counter-storytelling as an analytical framework for education research. *Qualitative inquiry* 8, 1 (2002), 23–44.
- [71] David Stovall. 2018. Are we ready for ‘school’abolition?: Thoughts and practices of radical imaginary in education. *Taboo: The Journal of Culture and Education* 17, 1 (2018), 6.
- [72] LaToya Strong and Atasi Das. 2018. Abolition Science Mission. <https://www.abolitionsience.org/>
- [73] LaToya Strong, Atasi Das, and Crystal T. Laura. 2018. Abolition in Education. <https://www.abolitionsience.org/home/2018/9/4/what-is-abolition-science>
- [74] LaToya Strong, Atasi Das, and Danny Morales-Doyle. 2018. Abolition Science Praxis (Part 1). <https://www.abolitionsience.org/home/2018/11/27/abolition-science-praxis-pt-2-dr-danny-morales-doyle>
- [75] LaToya Strong, Atasi Das, and Robert P. Robinson. 2018. The History of Abolition. <https://www.abolitionsience.org/home/2018/9/4/historically-grounding-abolition>
- [76] Sojourner Truth. 1851. Ain't I a Woman? *Feminist theory: A reader* (1851), 79.
- [77] Eve Tuck and K Wayne Yang. 2018. Toward what justice. *Describing diverse dreams of justice in education*. Abingdon: Routledge (2018).
- [78] Sepehr Vakil. 2018. Ethics, identity, and political vision: Toward a justice-centered approach to equity in computer science education. *Harvard Educational Review* 88, 1 (2018), 26–52.
- [79] Sepehr Vakil. 2020. “I’ve always been scared that someday I’m going to sell out”: Exploring the relationship between political identity and learning in computer science education. *Cognition and Instruction* 38, 2 (2020), 87–115.
- [80] Shirin Vossoughi and Sepehr Vakil. 2018. Toward what ends? A critical analysis of militarism, equity, and STEM education. In *Education at war*. Fordham University Press, 117–140.
- [81] Lev Vygotsky. 1978. Interaction between learning and development. *Readings on the development of children* 23, 3 (1978), 34–41.
- [82] Cornel West. 1995. *Critical race theory: The key writings that formed the movement*. The New Press.
- [83] Isabel Wilkerson. 2020. *Caste: The origins of our discontents*. Random House.
- [84] Carter G Woodson. 1933. *The mis-education of the Negro*. Associated Publishers.
- [85] Tukufu Zuberi. 2001. *Thicker than blood: How racial statistics lie*. U of Minnesota Press.