Cyborg Literacies in an Afterschool "Loophole of Retreat"

by

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Dedication

This dissertation is dedicated to kids. To the kids I've taught, the kids I've coached, the kids I've never met. To the fighters, the dreamers, the screamers, the scammers. It's dedicated to the valedictorians and the dropouts, dedicated to the magical, the excellent, the mundane, the dope-boys and the regular-degular girls, to the outliers and the utterly average. This is for the thugs and the thots, the rappers and bottle girls, the lazy, the laid off, the strippers and trappers and department chairs, for the ladies, theydies, fellas, and gentlethems, for the ballers the barbers, the balding, the broke, the broken, the saved, the healed, the born again, and the still lost; it is for those who once were kids, those who may still be childish, those who may never get a chance to grow old, for those whose small hands mine the minerals on which global capital greedily feasts, for those martyred and maimed over fake borders and national "security". For Sudanese kids and Palestinian kids. This is for all those who passed through the door of no return. For those who chose the sharks and the sea and those who survived, willfully and otherwise. For those who bore children; for those who bear witness, this dissertation is a paean that tolls for you. May it reverberate across space and time and memory. I hope y'all know that all you have to do, as they say, is stay Black and die. I hope you know joy along the way. And, for those who choose the funk: when the syndrome is around, don't let your guard down. May we shoot them with our bop gun. Now— turn me loose.

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Abstract

In this dissertation I explore the fugitive technology practices of Black high-schoolers in a tech-rich after-school makerspace. To do so, I invoke ontologies from two cyborgs to make sense of these Black teens' practices. First, James and Costa Vargas (2012) offer the Black Cyborg— the rebel intellectual rejecting victimization through self-making— as a figure that can emerge from the antiBlackness that organizes American social and political activity, of which schooling is a vehicle. Second, Haraway's (1985) cyborg is a metaphor and a scientific reality that casts the porous human/machine boundary in relief and helps to articulate how Black youth's imbrication with the digital offers both new ways for them to interpellated into antiBlackness and new ways to refuse it. With a third figure, Harriet Jacobs' (1861) loophole of retreat, I align with the long history of fugitive and liberatory Black literacy and making— and more recent interventions about the need and design of Black learning spaces (Warren and Coles, 2021; Okello, 2024). These frameworks were my lenses as I asked: How do Black youth practice cyborg literacies in an after-school loophole of retreat? To answer this question, I carried out a multimodal critical ethnography in an after-school makerspace co-designed alongside youth participants over the course of 8 weeks. Data collection included participant observation, focus groups, photographs of activity and products, and longer case interviews with two participants. I turn to Critical Technocultural Discourse Analysis (CTDA) to hold these multimodal data in focus as I read them through the three figures above; CTDA enables a simultaneous examination

of participants' artifacts, practices, and beliefs vis a vis the makerspace-as-technology (Brock, 2018).

In the first of three findings chapters, I describe how two affordances— vibes and self-determination— were a function of the learning ecology of the school and co-curated by students and me. Here, I also describe how these affordances allow the space to function as a loophole of retreat for Black youth. In the second findings chapter, I detail the cyborg literacies— the technologically mediated practices of selfmaking, sensemaking, worldmaking, joymaking, and refusal— in which participants engaged. In the final findings chapter, I offer a closer look at the study's participants by sharing insights and influences garnered from the two case interviews. Findings from this study contribute to conversations about the role of the digital in the lives of Black youth and their technology literacy practices. Findings also align with contemporary research about how afterschool spaces in which Black youth feel joyful, safe, and whole create new opportunities for the development of literacy skills. The dissertation concludes with a recommendation for designing learning experiences for Black youth in out-of-school time and some looming questions about the utility of equity- and STEM- centered frameworks "in the wake" of slavery (Sharpe, 2016).

Chapter 1 Introduction

"At the end of humanity, one sees the birth

of the black cyborg rebels

within the internal colonies,

the inner organs of the empire or nation state."

Joy James, 2013

"Who cyborgs will be is a radical question;

the answers are a matter of survival."

Donna Haraway, 1985

James fetched a long sigh, dramatic.

"After a long day at school," he opined, "how nice to relax and go fishing." He leaned back in one computer chair, crossed his one ankle over the other. He turned his head left and right, left again. Isaiah, waiting his turn to play **"**Bait!", found my eyes with his and rolled them. "Boy caught one fish and think he nice."

From beneath the Meta Quest 3, James couldn't see us, but the volume was low enough for him to pinpoint his interlocutor. "Oh you talking junk? Bet I catch one bigger than you!" Isaiah was unflappable, confident from playing the game on his home Quest: "ok say less!"

James “casted”, thumb and forefinger toggling the reel action of the handset strapped to his right wrist. A silence fell between the three of us— James in concentration, Isaiah, perhaps in amusement, arms crossed, me (who spends my IRL [in real life] summer afternoons angling every body of water I pass), in true respect for the finicky nature of fish. On the other side of the room, Austin fiddled with the projector I purchased; his sister, Aurora rehearsed the “Just Dance” routine for “Rasputin” by Boney M. Another duo hunched over a laptop, splitting earbuds, heads bobbing in rhythm. It was a quiet day for us in room 29; Robotics and Academic Games teams both met on Tuesdays.

James yelled anyway: “Got one!” He kicked his legs so hard that he spun in his chair, hands held high, left-hand controller circling where, in the headset, he was fighting a fictional fish in the first level of the game. He had just completed the tutorial**. “**Oh, he jumping!”

Isaiah and I laughed and clapped; Deven landed his catch.

“This my second ever fish, and he a juicy boy!” James exclaimed.

Isaiah demanded: “How big?” he rubbed his hands together in anticipation.

James craned his neck up, thumbs working. “Idk but it's big enough for a high score though, ahhh!”

“Yeah right, that’s because we just got the game! You went first!”

We three tittered. The boys switched places. Isaiah adjusted the headset’s straps for his narrower cranium, with James’ help.

“Ok, we’ll see what you got,” James said.

Isaiah smirked, thumbs working, eyes obscured by the headset. “That’s what y’all don't understand,” he said, stretching his Midwest twang to assume a southern accent. “Fishin,” he drawled, head turned to address us, eyes on the virtual lake**,** “is what I does.”

I'd find out later that Isiaih had never been fishing IRL. He had only played fishing games— this very game, on his home VR headset, or another on PS4, or an arcade version at Dave & Buster's. But "IRL-Isaiah" wasn't making any claims about fishing prowess. It was "cyborg-Isaiah" talking junk; the version of him that broke Deven's minutes-old record was made possible when his joyful, material Black self— a novice angler— was mutually constituted with a virtual self, in a virtual world, where he had expertise. Cyborg Isaiah even talked how he imagined "a fisherman" would. Isaiah would go on to set the first-place mark in the game, then tell us how he did it, still using the comical accent. "The big one in this lake," he intoned, "stays over in this corner."

I include this anecdote because it illustrates the self-making that Black youth can undertake vis a vis their digital technology use. In what follows, I'll argue that through practices like these, James, Isaiah, and the other participants in our after school makerspace engaged in cyborg literacies.

Black youth's lives are changing fast. The proliferation of powerful mobile and digital technologies since the iPhone dropped in 2007 has mediated the ways Black youth interact with the world. A maelstrom of apps, tools, and widgets followed in short order, rife with opportunity and (social productions of) risk, affordances, constraints, and ethical dilemmas. This constellation of devices, artifacts, practices, and discourses is known collectively as "the digital". Through the efforts of visionary education researchers working with Black youth participants, we know some of the manifold ways in which the digital mediates contemporary life—the digital suffuses practices of communication, play, racialization, domination, as well as self-authoring and other "unanticipated forms of agency, subjectivity" for Black youth (Elwood, 2020; Mattern, 2017; Wargo, 2017). In these ways and others, education research has begun to problematize

conceptualizations of the digital that hierarchize the "real" material, physical world over the digital, "virtual" worlds; these researchers are committed to understanding Black youth's imbrication with the digital, the ways in which online and offline are mutually constitutive (Sassen, 2002). More and more, these conceptualizations of the digital are shaping conversations about Black youths' uses of technology.

However, much education research still relies on and reifies digital dualism— this research assumes and reproduces a false opposition between Black kids' "virtual" digital activity, utterances, and life, and the "real" material activity and utterances of life offline (Jurgensen, 2012; Maddox, 2017). This conflation "reflect[s] deep-seated assumptions about [the] value, legitimacy, and consequence" of digital activity (Boellstorff, 2016). By contrast, recent theoretical and empirical work out of fields such as digital studies and the humanities have complicated the relationship between online and offline. The progeny of Marwick and boyd's (2011) "networked publics", for instance, flatten the implied hierarchy of face-to-face over digital interaction in teens' sociality (e.g. Ringrose & Harvey, 2017; Lane, 2016). Through empirical research from European contexts—research with scant Black participants— we know that the sense and self-making practices that today's teens and adolescents undertake are "distributed" online and off (Periera et al., 2020); indeed, children's bodies are being reconfigured as assemblages of data, technology, practices, and flesh (Lupton, 2017). More, post-phenomenologists posit that these digital practices are becoming increasingly embodied due to bodily extension and the incorporation of non-bodily objects (De Preester, 2011). That is to say, just as digital technology and practices reshape society (e.g. platform capitalism and the gig economy**)**, processes of technologization affect our bodies and influence the way we use them as well. Our use of digital technologies is "deeply changing the physiology of our bodies […] and

the effects of this modification are being embedded into our bodily experience" (Buongiorno, 2019). In other words, our digital tools could well be understood as prosthetics. Between the proliferation of wearables, livestreaming practices, and encroaching surveillance and datafication in and out of school, Black youth in America are never not online (Russell, 2020; Gray 2021; Browne, 2015). For many Black youth, reality is distributed, online and off. Of course, Haraway's (1984) cyborg was never only a metaphor. Once again, that which was once merely speculative became a tool for Black people's living and liberation (Gunn, 2020). The cyborg has implications for education research, policy, and practice-- our technologically informed and mediated existence in the 21st century is rife with tools that aid and hamper the mediation of Black youth's being in the world.

And hamper, they do; the more things change, the more things stay the same. The digital— its technologies, uses, discourses— mediates age-old antiBlackness. Discourses about Black folks' inherent inferiority are baked into discourses about technology use rates (Brock, 2020). The default user remains a white man (though he may sometimes be imagined to be Asian) (Brock, 2018). So, hardware from oxygen monitors (Jamali et al. 2022) to gaming accessibility cameras (Gray, 2019) fails to account for darker skin tones. Facial recognition technologies inaccurately identify us as criminals (Nkonde, 2019; Skinner 2020)**,** when it doesn't mistakenly identify Black folks as gorillas (Birhane & Grayson, 2018). Algorithmic decision making automates inequality from bank loans, to providing services to the unhouses, to predicting criminality (Eubanks, 2020). The same impulses to dominate and control Black folks that animated the design and use of technologies of American chattel slavery manifest in contemporary technology (Browne, 2016). We live in the wake of slavery (Sharpe, 2016), which

is to say that racial capitalism and the abjection of Blackness shapes American society and institutions— including schools.

Black students and the educators who love them have a long tradition of rejecting antiBlackness of these institutions, even while enclosed within them (Givens, 2019; Sojoyner 2018). Research about this tradition of fugitive orientations to schooling describes the ways in which schools and the spaces within them can be designed to prioritize Black kids' aliveness (Quashie, 2021). This is particularly true in research about third and makerspaces. Research with Black youth in third and making spaces documents the ways Black youth construct counternarratives about themselves and their Blackness (Vasudevan, 2014, 2017). Related studies have examined the ways Black joy can and should be fomented (Kearl, Mayes, and Drake, 2023; Mims et al., 2022). Researchers note that Black youth marshal and levy funds of knowledge from their home lives to make meaning about who they are in third spaces; as these use bring their Blackness with them, they make new worlds possible (Moll, 1992). Through these making practices, Black youth reject the victimization, the abjection of Black being and body that is necessitated by western liberal democratic values (Costa Vargas & James, 2012). Instead of making and learning for professionalization, Black youth in this tradition make for social justice (Calabrese Barton & Tan, 2018), for pleasure (Edouard, 2023), for leisure (Greer et al., 2024). In some cases, these enclaves within enclosures can serve as hush harbors' offering some psychic protection for Black youth (hooks, 1994; Neal-Stanley, 2023). Therein, this safety provides a platform from which the Black creative, radical imagination can soar (Mims, 2023). There, Black youth can freedom dream (Kelley, 2002) of safer, Blacker worlds. Insofar as they reject the implicit nation building and productivity-oriented project of schooling since "A Nation at Risk", these Black practices, too, are fugitive (Lysicott, 2020). While folks in the digital

humanities –and Caribbean studies in particular—are thinking and writing about Black flight, agency, and (digital) marronage (e.g. Yomaira Figueroa-Vasquez, Jessica Marie Johnson), these practices of sovereign Black making from within fugitive spaces require more study from education researchers.

This dissertation contributes to conversations in education research about what happens when Black youth engage in self-determined making within pro-Black space by turning to Harriet Jacobs' (1861) *Incidents in the Life of a Slave Girl*. I'll argue that, like the fugitive slave crafting her liberation through literacy with a hand-held gimlet in an interstitial garret space, Black youth leveraged the technology on hand within a "loophole of retreat" to mark their worlds via their literacy practices. The dissertation draws on Donna Haraway's (1982) cyborg to foreground the sedimentation and transparency of digital technologies in our quotidian lives; the project simultaneously draws on another cyborg, James and Costa Vargas' (2012) Black cyborg, the rebel intellectual who rejects victimization and abjection through self-making. So combined, I'll argue, the two cyborgs form a lens through which researchers can read Black youths' social practices as literacies (Lewis et al., 2020); through these cyborg literacies and from within the relative safety of the loophole of retreat, youth read and act on the world, online and off.

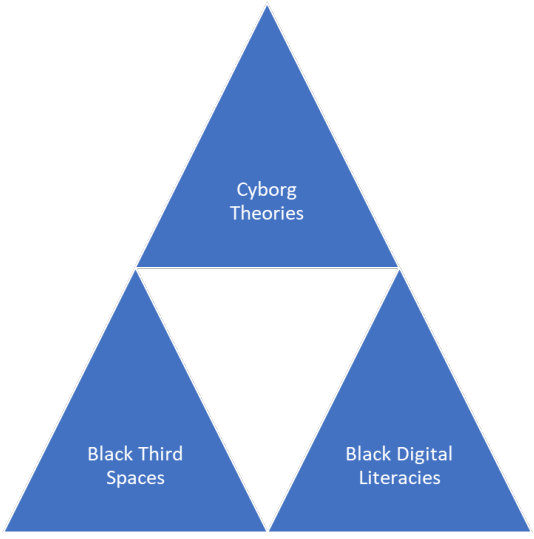
1.1 Theoretical Framework

This dissertation project is undergirded by several theoretical traditions. The first of these to be unpacked is cyborg theory. As will be discussed below, two genealogies of cyborg theory serve as a useful standpoint for understanding the mutual constitution of young people's online and offline selves, as well as for the intellectual work of Black folks under the conditions of antiBlackness and racial capitalism. The second theoretical tradition that this project inherits is Black digital literacies. These literacy practices, age old and mediated by emergent technologies,

operationalize the ways in which youth undertake in their everyday interfacing with digital technologies and media. As I'll describe, this conceptualization of literacy understands literacy as a social practice in context (Street, 1985); after Freire (2000), literacy expands to be a means of reading the world as well as the word. By looking back at history, the trajectory of Black literacy— including its criminalized origins and its subversive inculcation in schools before and after integration— emerges as a history of fugitive practices. The third construct on which this project rests is Black third spaces; inheriting from Harriet Jacobs, and in conversation with Gutierrez (2008), I'll argue that these spaces can serve as loopholes of retreat— safe harbors for Black youth selfmaking, sensemaking, worldmaking, joymaking, and refusal, or what I'm calling cyborg literacies. I trace the history and empirical use of these constructs in more detail in Chapter Two: Literature Review.

Figure 1

Theoretical Framework



1.1.1 Cyborg Theories

The Anthropocene, or this age of "Man's" dominion on Earth has been built on violence, hierarchy, and science. *Homo sapiens*—preferably white, preferably male— is a myth defined the Anthropocene with his individuality, his ability to accrue capital, his liberal subjecthood (Wynter, 2003). Through the 20th and into the 21st century, however, philosophers across genre began to expose the false binaries through which "man" exerted power and colonized the planet. These are posthumanisms that explore the conditions and possibility of life after the Anthropocene. One such exploration is Donna Haraway's Cyborg.

Haraway's cyborg is a metaphorical figure and scientific reality that exposes how the binaries that define the modern human subject— human/machine, human/animal, physical/non-physical— can be reimagined. It is a myth "about transgressed boundaries, potent fusions, and dangerous possibilities, which progressive people might explore as one part of needed political work" (Haraway, 1985, p.13). Metaphorically, the cyborg is a walking contradiction, a monstrous (im)possibility, a "fiction mapping our social and bodily reality and […] an imaginative resource suggesting some very fruitful couplings." (Haraway, 1985, p. 6). The construction of the fictive cyborg body therefore invites us to reflect on the construction of the human body, which is itself a chimera, blended, extended, imaginary. The cyborg "wants" us to write a new reality, particularly one where women and nature have agency and where the impulses to other, hierarchize, control, and dominate are neutered. In a literal sense, Haraway suggests, as modern technologies become incorporated with human bodies as well as human lives, people are "becoming" the Sci-Fi cyborg: electronic and networked. In the decades since she penned this manifesto, the incorporation of technology into people's bodies and lives has only increased. As I'll discuss more in chapter 3, this mutual constitution of online and offline-- especially in the lives of adolescents-- has ramifications for how to conduct qualitative research.

A lesser known cyborg also looms large when the term is invoked in this dissertation. In a 2012 essay, Joao Costa Vargas and Joy James reflected on the murder of Trayvon Martin, indicting liberal human subjecthood and "the political and cognitive schemes that guarantee her ontology and genealogy" (p. 194). They argue that premature death that Trayvon and so many other Black folks experience is a feature of the reproduction of the polis, not a bug. Vargas and James articulate how the democracy that Black progressives like Martin Luther King, Jr, and James Baldwin seek to rescue "cannot be resuscitated as anything other than a site in which Black death and the vulnerability of Black children to emotional, psychological, physical trauma continue to exist" (2012, p. 200). Rather than praying for Black redemption from the white gaze— impossible, the authors suggest— the Black revolutionary demands not democracy, but freedom.

This is the Black cyborg, the rebel intellectual making herself. As I'll discuss more in chapter two, the Black cyborg exists outside humanity, eschewing the fantasy of inclusion for the possibility of freedom. With new political understanding, the Black cyborg plots from within enclosure, connecting with like minds, perceiving the unity of the oppressed, in pursuit of freedom. The cyborg, as Haraway writes, gives us our ontology. These two cyborgs have distinct theoretical traditions, and align in their vision for a new world, agentically crafted to oppose domination. I look to these cyborgs to help me situate the lives of the Black youth in this moment. Haraway's cyborg helps account for the realness of youths' digital activity. Recall Isaiah, the VR fisherman: the permeable boundaries between human and machine as Isaiah uses this prosthetic technology to be in virtual worlds produces a new version of him IRL, complete with the faux country accent he thinks this new self would have; moreover, James' cyborg historicizes Isaiah's process of self-authoring such that we can read this joyful self-making as

revolutionary. More details about these two cyborgs and how they and other posthumanisms are taken up in education research is forthcoming in Chapter two. The second construct undergirding this project is Black digital literacies.

1.1.2 Black Digital Literacies

The conceptualization of Black digital literacies evolves from a theoretical tradition that understands literacy as a social practice of making meaning in context (Freire, 2005; Garcia et al., 2015; Gee, 2003; Holland et al., 1998; Moje, 2002; New London Group, 1996). More than a way to account for the fluency with which Black Youth read and write, this understanding of literacy helps situate study participants' knowing, doing, and being as situated, contextual, and plural. As I'll elaborate in Chapter 2, this study builds on the idea that literacy is a social meaning-making practice that is connected to and implicates power (Street, 1987; Lewis et al., 2020). Moreover, as the findings of this study show, participants engaged in practices documented in a long tradition of fugitive Black literacies. That some of these literacies are mediated by the digital provides both new avenues for interpellation into hegemonic ideology and new opportunities for Black youth to refuse the "hail" (Hall, 1985).

From previous research we know that Black youth utilize a bevy of literacy practices in their engagements with the digital. Through critical media literacies youth read, write, and interpret digitally mediated texts in their everyday sensemaking (Kellner & Share, 2007; Livingstone, 2004). Black kids engage in practices of refusal and nonparticipation, shaping their networks and protecting themselves though savvy data literacy practices (Harvey & Ringrose, 2017; Vickery, 2015). Through complex processes of identity construction and self-authorship, Black kids develop versions of themselves that would otherwise be impossible (Lewis Ellison, 2014; Wargo, 2017). Black kids' digital literacies are agentic practices of sense, self, and world-

making (Avila & Pandya, 2013; Hull & Stornaiuolo, 2015; Hutchinson & Novotny, 2018). Through these literacies, youth manage multimodal information through and about technologies that are reshaping and reorganizing society (Cope & Kalantzis, 2000; Bhatt et al., 2015; Garcia et al., 2020; New London Group, 1996). Those Black youth who are students in American public schools develop these practices through and despite the schooling project's fundamental anti-Blackness (Dumas, 2014).

If we consider the self-, meaning-, and world-making practices of Black youth vis a vis the digital and its artifacts, it becomes clear that Black youth are not only critical, but fugitive in their literacy practices. As Ohito (2020) conceptualizes, fugitive literacies are tools which "awaken and animate education as the practice of liberation from whiteness and anti-Blackness." As I'll discuss in Chapter two, when Black youth interface with the digital in their engagement in these practices, it continues a long tradition of fugitive literacy that Black folks utilize in an antiBlack world. A final construct undergirds this dissertation: the loophole of retreat.

Loopholes of retreat

The Loophole of Retreat is the garret space Harriet Jacobs hid, lived, and wrote in for seven years. As chronicled in her (1861) *Incidents in the Life of a Slave Girl,* the loophole of retreat was a temporary haven, an interstitial space from which Jacobs could peer out on the world and write herself to liberation (Wardrop, 2007). Jacobs' literacy— of both the word and the world—grants her an agency that she uses to free herself and advocate for the freedom of others. In her loophole, Jacobs exists in a state of freedom within a world of unfreedom, a harsh liminal space "from which to formulate her own way of speaking and writing" (Wardrop, 2007, p. 217). Given the manifold ways Black youth experience antiBlackness to this day, given the enclosure of the school-prison nexus (Sojoyner, 2017), I argue, following Okello (2024), that the

loophole of retreat may be a generative metaphor for fugitive educational spaces in which youth use the technologies that mediate their lives to develop literacies they can leverage toward liberation. I argue that the afterschool space they designed in this study was one such space, an artifact of Black technoculture, a loophole of retreat. I argue, as others have, that Black folks BEEN been carving out spaces like this this—particularly in pursuit of self-determination and of joy (Lorde, 1984; Okello, 2024; Stewart 2021; Young, 2012). I expound on the loophole of retreat in chapter two, as part of my conceptual framework.

1.1.3 Putting it all together: Cyborg Literacies in the Loophole of Retreat

In this dissertation I really want to pay homage to the practice of Black study as I invoke research traditions from Education, Science and Technology Studies, Learning Sciences, and Black Studies (Harney & Moten, 2013; McKittrick, 2021). This transdisciplinarity is a feature of this work, not a bug. It's only in this way that I can account for the practices that these youth are undertaking. In brief, here's what's at play:

Cyborgs. The human/machine hybrid blurs the boundary between online and offline. Fitting, because there is no distinction for many Black youth today. The Black cyborg, the networked rebel intellectual rejecting victimization, is afoot here as well. Necessary, because some Black youth engage in these kinds of rejections, these kinds of refusals of the status quo. Either of these cyborgs clarify the worlds in which Black youth live. I'll use both cyborgs to account for what these youth got into in our afterschool space. So, when I say cyborg as I explicate findings from this study, I mean both of these, simultaneously.

Cyborg Literacies. Cyborg literacies are the practices through which Black youth read, act on, and are in the world. These are practices of selfmaking, sensemaking, worldmaking, joymaking, and refusal. In the conceptual framework that concludes chapter 2, I offer some

literature that historicize these practices and may serve as a guideline for unfamiliar readers. As some foreshadowing, I'll say this: Black technology practices— particularly and including those that undermine a status quo that imagines and subsequently requires domination of Black folks— are centuries old. Indeed, as Robyn Maynard (2018) argues, Harriet Jacobs' fugitive technology and literacy practices make her a quintessential Black cyborg.

The Loophole of Retreat. My whole thing is—that is to say, a refrain to which I'll return is— that so little of this is new. I merely hope to contribute to conversations about contemporary Black literacy practices in a way that honors the sovereignty, brilliance, and expertise of Black youth and the ways they used the control I offered them in an on-campus afterschool makerspace to design for themselves a "loophole of retreat"—a respite for the antiBlack structures in which they're enclosed. I hope to extend conversations about how Black life so often exceeds resistance, genre, legibility, citizenship, and/or notions of propriety. Through this study, I hoped to help articulate a sliver of the ways that the digital, writ large— not only so-called "AI" and algorithms, including web 2.0 social media prosumption, not limited to web3 and the blockchain—can mediate the experiences and activity of these youth. And knowing what we know about the potential that afterschool spaces offer youth from minoritized communities, I wondered what Black youth might make in a makerspace; this wondering evolved, alongside participants themselves, to consider if and how youth were leveraging the makerspace itself as a technology, before and as they engaged with the technologies in it. In the following section I crystallize that wondering into the research question that animated this dissertation.

1.2 Research Question

To contribute to what we know about Black youth literacy practices**,** I propose the following research question: **How do Black youth practice cyborg literacies in an after-school**

loophole of retreat? By cyborg literacies, I mean the constellation of selfmaking, sensemaking, worldmaking, joymaking, and refusal practices Black youth take up vis a vis their digital and material activity. In pursuing this research question, I make the case for a transdisciplinary approach to education research and practice that accounts for the vastness of Black youth's technology practices and the omnipresence of the digital without succumbing to utopic techno-determinism. In attending to the mundane practices of Black youth's lifeworlds, the question unsettles digital dualism discourses; researchers and laypeople alike have accepted as axiomatic the "real" / "virtual" dichotomy and the hierarchization it implies (Boellstorff, 2016). By invoking Harriet Jacobs' (1861) "loophole of retreat", the safe harbor in which Black youth can develop literacy and remake themselves, I situate the after-school makerspace as a potential technology with which Black youth do some freedom dreaming from within the enclosure of the school-prison nexus in the wake of slavery (Kelley, 2002; Meiners & Winn, 2010; Sharpe, 2016). I offer more details about these constructs in the conceptual framework section of Chapter Two: Literature Review.

By drawing on digital studies literature, Black studies literature, and multiliteracies literature, this research question seeks to extend education researchers' understanding of Black kids' technology practices outside contexts that typically restrict their use. This proposed project foregrounds the sedimentation and subsequent transparency of digital technologies in our quotidian lives en route to asking Black youth how these tools aid and hamper the mediation of their being in the world. In other words, this research question asks how Black youth are in relation to technology—how they are shaped by the digital and to what ends they would use the digital to re-shape themselves and their futures. This conceptualization of technology is broad; I invoke discursive and symbolic technologies in a tradition that follows race as technology (Chun,

2009; Coleman, 2009) and Blackness as technology (Brock, 2020; Young, 2012). As participants used the affordances of an after-school makerspace-cum- "loophole of retreat" to pursue their own questions about technology practices, they collected and created data related to this research question. In so doing, participants revealed how they conceptualize digital technologies in everyday use, how their online and offline selves are related, and how their technology use reshapes their lives.

1.3 Study Overview

This research project was a co-designed pilot after-school tech makerspace that was initially conceptualized in Spring 2023 that launched in September 2023. During the course of the eight week study, participants engaged in up to thirty two two-hour after-school sessions. They leveraged program resources and technologies in pursuit of a question, task, product, play, or project of their choosing**.** Technologies on hand include VR headsets, XR authoring software, 360 cameras, 3D printers, GPS beacons, laptops, and smartphones. Rather than an overarching learning goal, information delivered from instructor to learner, the desired outcome of this pilot was merely for participants to be supported as they engage in semi-structured critical inquiry about and via digital technologies. This pilot iteration of the makerspace was therefore intentionally open-ended, organized by an inquiry-based approach. Some possible lines of inquiry for students to pursue (or eschew) included: How do I use digital technologies to express myself and my ideas? How can technology be used to make my school and community a better place? How can technology be used to pursue social change? What is my relationship to technology? How does society shape technology use? How does technology use shape society? How will we use technology in the future? Of course, students generated and pursued their own questions through our inquiry process. I will note that I was inspired and guided by orientations

toward critical fabulation (Hartman, 2008) in design (Rosner, 2018); I dreamt that participants' practices of inquiry and play might overwrite traditional notions of literacy, of design, of Black technology practices. After Strohmayer (2021) I aspired to a making space where Black kids' traverse digital and analog modes as they collaborate and create a better world. In so doing, I hoped to activate their radical imaginations such that they approach the technology tools on hand- indeed the marketspace itself— with agency. As it turns out, the youth rejected my ideas for what they might do in the space, and they used their agency to make the space their own. Along the way, they taught me a new Yoruba word, "Faaji", that means "the pleasure of being together." Our time together did not only made for rich findings about the cyborg, technology-enmeshed (Haraway, 1984) and cyborg, antiBlackness rejecting (James, 2013) nature of their activity; it also created opportunities for students to affect change in their immediate lives, online and off.

Methodologically, this dissertation used critical ethnographic methods to foreground the experiences and expertise of participants in situ. These data are supplemented by interviews, focus groups, and analysis of products that students created. Particular attention was given to both the discursive and material aspects of the technology and how they afford or limit participants' cyborg literacy practices. I did so to account for participants' beliefs about the technologies at hand and writ large, their technological practices, and what they made in our time together. In so doing, I engage with the makerspace-as-technology, as a tool agentically leveraged by these Black youth participants. Critical Technocultural Discourse Analysis (CTDA) provides a framework to operationalize the complementary multimodal data sources needed to account for participants' technology artifacts, practices, and beliefs while using my theoretical framework to analyze it all. To this end, I use these cyborgs (Costa Vargas & James, 2012;

Haraway, 1985) in two ways. First, I use these cyborgs to consider what the collected data show about how students designed their space: to be a zone respite within enclosure, within which they practice fugitive literacies, online and off. Second, I use these cyborgs and an understanding of literacies as social practices to make sense of the activity in which the study's Black youth participants engaged while in the space they created. More will be said about data collection and analysis in Chapter 3.

Findings of this dissertation study are shared over three chapters. In Chapter 4, "Designing the Loophole of Retreat-- Ecology, Positionality, Affordances, and Limitations," I use analyzed data to reflect on how students operationalized a pilot set of design principles to create a loophole of retreat; I then reflect on how the design and ecology of our "loophole of retreat" fomented two affordances for the enactment of cyborg literacy practices: vibes and self-determination. In Chapter 5, I use the five facets of cyborg literacies— sensemaking, selfmaking, worldmaking, joymaking, and refusal— as an a priori framework for reading participants' activity in our after-school makerspace. In Chapter 6, "'Hitler' or 'Henceforward'—Influences and Insights from two Rebel Intellectuals," I leverage case interviews from two students to think more about what makerspace participants brought with them from their home, school, and online lives, about their presents and futures, about what they think it means to be cyborg. In the discussion and that follows the findings, I reflect on this study's implications for fomenting critical digital literacies and for designing learning experiences for Black youth in an antiBlack world. In the conclusion of the dissertation, I wonder aloud about what, if anything, the American schooling project from K-12 to higher education can do to engender aliveness in Black youth instead of serving as factories for reproducing the antiBlack status quo.

Chapter 2 Theoretical Framework: Literature Review and Conceptual Framework

I'll situate this project within three bodies of research: Black (fugitive digital) literacies, cyborgs, and making-spaces for Black youth. In discussing the first body of literature, Black (fugitive digital) literacies, I explain what I mean by literacy and situate Black literacy practices historically; in so doing, I describe why Black literacy practices have necessarily been fugitive and the ways in which they remain so. In the second body of literature, cyborgs in education, I explain how two cyborgs— one from cyberfeminist Donna Haraway (1985) and one from Black studies' Joy James— can clarify our understanding of the worlds that Black youth inhabit; as Haraway writes, "the cyborg is our ontology" (1985, p. 7). The final body of research on which this dissertation project draws is concerned with making Black making spaces. I use this literature to help readers understand what makerspaces are and to frame the kinds of making practices that Black youth might take up in makerspaces and the kinds of skills they develop through participating in them. As I discuss each of these bodies of literature, I will ground readers in the foundational theories on which this research project stands and the empirical research with which I hope to be in conversation. With this groundwork laid, I conclude this chapter with an explication of the two-strand twist of constructs that animate my research question: cyborg literacies and Harriet Jacobs' (1861) loophole of retreat.

2.1 Black (Fugitive Digital) Literacies

Contextualizing Black literacy practices starts with the premise that Black folks in America have always engaged in practices of teaching and learning in pursuit of freedom. The

condition of unfreedom from which Black folks physically and figuratively fled was codified by law, and has been an economic fact since at least 1619 (Hannah-Jones, 2021). The logic on which the nascent nation organized and governed itself necessitated and perpetuated the condition of unfreedom. Indeed, all men were created equal, but Black people were chattel slaves, were livestock to be exploited, kept docile, annihilated. These imperatives of the plantation dominated after emancipation and continue presently (Sharpe, 2016).

Before emancipation, slave codes made reading and writing capital offenses for Black folks. Letters and learning were tied conceptually to notions of freedom by enslaved folks and their oppressors alike. Gathering to teach and learn letters—even those in the Bible—earned lashings and worse. Enslaved folks engaged in these practices anyway and did so with the explicit purpose of growing nearer to liberation (Givens, 2019). Givens (2019) theorizes these curricula as fugitive pedagogies. Even white folks caught teaching literacy skills to Blacks were subject to legal recourse. Even teaching free Black folks to read was an act subject to imprisonment (Douglass, 2018). They did it anyway. In the north, there were different legal obstacles to Black education. In the now infamous Roberts case in Boston, Massachusetts, the Supreme Court upheld segregation in public schools. This pattern would continue, turning de facto segregation into de jure segregation as official policy.

2.1.1 Black Learning Through the Birth of Public Schools

After emancipation, the same logics of domination transferred to public policy and corporate ends. A system of "caste education" proliferated, wherein the public school became a site in which the hierarchy of white over Black was operationalized (Du Bois, 2001). When the Committee of Ten (1892) imagined a standardized public-school experience for American children, they did so without the counsel or consent of Black Americans, including only certain

children in their vision (Gordon, 1988). Thus, “quality” public schooling was imagined with a particular demographic in mind: white kids. Despite this, Black folks continued their legacy of providing youth and adults alike with the best education they could. A common site for black schoolrooms were churches (Gilyard, 1999). Black schoolhouses were responsible for teaching literacy and other skills to millions of Black folks through reconstruction and into the 20th century. Black literacy rates plummeted from 79% in 1870 to 11% in 1947 despite the separate but equal doctrine sedimented by Plessy vs Ferguson (1896) (US Department of Commerce, 1970). This, despite being unsupported by taxes, which only provided public funds to white schools, largely still segregated. Black folks still contributed to the building and maintenance of black schoolhouses, and Black landowners paid double taxes—once for the white schools, and again for the Black (Wallace, 2020). The facts of Black education, both in attitude and attainment, run counter to common discourses about Black folks' relationship to learning.

2.1.2 Schooling After Brown v Board

Derrick Bell, among others, has questioned what Brown actually achieved for Black students (Bell, 2004). The voucher and charter models that began in the aftermath of Brown vs Board have continued to this day. These models combined with white flight from cities to the suburbs to erode the funding structure of many school districts. As a result of these and other factors, schools are just as segregated in the 21st century as they were in 1956 (Hannah-Jones, 2014). Efforts to solve inequity in schools through bussing were met by white mob violence. Black folks persisted, became politically activated through their persistence and attendance of Freedom Schools in Mississippi and elsewhere; freedom schools remain a site for the possibility of Black thriving (Hale, 2011; Jackson & Howard, 2014).

Generally, curricular apartheid disallowed learning that would upset white sensibilities. James Baldwin's Talk to Teachers (1963) names the cognitive dissonance that whitewashed curricula and the myths of nation building causes in Black students; and what the work is: " to make them know—that those streets, those, houses, those dangers, those agonies by which they are surrounded, are criminal [… and] that these things are the result of a criminal conspiracy to destroy him (p. 5)." This is the miseducation Carter G Woodson taught against; fugitive pedagogues taught these things, taught black histories and created more possible black futures, at great risk (Givens, 2019). Today, schools remain a battleground for educators who refuse to miseducate their students. The so-called "anti-woke" political contingent is committed to a curriculum that teaches the 21st century equivalent of the myths and untruths that Baldwin exposed. Under the guise of "don't say gay" and "Anti-Critical Race Theory" legislation at the state and federal level, white power seeks to re-entrench the social hierarchy of Jim Crow America through schooling by confining Black students to deficit-laden visions of self and truncated imaginations for the possibility and practice of freedom in the future (Love, 2023). In no uncertain terms, this is violence.

Given their work to construct democratic citizens, and their willing participation in unflinchingly antiBlack institutions and commerce, schools can be inherently violent places for Black students. Schools inculcate this violence by their very function: interpolating Black children into American ideology (Hall, 1985). Even when Black students seek to express their humanity in school spaces that ostensibly support them and their pursuit of so-called social justice, they face policy and activity that reifies a white-supremacist state (Shange, 2018). Black folks have continued to take a fugitive stance toward this education project, often more literally than the history of curricular fugitivity that Givens (2019) illuminates. Sojoyner (2016) explores

the agency Black kids and families exercise when they refuse to participate in their own miseducation, and drop out. The purpose of schooling is to produce citizen subjects, good Americans, democratic participants in racial capitalism (Picower & Mayorga, 2015). For Black students, this means being indoctrinated into the myths that make America, including explicit and tacit instruction of their civic responsibilities; in America, this means not only compulsory democracy but productivity and labor. Together, these factors make many schools sites of enclosure for Black students.

These schools, like the Los Angeles, school from Sojoyner's 2016 *First Strike,* the San Francisco school from Shange's (2018) *Progressive Dystopias*, are enclosed spaces. Physically, students are enclosed on campus. Thanks to the omnipresence of digital technologies and students, datafication, (Lupton, 2017), this enclosure extends digitally as well. Platform capitalism (Cottom, 2020; Patel 2019). Zoom school, ushered in by COVID 19, brought surveillance into kids' homes with each device (Foster, 2021; Tamura Ho, 2023). The kitchen table and/or bedroom desk became a new site in which Black kids' and families' behavior is policed, extending their enclosure (Morris, 2016).

As ever, Black students, families, educators, and community members resist and reject enclosure. The Lindendale School is one such place where these stakeholders take a fugitive stance to the schooling project. Even where it seems impossible, Black faculty make room for Black youth to be their full Black selves. Educators and community members engage in fugitive practices within them. Families overcome these racialized spatial imaginaries to care for their children and communities more broadly (Nickson, 2020). Black children themselves have an established tradition of education organizing through community advocacy groups, using traditional and digital methods to "influence reform discourse, educate local communities, and

forward community-driven educational reform" (Hetrick et al., 2020). In her work with Black women in Detroit, Michigan, Wilson (2015) shares participants' counternarratives of critical care and political resistance in the face of the "politics of disposability" inherent in neoliberal urban centers like Detroit. Detroiters created formal and informal networks of activism and advocacy that spans from grassroots to institutional levels (Wilson & Johnson, 2015).

Within their schools and classrooms, fugitive pedagogues carve refuges for maroon Black youth. Derived from the Spanish 'Cimarron', maroon refers to "a group of persons isolating themselves from a surrounding society in order to create a fully autonomous community"; theorizing the maroon has been vital to developing understandings of the Caribbean and struggles for freedom that proliferated from there (Roberts, 2015, p. 4). In simpler terms, Marronage means flight. Maroons are fugitive to colonial powers and the abjection of Black people that their economic logics required. As Givens (2019) argues from the curricular perspective of Black teachers and Sojoyner (2016) asserts through the practices of refusal from Black boys, fugitive practices that reject the narratives and political investments of white power still exist, and indeed are still enacted in schools by students and educators alike (Okello, 2022).

Flight generally implies movement, a physical escape. Across the diaspora, Black folks fled to swamps and mountain ranges, deep forests and abandoned isles to achieve their autonomy (Roberts, 2015). In addition to these, histories of the enslaved describe the internal and temporary flights undertaken. Today, the risk of continued enclosure (in juvenile detention or prison) at stake for Black folks engaging disobedience, for unauthorized joy, for self-edification that is not neatly aligned with the American project is great (Meiners & Winn, 2010; Sojoyner, 2018). These activities reduce neither fugitivity nor marronage to a metaphor. Under circumstances of enclosure, Black folks still move to spaces where they can be free of the

clutches and efforts of the state. As Roberts (2015) writes, flight to these "zones of refuge results in keeping states at a distance […] escape from state legibility and the enactment of local forms of lawmaking, epistemology, organization, agriculture, and relations is a mechanism to avoid the appropriating dynamics of state power (p. 152)". Black youth often create and participate in these zones of refuge, maroons within their own schools. This, after all, is one of the reasons all the Black kids are sitting together in the lunch room (Tatum, 1997). Away from interpellating hails by law enforcement and school staff alike, Black youth seek safe spaces to be their full selves even and especially as these selves pursue aims contrary to schools' visions for "productive citizens" participating in their own subjugation under racial capitalism (Player et al., 2020; Warren & Coles, 2020). It was the need for the loophole of retreat wherein Jacobs wrote herself into more freedom. It remains the need for the loophole of retreat today: Black students are enclosed by the school-prison nexus, by a compulsory system of citizenship training that teaches them that there are only so many appropriate ways to think, act, and be. But Black folks, as they have since the middle passage, engage in refusal:

> [A] rejection of the status quo as livable and the creation of possibility in the face of negation i.e. a refusal to recognize a system that renders you fundamentally illegible and unintelligible; the decision to reject the terms of diminished subjecthood with which one is presented, using negation as a generative and creative source of disorderly power to embrace the possibility of living otherwise. (Campt, 2017, p. 83)

Contemporary research on schools and the Black students who want to do more than survive in them attests to this (Greer et al., 2024; Kearl et al., 2023; Love, 2022; Mims et al., 2022; Muhammad, 2024; Ohito, 2020; Okello, 2024; Player et al., 2020; Warren & Coles, 2020) Within loopholes of retreat, students are more safe, more whole, more free.

This research project contributes in this vein, seeking understanding of the complex ways in which Black students work outside of schools' vision to achieve their own versions of self-hood—even when this work takes place within schools. I argue that the youth included in this study, like other maroons in history practice fugitive literacies. Like other maroons in history, they leverage the technologies at their disposal to do so. From agricultural wisdom, medicine and indeed Blackness itself, Black literacy practices are co-constituted with technology.

2.1.3 Fugitive Black Technoculture

Like Black literacies, Black technology practices are fugitive. They exist when they shouldn't and often exceed their prescribed use. Both technology-as-artifact and technology-as-discourse are prefigured for the use of white men people (Brock, 2018). The imagined technology user, the default AVI, the cultural mores of racial domination built into the hard and software of the online experience reveal that the ways "tech user" and "white male person" are constructed to be synonymous (Brock, 2020). Though whiteness and technology are imbricated in those ways, Blackness and technology have been imbricated, this whole time, leveraged in pursuit of joy and liberation. From the earliest days of ARPNet, Black folks—in and with the purpose of creating community—pioneered digital technology use. There is a whole genealogy of what Charlton McIlwain (2019) calls the "vanguard", Black computer scientists, programmers, organizers, and visionaries who helped build the internet as we know it, who picked up the mantle from Katherine Johnson, Dorothy Vaughan, Mary Jackson, the punch-card technologists who put man on the moon. A century earlier, Black people were negotiating photographic and pre-photographic technologies as tools for truth telling and liberation from the horrors of American chattel slavery (Blackwood, 2009). Since then and to this day, Black artists use music technology to transcend time and express against dominant cultural norms (Howard,

2022). These are fugitive Black technology practices, espousing "a desire for and a spirit of escape and transgression of the proper and the proposed", used since the only "digital" was hand picking of crops by chattel slaves (Moten, 2018, p. 131).

Black technology practices had to become fugitive because Black people and Blackness have themselves been technologies for creating and organizing the Western world. Under chattel slavery, black bodies were currency and technology, the engine propelling the founding fathers' enlightenment ideals into economic prosperity. For centuries, in America and elsewhere, Black folks had to navigate and understand Blackness and race itself as a technology. Race has served as a mapping tool, a means for organizing homo sapiens into distinct groups with measurable differences in intellect, ability, humanity by rendering visible that which is innate (Chun, 2009). In America in particular, dark skin came automatize the brutal treatment of Black folks:

> The wanton use of and the violence directed toward the black body come to be identified as its pleasures and dangers — that is, the expectations of slave property are ontologized as the innate capabilities and inner feelings of the enslaved, and moreover, the ascription of excess and enjoyment to the African effaces the violence perpetrated against the enslaved […] the conception of race engendered by slavery and abolished by the thirteenth amendment made "black" virtually synonymous with "slave" and "white" with "free." (Hartman, 1997, p. 26)

Blackness was and remains a heuristic for determining who can be brutalized; with the abject position of the Black established, whiteness can be defined as its opposite, can be protected, can be idealized. Race, as operationalized in the western liberal humanist tradition, is a technology of mediation, a "means by which both [human biology and culture] are established and negotiated

(Chun, 2009). Black folks are fugitive to this, evading, escaping, and otherwise existing outside of the definitions of Blackness against which whiteness defines itself (James, 2013).

For many Black folks, reading the world around them means becoming fluent in how skin tone shapes experiences in order to survive. These are literacies, figured as social practices. Literacies as social practices are broader than just reading and writing. For Black folks, the context in which the meaning making happens is antiBlackness. Parents teach children how to comport themselves to avoid scrutiny. Obfuscation is a moral imperative for protection from individual prejudice and state oppression. All this is to say that everyday Black being is itself a fugitive literacy; Black being online can therefore be understood as fugitive digital literacy. Fugitive digital literacies.

The fugitive practices of black being continue when Black folks interface with contemporary digital technologies. Just as the logic of the plantation suffused politics, it informed the development of agricultural, economic, and industrial technologies. As Deleuze (1992) named, these technologies were used to cement the control society in which we live today. Life has become increasingly datafied— we are represented numerically and therefore organizable. The spread of "AI" and the use of algorithmic decision making by businesses and government for years now means that those entities think people are predictable as well. The use of technology to track, organize, verify, and control has long roots in the United states. As Simone Browne notes in her 2015 Dark Matters, contemporary digital surveillance methods are themselves the descendants of race-making technologies of the 18th and 19th centuries: the caliper, the census, the slave pass. Black folks have in turn developed new methods for resistance, fugitivity, and marronage. Just as the mundane and necessary ways Black folks make themselves and the world "offline" are fugitive literacies, so are "online" Black practices.

Despite and indeed to spite the logics of white domination, now extended through and onto the digital, Black folks engage in everyday practices of fugitive digital literacy. Brock (2020) describes Black cyberculture as "the protean nature of Black identity as mediated by various digital artifacts, services, and practices both individually and in concert—or Blackness as:

- An informational identity premised on
- Libidinal online expressions and practices of joy and catharsis about being Black
- Expressed through semiotic and material relationships between content and hardware and code performances and cultural phenomena online as Black cyberculture (p. 5).

This excess of life, this jouissance, this libidinal economy, is an unruliness that whiteness uses to continue to use to reproduce Black as abject, as incommensurate with proper, with modern, with normal technology use (Brock, 2018; Fanon, 1963)**.** Black cyberculture(s), like AAVE, like signifying practices-cum-memes, are illegible to white mores. Therefore, though Black people increasingly use digital technology, the consensus is that we're doing it wrong (Daniels, 2013). The facts of Black tech use have not prevented deficit discourses from proliferating. Recent research indicated that Black tech adoption rates are catching up with that of their white counterparts (Lenhart, Purcell, & Smith 2010). In the case of smartphones, Black youth in particular are avid users; indeed Black kids create new ways to use SNS and other apps (Wang, 2021). "Black twitter" is the use case for the app (Brock, 2018). To keep up, discourses about Black tech use have evolved. The "digital divide" still exists, though now it indicates Black youth lack access to broadband/high speed internet in only 18% of homes (Dolcini et al., 2021). So often, researchers concede Black folks are leading technology users, only to point out the increased risk they face for violence, drug and alcohol use, unsafe sex, and other

ramifications of their bad behavior. Black youth pioneer trends on platform after platform, only to be blocked from search results and payment programs by algorithms.

Despite— and perhaps because of— their illegibility, Black tech practices have proliferated. Black folks engage in life affirming practices despite symbolic annihilation that the American regime employs in its media production. I argue that as they pursue thriving and joy in their interfacing with the digital, Black folks can be said to be practicing fugitive digital literacies. Through practices of Black joy (Steele & Lu, 2018), autopoiesis (Greene Wade, 2023), Black political activation (Tanksley, 2020) and refusal (Campt, 2017) Black folks engage in digital marronage-- disobediences against the social order. This dissertation project continues explorations of agentic Black youth fugitive digital literacy practices under the conditions of antiBlackness as they are manifested online and off. That is to say—this project is an exploration of Black technoculture as practiced by Black youth. It is an investigation of the ways in which youth technology practices are an "interweaving of technology, culture, self, and identity" (Brock, 2020, p. 221). In an effort to account for both of those contexts-- antiBlackness in American society and literacy practices that span the online/offline boundary-- I turn to cyborgs. This research offers cyborg literacies, which situate posthuman arrangements of human/machine within the regime of anti-Blackness "in the wake" of slavery (Sharpe, 2016). To explain what I mean by this, I'll next establish the ontological stakes via cyborgs offered by Donna Haraway (1983) and Joy James (2013).

2.2 Cyborgs

The second body of research that this project leans on is cyborgs. Organically coined by Kline and Clynes as a portmanteau of "cybernetic" and "organism" for an audience of NASA engineers, the term has come to represent one of the more prevalent conceptualizations of

humans' relationship to technology, each other, and the planet. In this dissertation, I use cyborgs to make sense of the ways Black youths' literacy practices traverse the online/offline boundary; as this occurs, youth can reject enclosure and victimization. Two cyborgs figure prominently here. First, Donna Haraway's 1985 metaphor illuminates the technological reality that had come to be in the late 20th century. In addition to their prevalence in prosthetic medicine, science fiction, and pop culture, human-machine hybrids have played a role in education research. As I'll explain, this cyborg has been used in education to account for the complex ways in which youth lives are mutually constituted online and offline. A second cyborg, this one from abolitionists Joao Costa Vargas and Joy James, helps us understand the stakes and impossibility of Black integration because of white supremacy's need for an abject other. Together, they help me articulate the context and conditions of Black youth digital practices. These Cyborg theories are but two of the counter- and post-humanisms that critical scholarship leverages to resist hegemony; some will be cited in this section where they provide clarity, but full discussion of post-humanisms in education is beyond the scope of this dissertation.

Haraway's cyborg has been used throughout the 21st century to help researchers make sense of the relationship between people and technology. By exposing the "leaky distinctions" on which the liberal human subject teeters-- human/animal, human/machine, physical/nonphysical-- 1985's *Manifesto for Cyborgs* offers new configurations that people might take up to birth a more just world**.** In digital studies, Society and Technology Studies (STS) and sociology, folks researching the cyborgic explored the ways in which we use digital and computer technologies as extensions of our bodies in art (Gray et al., 2013; Russell, 2019); war (Masters, 2005; Wilcox, 2017), commerce (Sassen, 2002), sociality, and sex (Eerikaianen, 2001). Cyborgs range from the exotic to the mundane (Petersen, 2007), with proliferating uses including genetic

engineering, pacemakers, and wearable smartphone extensions (Wilde, 2019). These applications span both human/machine hybrids and cybernetic networked assemblages of organizations and businesses. In Black studies, the cyborg (and cybernetics) has illuminated Black fictional protagonists (Chaney, 2003; Federmeyer, 2000; Ramirez, 2002**)** and British Grime music (Stainslaus, 2022), as well as fertilizing Digital Autoethnographic methods (Brown, 2019). In broader academic writing about Black people-- particularly Black women-- the cyborg illuminates how Black people of all genders are represented in the white imagination and popular media (Bey, 2016; Shaviro, 2005**),** but also how Black people and Black art leverage gender as prosthetic technology to subvert dominant narratives and oppression (Bisschoff, 2020; Omry, 2005). I'll return to Black cyborgs again, later in this section. The cyborg has been used extensively in education research as well.

In education, Haraway's cyborg has been invoked to account for the arrangements of youth and their technology as they accomplish tasks, especially composition, across modalities (Lizarraga, 2023; Winkelmann, 1995). Cyborg pedagogies have been leveraged in arts education to critique the ways computational and digital culture have become inscribed on bodies and identities (Garoian & Gaudelius 2001). Researchers in the learning sciences have attended in great detail to the potential opportunities that networked sociality of our digital age affords youth participants; they find that the sociopolitical reconfigurations that collaborative cyborg activity engenders world-making through speculative fabulation (Lizarraga, 2023). In higher education, researchers have examined the posthuman practices with which university students engage in meaning making in contexts where the boundaries between digital and analog are blurred (Gourlay, 2017). Many of these activities and practices have been interpreted by researchers as literacies; I'll attend to cyborg literacies in more detail later in this section.

Researchers not only leverage the human-machine hybridity of Haraway's figure, they lean on its cyberfeminisms to bring critical lenses to the study of digital technologies in education. For example, library studies (Schelesselman-Tarango, 2014; Yoder, 2003). Research with queer Latinx teachers explored how "non-dominant people that exist and fluctuate in the in-between of boundaries of gender, race, sexuality, the physical, and the virtual provide pedagogical overtures for imagining and organizing for new possible futures that are equitable and just (Lizarraga & Cortez, 2020). Cyborgs have been illuminating as they help describe the ways in which adolescents' social selves are distributed online and offline, across platforms (Ringrose & Harvey, 2017). Cyborgs have been used to articulate hybrid learning environments, even before Covid 19 interrupted schooling, with implications for writing, instruction, and sensemaking (Burgess 2015; Hilli 2019; Gleason, 2014; McPheeter, 2010).

2.2.1 Race and Technology, or Fear of a Black Cyborg

Academics have debated the range and utility of Haraway's cyborg in the years since it came to prominence. Chude Sokei (2019) illuminates the ways that hierarchies of race as foundational to the development of technology and its discourses. Computing advancements in the 20th century, including vitally, Norbert Wiener's cybernetics reshaped the ways we organized people and labor. Chude Sokei (2019) indicates how it is no surprise that the "Human Use of Human Beings" was appropriate metaphor for the future of work, "because the evolution of robotics and cybernetics explicitly borrowed from and were imaged through the rhetoric, assumptions, and social positions of blacks" (p. 161). In short, people made these machines because it was no longer palatable to force labor through physical and social dominance. Master-slave relationships between whites and Blacks were replaced by the "master-slave" relation foundational to computing. Cybernetics then, is a "science of computation and control systems

[;] merely a thin disguise for methods of social domination and control" (Eglash, 1995, p. 18). The question is raised--- can "cyb" be vivified? Globalization cum colonization via the surveillance capitalism that cybernetics makes possible suggest that we ought to be wary (Crowley, 2021).

Others have noted the ways Haraway mythologizes "women of color" as the ideal cyborg in her manifesto; (Sandoval, 2000, Schuller, 2005). Currier (2003) critiques the ways in which Haraway's cyborg reproduces the very binaries she purports to disrupt, writing, "insofar as the hybrid cyborg is forged in the intermeshing of technology with a body, in a process of addition, it leaves largely intact those two categories—(human) body and technology—that preceded the conjunction (p. 323). These critiques are valid and generative for my thinking, helping me to avoid technosolutionism. Pop media representations of the cyborg— weaponized, hypermasculine, and (when Black) superhuman saviors (Jimenez, 2019). The eponymous comic book character, Vic Stone aka Cyborg, represents the paradox and possibility of the Black cyborg. Both "blessed" and "cursed", simultaneously superhuman and monstrously subhuman, Vic struggles to define himself and to save himself; his efforts and capacity to do both signal an interruption to hegemonic ideas of who can be human and to what ends (Bey, 2016). In the comics, Cyborg remains committed to saving humanity despite humanity's inaccessibility to him. This is a figuration of the cyborg I vehemently resist. After all, so many Black cyborgs merely endure becoming cyborg; the same technologies that extend the Black cyborg's body are technologies of surveillance, industry, colonization, and war (Casey, 2021). Rather than imagining a cyborg orientation as panacea, I hope to investigate what affordances and limitations Black youth experience in lives distributed across, and infused with digital technologies. To do so, I turn to another cyborg: the Black Cyborg as posited by Joy James and Joao Costa Vargas.

Reflecting on the murder of Trayvon Martin by George Zimmerman, Joao Costa Vargas and Joy James (2012) extend the work of Frantz Fanon's (1961) *Wretched of the Earth* to theorize the social position of Black people under antiBlackness. They argue that full integration into (white) society is impossible: "for a Black person to be integrated s/he must either become non-black or display superhuman and or/infrahuman qualities" (Costa Vargas & James, 2012, p. 194). This is because "the imagination, mechanics, and reproduction of the ordinary polis rely on the exclusion of ordinary blacks and their availability for violent aggression and/or premature death or disappearance" (Costa Vargas & James, 2012, p. 194). Trayvon's brutalization, like Rodney King's, like Emmit Till's, was a preventative measure to intercept his Blackness before it does "what is assumed the black would do without repression" (Costa Vargas & James, 2012, p. 195). Through these processes of literal and symbolic brutalization, the anti-person— the Black— is perpetually recreated, thereby producing the boundary whiteness uses to cohere itself.

The authors draw a trajectory of futile efforts to escape the violence of white suppression in the postbellum United States. Along the way they theorize two contrapuntal Black cyborgs. They argue that the first involves calls for the "talented tenth" and efforts to be "angelic" in advocating for civil rights in the face of bombings, lynchings and death threats; this black cyborg is "a modified, improved human whose increased ethical, spiritual and physical capabilities generate unusual strength omniscience, and boundless love" (Costa Vargas & James, 2012 , p. 198). This cyborg is born of misguided efforts to create an acceptable (and markedly extraordinary) blackness capable of "[overcoming] the brutality of imposed limits-- the conditions of social and physical death [...] by narrative a political desire, offered in an unproblematic fashion, the necessity and possibility of integration" (Costa Vargas & James, 2012, p. 198). What makes these efforts misguided is the belief in "a social organization, its

institutions, and people, as if they were not intrinsically anti-black" (Costa Vargas & James, 2012, p. 199). At the end of the day, the temporary beneficence for these perpetually forgiving seekers of integration is solely "predicated upon their usefulness for the transformation of whiteness into a loftier and ennobled formation (Costa Vargas & James, 2012, p. 194)." So-called progress requires Blacks to teach white America about its historical and contemporary brutalities though "boundless love" and "without rage," such that "the burden of integration[...] is squarely on blacks-- black intellect, body, imagination" (Costa Vargas & James, 2012, p.199). However, there is a battle afoot.

Opposed to this angelic cyborg, there exists another Black cyborg formulation, one that recognizes that western liberal democracy "cannot be resuscitated as anything other a than a site in which black death and the vulnerability of black children to emotional, psychological, physical trauma continue to exist;" this Black cyborg is a "rebel who relinquishes the unachievable goal: striving for a socially recognized "humanity" that is constructed on the antithesis residing on her hip" (Costa Vargas & James, 2012, p. 200). Thus aware of how the Black body will be used in the reproduction of the white body politic, the Black cyborgs reject victimhood. James argues that this is a process of self-making, a psychological "[relinquishing of] the fight to be considered 'human' (James, 2013, p. 68) and the attendant abjection necessitated by it. The Black cyborg becomes fugitive in her refusal of Blackness-as-victimization and reconstitutes Blackness-as-resistance, in rebellion within the colony (or favela, or ghetto) in pursuit of what Fanon (1963) called the "henceforward": the moment of ultimate struggle against oppression, in a refusal of oppressive futures.

Self-making toward freedom is a storied Black literacy practice, as I have described earlier in this section. Through this autopoiesis, Black cyborgs transgress categories, boundaries,

and worlds (Greene Wade, 2023; Russell, 2019). Janelle Monae provides a ready example, having eschewed labels in their music, their style, sexuality, their performance of gender, their unabashed pursuit of pleasure (Baro Gonzalez, 2017; Rodine, 2022). Black cyborgs are subversive, they are tricksters gaming the system (Faucheux & Lavender III, 2018). And they always have been.

I hold these cyborgs together in this dissertation, leaning on both of their capacities to account for the world(s) in which Black youth live an act. This cyborg is an assemblage of Haraway's metaphorical figure cum scientific reality and Joy James' Black rebel intellectual rejecting victimization. The cyborg youth who participated in this study:

1) have digitally mediated selves and/or leverage technology in their becoming themselves;

2) these selves, networked with others, reject the abjection (the deficit framings, the symbolic annihilation, the material oppression) that antiblackness-cum-liberal democracy demands of them.

Here's another way to think about it. In this dissertation, to say a practice or activity is cyborg is to say that it

1) traverses the offline/online "boundary" or is mediated by technology AND

2) that it exemplifies fugitive Black practices of self-determination, joymaking, liberation.

As I have described above, Black practices of self-making through literacy are a storied tradition, tracing back to slave narratives. One of these narratives, that of Harriet Jacobs, serves as an anchor for this project and an exemplar Black cyborg. As I'll describe in the following section, Jacobs' autodidactic critical literacy was an effort to "dismantle the master's house with

the master's tools" (Cutter, 1996); this literacy practice was only possible because of a fugitive space to which she was able to retreat, a hidden attic space above the pantry within which she remade herself— her "loophole of retreat" (Jacobs, 1861). Thus sequestered, she used the tools at hand—letters and a gimlet— as technologies to move closer to liberation. The next section of this literature review focuses on these kinds of spaces by describing the affordances of third and makerspaces in education research and the ways in which they can support the literacy development of Black youth; keeping our expanded conception of literacy at hand, I surface benefits of these spaces for Black youth beyond mainstream connotations of STEM making.

2.3 Making Black Making Spaces

Makerspaces are sites of collaborative, youth-led exploration through crafting, building, creating, tinkering and making. According to Halverson and Sheridan (2014), making is a set of activities built on practices and mindsets that value collaborative and iterative construction of objects through creative use of material and digital fabrication tools. Research on making spaces spans disciplines, including education, learning sciences, library sciences, engineering, and design. In this model, often designed as a vehicle for youth participatory action research (YPAR), youth are "engaged, positioned, and apprenticed […] to become change agents in their communities across settings and time (Tan et al., 2016). Some of these explicitly call for youth participants to co-design the space in which they do their tinkering (DesPortes et al., 2021). Theoretical perspectives range from Cultural Historical Activity Theory (CHAT), and communities of practice, through Vygotskian and constructionist learning theories through posthumanisms and Actor Network Theory. Researchers have been interested in what people make, how they make it, how they make it together, and why they make. Despite this diverse

array of entry points to the topic, the participants in studies about makerspaces have historically been somewhat monolithic.

Much research on making and makerspaces attends to STEM learning and perspectives. Given imagined disparities in interest in STEM and real disparities in access to high-quality STEM instruction, researchers note that girls and children of color are less likely to take on STEM identities (Brown et al., 2016). Research has found that particularly for low-income students, high quality out-of-school learning activities can positively impact participation and learning in STEM (Falk et al., 2007). Like technology cultures more broadly, making and makerspaces are often conceptualized as a white, male activity. Employment rates in STEM fields reflects that. Critical researchers push the field "to consider how making—as a practice—is always linked to individual and social histories that unfold across space and time. Who can make and who cannot, whose knowledge matters and whose does not, are all part of making itself" (Calabrese Barton et al., 2017). These researchers note the potential that makerspaces can have in "supporting youth in framing, unpacking, and interrogating salient concerns and needs with the tools of science, engineering, and communities so as to innovate unique solutions to address particular inequities in their lives" (Calabrese Barton et al., 2017, p. 7). While making has been part of the human experience since time immemorial, there is relatively nascent maker "movement", an "attempt to organize resources, attention, and people around maker communities and maker practices" (Calabrese Barton et al., 2017, p. 119).

Despite these aims and the coherence of the so-called movement, there's a paucity of and need for research on Black youth in these contexts. Calabrese Barton et al. (2017) write that "There is little evidence that the maker movement has been broadly successful at involving a diverse audience, especially over a sustained period of time. The movement remains an adult,

white, middle-class pursuit, led by those with the leisure time, technical knowledge, experience, and resources to make". The kinds of hands-on technology playspaces that might engender these skills and predilections are predominantly taught and attended by white males (Pinkard et al., 2017). Inclusion is a growing concern for makerspace designers (Greene et al., 2019; Masters et al., 2018). As I look at this trajectory, I'm reminded of the ways that digital technologies have traditional been designed, and for whom; the whiteness of the "default" user, his maleness, loom large as I examine the makerspace as a technology, as a sociocultural tool, imbued with beliefs about who belongs and what constitutes making (Tan & Calabrese Barton, 2017). Combined with what we already know about how race, class, and gender shape which high school students get to take what classes, continued interruptions of the automaticity of whiteness and maleness in making and technology education are vital. This is important beyond preparing workers for STEM careers, though that is the impetus for much STEM oriented programming, both in and out of school time. What's at play here is a refusal of dominant narratives of how the makerspace-as-technology is to be used, and by whom. In this dissertation I explicate fugitive uses of the technology, Black uses for which "utility and efficiency are not the ultimate aims" (Brock, 2020, p. 5).

Researchers have examined the affordances of makerspaces beyond developing STEM skills. Researchers have taken up the ways in which Black girls reap all manner of benefits from participation in makerspaces beyond STEM skills, including self-efficacy, and agency. Vasudevan (2006) explores how Black boys made and remade and restoried their identities. Greene, Kellam, and Coley (2019) found that Black college-aged men can develop agency and positive identity associated with engineering through making. In recent years, there has been a push to design making spaces for equity, or justice, wherein youth make media and/or tools

designed to address an issue or intervene in their communities (Calabrese Barton & Tan, 2018). Others—particularly in critical computer sciences and critical race computational thinking—invite making, tinkering, and hacking toward liberation and the construction of social futures (Shaw et al., 2023). Through their making, nondominant youth produce situated knowledges that influence their identity development and historical awareness, inculcating an agentic orientation toward technology, and expand their literacy skills; Black youth making practices can therefore be understood as a "practice of resilience [...] that deals with concrete needs and values" (Ryoo et al., 2020, p 396). In spaces that are oriented toward facilitating Black joy, youths' design and making practices can interrupt white-dominant narratives and paradigms (Worsley & Roby, 2021). Design and proliferation of these spaces of critical importance.

In a systematic review of "creative educational experiences" for Black youth which included making spaces, Mims et al. (2022) found that a key design component of spaces that support the brilliance of Black youth is fugitivity. Citing Givens (2021), Mims et al. (2022) note the relative psychological safety and cultural relevance of fugitive spaces for Black youth creative education experiences; their work recommends future research that demonstrates the effects of such spaces. Other formulations, such as Black Educational Spaces, (Warren & Coles, 2020) similarly reckon with the ways Black youth and communities seek opportunities to exercise their aliveness, their self-determination, their joy. This dissertation project aims to continue that conversation empirically and theoretically. First, empirically, I hope to contribute findings to the body of critical making research that celebrates Black high-schoolers' identities, practices, and cultures. Second, theoretically, I aim to add my voice to the chorus of scholars engaging in fugitive study of fugitive practices in education. As I take on both these charges, I hope to contribute to conversation about Black placemaking, about the nimble practices of Black

technoculture through which we carve out spaces of respite and joy within the fraught enclosure of public education. One such space is the loophole of retreat (Okello, 2024). After Young (2012), I'm here to "discuss the trapped Black mind as a cosmos" (Okello, 2024, p. 23).

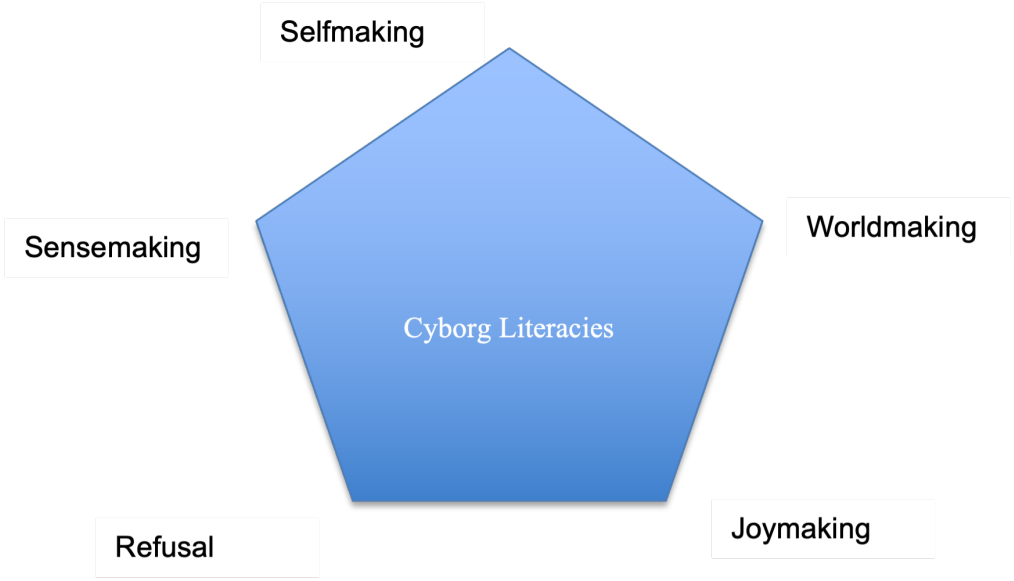
In this chapter, I drew on a transdisciplinary bibliography to create the platform on which this dissertation stands. I told the story of Black literacies, why they are necessarily fugitive, and how they have mutated as they became mediated by the digital. I then described the twin ways in which Black youth may be ontologically cyborg—self-defining, hybrid, distributed. Finally, I described some contexts, uses, and affordances of making and making spaces for Black youth. I draw on all of these literatures to conceptualize two constructs that undergird this dissertation project: cyborg literacies and loopholes of retreat. In what follows, I will define each of these constructs and explain how they animate my research question.

2.4 Conceptual Framework

In the above, I told a story about Black fugitive literacy practices and how two cyborgs can help education researchers continue to understand them and support their development in para-educational spaces. Two constructs emerge from this story and create the conceptual framework that undergirds this dissertation's research question: cyborg literacies and loopholes of retreat. Together they illuminate this project's aims: to study Black youth practices of selfmaking, sensemaking, worldmaking, joymaking, and refusal-- on and offline.

Figure 2

Cyborg Literacies



2.5 Cyborg Literacies

This proposed research contributes to empirical research about Black kids' literacy practices by exploring the ways in which fugitive digital literacies inculcate opportunities for and predispositions toward Black joy and Black futurity through acts of co-creation, self-determination, and refusal**.** These are Black youth agencies that interrupt a status quo requiring their abjection; these are fugitive literacies (Player & Coles, 2020). When and as these practices are mediated by digital technologies and/or distributed among youth networks and reject Blackness-as-victimization, they are cyborg literacy practices. As Black youth engage in fugitive literacy practices in via the digital and its artifacts, Black youth embody Vargas and James' (2012) theorization of the Black cyborg, the rebel intellectual rejecting victimization via self-making; insofar as these practices are distributed across Black youths' imbricated online and offline worlds, they can be called *cyborg literacies*.

Cyborg literacies constitute a constellation of sense, self, world, and joymaking practices through which Black youth practice in their everyday lives, on and offline. These literacy practices are broader than popular notions of literacy as only reading and writing texts. Instead, from this cyborgic perspective, we can understand literacies as (digital) social practices. In other words, cyborg literacies are techniques for reading and being in the world today. In what follows I'll describe how cyborg literacies offer a standpoint that allows me to describe this moment, these conditions, these participants, and their activity— with precision.

Cyborg literacies are useful for building a framework to understand how Black youth make their way through a world such as this one, with these conditions. First of all, this world is antiBlack. Black folks' everyday practices of survivance (Patel, 2016; Vizenor, 2008;) have been documented for centuries, across the diaspora. These fugitive practices– uses of technology for acts of agency, rebellion, flight, and joymaking in a society designed to hasten Black physical and social death— have a long tradition in the Black diaspora, from the gimlet (Jacobs, 1861); the Daguerreotype (Blackwood, 2009); the cornrow (Quampah et al., 2023) ; the blues, jazz, rock, and house music (Young, 2012). To study cyborg literacies is to study the ways Black folks might, through the technologies at hand, "refuse blackness-as-victimization" (James, 2013, p.68). These technologies have changed with the times, of course. Today Black youth inhabit a world in which their lives are mutually constituted and/or distributed between online and offline worlds. This is another reason cyborg literacies are apt for the task I aim to undertake.

Cyborg literacies offer a way to reckon with the imbrication of the digital and physical planes into which Black youth find themselves interpellated. Imagine being a seventeen-year-old. You probably text your grandma. You deftly manage your image across a slew of social media sites, depending on your aims and audience. Your school requires you to have an online

presence for a gamut of reasons (assignments, grades, discipline records, aspiring to higher education, etc.). Perhaps you use an Apple Airtag to keep tabs on your backpack; perhaps you wear a Fitbit as a watch. In a very real sense, you are never not online. This is simultaneously a thrilling opportunity for freedom dreaming and a ready mechanism for control and surveillance for Black youth under racial capitalism. This is all to say that with or without my puny theorizations, the border between human and machine is blurred. Cyborgs are. Cyborg literacies therefore assume the realness of Black youth's digital and hybrid selves and their capacity to leverage them agentically in pursuit of fuller, freer being.

I imagine cyborg literacies mapped in relation to other 21st century literacies. Cyborg literacies are perhaps the progeny of critical digital literacies (Ellison & Kirkland, 2014; Hutchinson & Novotny, 2018;) niblings to worldmaking and cosmopolitan literacies (Hull & Stornaiuolo 2014). They might call Holland, Skinner, Lachicotte, and Cain (1998) meemaws and grandpappy; Stuart Hall is a trusted padrino (1985). Among the blossoming profusion of multi and new literacies, cyborg literacies are little sis to critical data literacies (Gutierrez, 2019; Tygel & Kirch, 2015), Critical race techno-literacies (Tanksley, 2022) and critical computational literacies (Lee & Soep, 2016) and little bro to the abolitionist computer sciences (Ivey et al., 2021; Jones & Melo, 2021). In short, cyborg literacies are fugitive literacies (Fugitive Literacies Collective, 2020; Lysicott, 2020; Ohito, 2020) with a telescopic lens for the role of the digital; they offer me a way of understanding Black youth's sense, self, world, and joymaking practices from the intersection of science and technology studies and Black studies.

I can also imagine specific practices, activities, orientations that illustrate cyborg literacies in action. These are agentic Black practices of self-making, sensemaking, worldmaking, joymaking, and refusal mediated in some capacity by technology. These include

networked sociality, distributed selves, and prosthetic uses of technologies to enhance or augment, among others. While these are some examples, I was not necessarily looking for these specific practices, and as I suspected, participants demonstrated additional practices that I had not yet imagined. Here I offer some definitions and examples of each of these cyborg literacy practices.

Selfmaking: Black youth practices of crafting, trying on, assuming, and discarding roles and identities for their current and future selves. From naming themselves, to plotting on the skills they need to develop to achieve economic or spiritual freedom, Black practices of selfmaking have long been fugitive. This process of constructing current and future selves is often truncated by the norms and mores antiBlackness and the patriarchal thinking that accompanies it (Campt, 2017; Warren & Coles, 2020; Young, 2012);

Sensemaking: discussing, debating or otherwise individually and collectively processing their lived experiences of being in the world. This "kitchen table talk" unleashes a radical capital through which Black youth and Black folks develop understandings of the systemic forces that shape their lives (Bolding, Glover, Mouton, & Routt, 2022);

Worldmaking: dreaming, wishing for, predicting, imagining, forecasting about a present and/or future that does not exist yet. These practices occur at the micro and immediate level as expressions of Black aesthetics and design, and the cosmic level as Black folks labor and laugh toward safer worlds in which they can be their whole selves (Coles, 2021; Greene Wade, 2017);

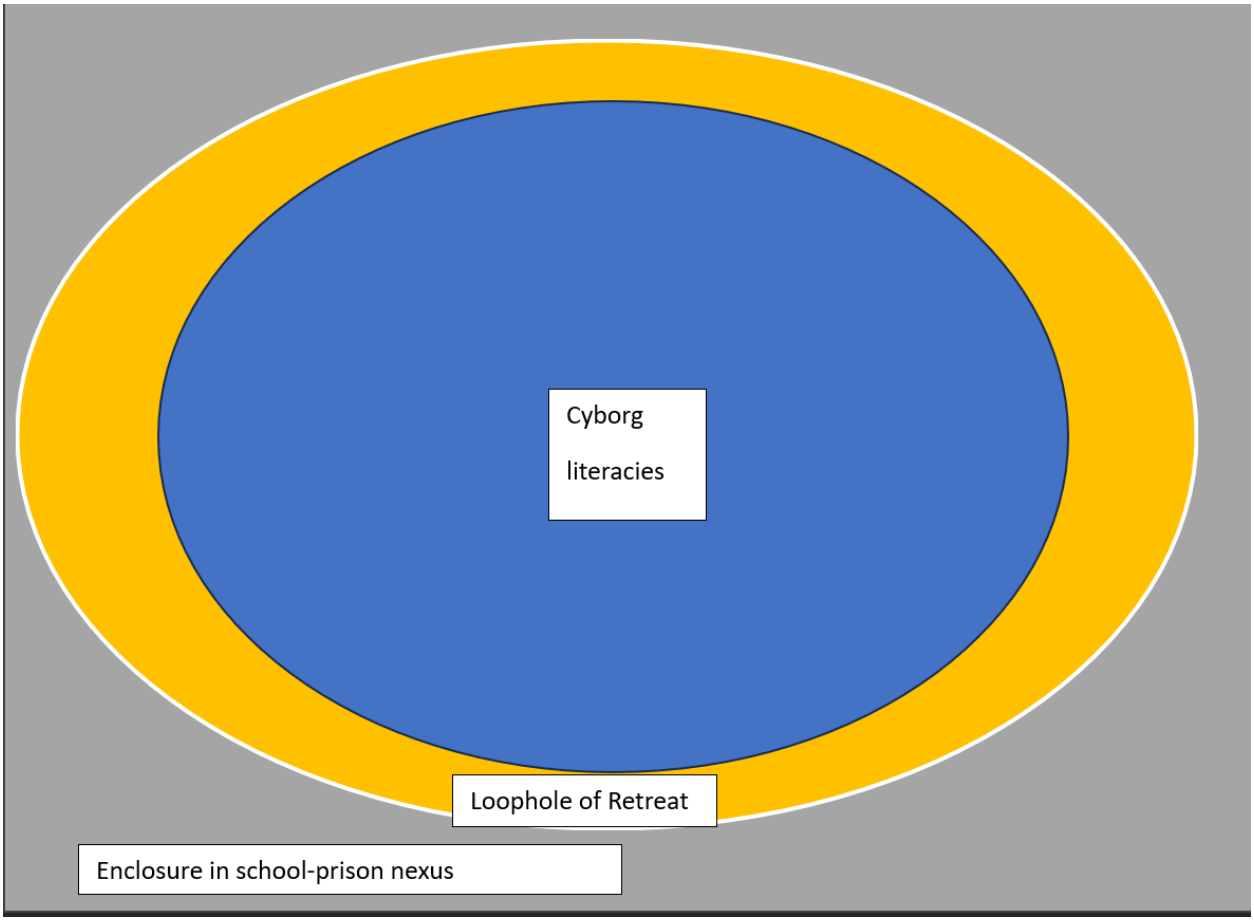
Joymaking: everyday communal practices of dancing, singing, playing, creating, laughing, cutting up, memeing, joaning, signifying, and being fully alive (Lorde, 1978; Love, 2019; Stewart, 2021) that Black youth take up when they feel safe, trusted, and loved (Kearl et al., 2023);

Refusal: renegotiating or outright rejecting participation or inclusion in class, school, democracy, society; ranges from material refusals to discursive rejections of abjection, of victimization, of symbolic annihilation; through these processes, Black youth embody the possibility to as Ruth Wilson Gilmore (2013) describes "live unbounded lives" (Campt, 2017; James, 2013).

In Chapter 5, Cyborg Literacies in the Loophole of Retreat, I use multimodal data to illustrate a more context-specific array of practices I observed with participants at the Lindendale School. But these are literacy practices with which Black youth navigate their social worlds, locally and globally. Cyborg literacies are practiced by all manner of folks, in all sorts of circumstances. However, within enclosure, where Black students' behavior is potentially policed and leads to exposure to the criminal justice system, it may be the case that fugitive spaces lower the risks of and afford the possibility of practicing cyborg literacies. As I described earlier in this chapter, research has already indicated the affordances of afterschool third spaces in Black literacy practices (Okello, 2024; Warren & Coles, 2020). After Harriet Jacobs (1861), I look to the loopholes of retreat as an exemplar interstitial space in which Black youth might practice cyborg literacies. Next, I describe the characteristics of a loophole of retreat and consider what the construct offers my analyses.

Figure 3

Cyborg Literacies in the Loophole of Retreat



2.6 Loopholes of Retreat and Public Schooling

Amid the imposition of citizenship, participation in compulsory democracy, overexposure to the criminal justice system, Black students engage in life-affirming practices, in fugitive practices. These students engage in practices that reject the progressive agenda of divestment in them and their communities. So I wondered: how would students engage in these ways of being if there were a place in school for them to do so freely? Consider that an after-school makerspace could serve as one such place of refuge, a loophole of retreat (Jacobs, 1861)— a place for cyborg study. As I'll describe in the subsequent findings chapters,

participants used an after-school makerspace in the same ways that Jacobs used the garret space above the pantry in her grandmother's house. Jacobs spent seven years there, sovereign, more than surviving, "[producing…] subject-knowledges that can subvert the perimeters of bondage" (McKittrick, 2006). Such an interstitial space became—even from within enclosure— a space for Black youth to find respite, for skill development, for stretching themselves beyond what they believed was possible, for joy (Okello, 2024). It may become a space for "enacting practices of freedom -- practices of / thinking, planning, writing, and imaging new forms of freedom (Campt, 2019, p. 2). In an educational context, the loophole of retreat becomes a space that supports the development of agencies and practices with which students can be and feel free and safe.

Black youth navigate their increasingly digital, inevitably datafied K-12 reality as Black folks always have in America: via fugitive practices of peace-and joymaking (Harney & Moten 2013). The school-prison nexus consumes voraciously. It steals time, life, and joy from Black youth, contributing to physical violence and social death (Dumas, 2014; Lyiscott, 2020; Medina Falzone, 2019). The compulsory nature of the American public education system and that system's enmeshment with the criminal justice system renders physical flight all but impossible (Sojoyner, 2017). Despite this impossibility, fugitive pedagogues—teachers, specialists, researchers, counselors, administrators, and others— work to resist and reconstitute schooling spaces such that Black kids can be free and whole (Givens, 2021). Even where it seems impossible, Black faculty make room for Black youth to be their full Back selves. Within their schools and classrooms, these pedagogues carve refuges for maroon Black youth (Roberts, 2015). Without these refuges, Black youth might otherwise be subsumed in a macabre cycle of "excellence" and "resistance" under neoliberal racial capitalism (Kumar, 2012; Patel 2019;

Picower & Mayorga, 2015). Though opportunities for physical flight are limited, fugitive pedagogues navigate policy and recalcitrant colleagues to carve out loopholes of retreat. These kinds of spaces are what Warren and Coles (2021) define as Black Educational Spaces. Within these loopholes, Black kids "dream of possibility from within impossible / strictures of enclosure and confinement / [. Their] escape is imminent, as [their] imagination is / boundless" (Campt, 2019). After-school third spaces can be Black Educational Spaces— para-educational environments with the potential for transformative education, a space of safe harbor for Black youth, where they may develop and enact practices of freedom. Within such spaces, students "begin to reconceive who they are and what they might be able to accomplish academically and beyond (Guttierez, 2008). These spaces are technologies for imagining otherwise. The loophole of retreat is one such technology.

Loopholes of retreat provide the conditions for Black youth to pioneer and practice novel literacies. Within them, institutional resources are leveraged to support Black kids and adolescents as they dream of ways to be and do better and differently, positioning Black youth as makers, teachers, doers, architects, and authors of themselves and the world around them (Rivers-McNair 2021; Stornaiuolo, 2020; Worsley & Roby, 2021). I'd argue that countless other such spaces exist. Countless because they are mundane and necessary spaces Black folks create in any number of contexts; uncounted because exposure and perception lead to capture, cooptation, and assimilation. Research with Black youth in these spaces has found that they support students building technological fluency and new media literacies (Pinkard et al., 2008). In a 2019 study by Stornaiuolo, Black youth developed an understanding of themselves as data creators and users, and of their data as socially situated resources for meaning making. Studies like these expand understandings of after-school spaces and the particular affordances that such

loopholes of retreat can offer Black youth. Mims et al. (2022) describe the ways the fugitive educational spaces enable Black kids to be whole in ways that traditional schooling does not. Loopholes of retreat are what you get when you make spaces for Black making. They are an interface through which Black folks, from the relative safety of enclosure, can act on the world. With this research project, I aim to contribute to conversations about Black joy and meaning making practices through interdisciplinary theory from STS and Black studies that helps to understand youth literacy practices and makerspace design. Design for a loophole of retreat requires certain features, and co-design for such a space has certain ethical and practical obligations. It also has ramifications for my data collection. I'll say more about this in Chapter 3 as I describe the design of this study, and more still in Chapter 4.

Chapter 3 Design and Methods

3.1 Study Overview

This research project was an eight-week, co-designed, voluntary after-school makerspace initially iterated in Winter/Spring 2023 with a September 25, 2023 launch date, during which I conducted critical ethnography (Madison, 2020). During the course of the study, participants engaged in up to 32 two-hour after-school sessions, separated into two 4-week segments. Participants had the opportunity to leverage program resources and technologies in pursuit of questions, tasks, products and projects of their choosing**.** Technologies on hand included Oculus 2 and (after a few weeks' delay) 3 VR headsets, XR authoring software (Uptale), 360 cameras, 3D printers, robotics kits (Makeblocks), arduinos, microphones, keyboards, an Instamax Camera, GPS beacons, laptops, smartphones, and a bevy of satellite apps to make the tech accessible. I'll say more about these tools below as I describe the learning ecology of the space. Rather than an overarching learning goal, information delivered from instructor to learner, the desired outcome of this pilot was merely for participants to be supported as they engage in semi-structured inquiry about and via digital technologies (Dewey, 1899; Friere, 2000). This iteration of the makerspace was therefore intentionally open ended, organized by a student-led, inquiry-based approach. In this chapter, I describe the V.0 design of the space in detail and offer a snapshot of its participants. I'll then delineate the methodological choices I made for data collection and analysis, including how I selected particular cases for study.

3.2 Researcher Roles & Positionality

One necessary step of this design was a surfacing of the multiple and overlapping roles I might take on in the after-school space. These roles were contextual and situated, shaped by the evolving affordances and limitations of the institutions overseeing the research project and the communities from which participants come (Irizarry, 2009). Of course, my personal and educational histories are bound up in this too; this positionality is important to name (Morrow & Kettle, 2023). Like the participants with whom I worked, I, too, came of age with technology tools mediating my experiences in the world. I, too, was a Black kid who developed my sense of self via the recursive loop traversing my online and offline worlds (Russell, 2019). These histories shaped my belief that schooling, by design, often stifles opportunities for Black youth to engage with digital tools in the ways that make the most sense to them. Though the research supports this hypothesis (this is, after all, why fugitive educational spaces become necessary) I was careful not to let my past experiences overdetermine the data I collected and the conclusions I drew from them.

I have been a high school English teacher; I have ideated and run out-of-school time programming for Black youth. Though I lacked the language for it then, looking back I can say that I moved with fugitive orientations in both those contexts (Givens, 2020; Player & Coles, 2020). The student learning that motivated me was not just grades and standardized test scores, but the perspectives and predilections Black youth need to survive and achieve in the 21st century. Naturally, as technology evolves and changes, so do youth practices of engagement, obfuscation, and refusal, which is to say that I anticipated that participants would embody these practices in novel ways. That said, I hoped, after Shange (2018), to care more than I can know about these youth and their practices. That is, that my commitment was first and foremost to

ensure the safety and well-being, the wholeness and aliveness of participants. In Chapter 4, I'll say more about how this commitment shaped the aperture of my data collection.

As a facilitator of our after-school space this fall, I offered all the resources I could muster. When requested and appropriate, I offered instruction about the histories and uses of the technologies taken up by students. I tried to serve as a springboard from which participants' ideas and inquiries might bounce. As a participant, I was a novice at many of the technologies to which we had access, tinkering with a Nina Simone sample or a 3D rendering in TinkerCAD as the mood strikes. As a researcher, I was positioned as a participant-observer, co-maker, and co-designer. I never hid what interests me and what I was learning alongside participants. Indeed, as I will discuss later, participants had opportunities to direct and execute data collection collaboratively and to sensemake alongside me. My commitments as a researcher are to support Black youth's development of agentic orientations to the technologies that mediate their lives. My aims— aligned with the mission of the Lindendale school— were primarily to offer opportunities for these youth to "interrogate the conditions of oppression and surface leverage points for resistance and change", if that's what they chose to do within our space (Fine, 2008, p. 15). Some did choose to do so, as I'll discuss in subsequent chapters. Along the way, I hoped to establish a creative after school space students at TLS can leverage for years to come.

A foundational element of this study's initial design included developing in participants a sense of themselves as historical actors (Tejada et al., 2003) who can become designers of their own futures (Gutierrez, 2008). Youth Participatory Action Research (YPAR), Social Design Experiments (SDE), and the ways they empower students to become critical researchers offer them an opportunity to act on the world, "instead of merely being acted upon, oppressed" (Morrell, 2004, p. 114). These provided a north star for this pilot study, even though I can't make

claims to these ends, epistemologically. For instance, I opened invitations for participants to co-design our space and its aims and to "get in where they fit in" in our data collection and analysis procedures. However, the student participants did not shape the research question or the object of analysis of the project. In the longer term, participants will be invited to iterate on the makerspace's design, to help gather contextual data about the student body's appetite for after-school programming, and to present and publish our findings to the school and the broader MWCSD and University of the Midwest community. These efforts align with the broader space that our makerspace inhabits; the pillars of the school's mission include the development of design thinking skills and orientations toward social justice and equity.

3.3 Research Question

To contribute to what we know about Black youth interface with the digital, I proposed the following research question: **How do Black youth practice cyborg literacies in an after-school third space?** By cyborg literacies, I mean the constellation of practices Black youth take up vis a vis their digital and material activity as they make sense, make themselves, make worlds, make joy, and refuse victimization. In pursuing this research question, I make the case for an interdisciplinary approach to education research and practice that accounts for the vastness of Black youth's everyday technology practices and the omnipresence of the digital without succumbing to utopic techno-determinism. In attending to the mundane practices of Black youth's lifeworlds, the question unsettles digital dualism discourses; researchers and laypeople alike have accepted as axiomatic the "real" / "virtual" dichotomy and the hierarchization it implies (Boellstorff, 2016). In other words, this research question asks how Black youth are in relation to technology—how they are shaped by the digital and to what ends they would use the digital to re-shape themselves and their futures. The question, iterated as the afterschool

makerspace took shape also invites an exploration of the ways and reasons students designed their space how they did. In Chapter 4, I articulate how, through students' desires for sovereignty, joy, and agency, the afterschool space came to function as a loophole of retreat.

By drawing on digital studies literature, Black studies literature, and multiliteracies literature, this research question extends understanding of Black kids' technology practices outside contexts that typically restrict their use. As participants used the affordances of an after-school loophole of retreat to pursue their own questions about technology practices, they collected and created data related to this research question. In so doing, participants revealed how they conceptualize digital technologies in everyday use, how their online and offline selves are related, how their technology use reshapes their lives and futures. Findings from this study contributes to research on making and STEM learning, literacy studies, and digital studies. In what follows, I describe the design and methodology of the project.

3.4 Sites, Spaces, Settings

3.4.1 Midwest City

Historically, Midwest City Public Schools, like the city more broadly, has battled disinvestment at scale, as the gold rush of voucher and charter schools undermined the system's ability to provide a quality education for students. Residents note the repeated failures and ill-aimed "structural transformations" that litter their city's history; these join other scarred playgrounds of capitalism—places where apocalypse has already happened. Austerity measures, redlining, and other policies have destabilized Black communities hard hit by industry's turn away from the plants and factories that employed them. Residents recognize that these measures were state retribution for the effectiveness of the 1967 insurrection, which led to decades of

Black leadership in the city. As a Black enclave under Black leadership, Midwest City itself could be considered a maroon society, for a time.

To this day, the city's resurgence and the resilience of communities shine through. Resident Richard Pope describes the lives of the city's inhabitants as "the affective disjunct between a utopian capitalist ideal and a dystopian capitalist reality (Pope, 2011, p.29); The city's Black residents embody what what Pope calls a "radical pessimism." Wilson and Johnson (2015) identify how the radical leadership qualities that grassroots community members and activists from Midwest City use to advocate for educational change could be a model for combating racism and building school-community alliances. As residents are grounded in the realities of capitalism's violence, it might become possible for its regressions to lead to something else, something better.

3.4.2 The Lindendale School

The Lindendale School was a generative site for the study of Black kids' digital literacy practices because of the confluence of forces that shaped their experiences there. The school is part of a partnership between Midwest Public Schools District (MWPSD) and the University of the Midwest School of Education that began in 2020. The Partnership touts a commitment to supporting the local community by developing and studying wrap-around services and educational enrichment opportunities. The campus— situated within the Liberal Arts building of the now-defunct Lindendale College— will ultimately serve families from prenatal care through credit-bearing college courses.

TLS functions as a teaching laboratory, where future educators can gain experience as interns and teacher educators can learn more about what models for instruction and coaching are most effective. This program fits in the history of Lindendale college, which had a strong teacher

preparation program, and also hosted the "Lindendale Griots", a program for producing high trained Black male teachers in K-12 urban schools (Okezie et al., 2002). Lindendale has served as a community hub and site for educational opportunities for decades—long before The University of the Midwest got involved. Future programs, like UM's LAUNCH program, will continue the university-city connection that exists in other parts of the city (e.g. the Midwest Engineering Zone and Midwest City Center).

The Lindendale School admits students by application only, with a preference for students within a proximal radius. It boasts STEM and Social Justice curricula to attract families. Lindendale's student body is almost entirely Black. It's an understaffed school with Black administrators and a diverse corpus of teachers. The school's elective curriculum includes YPAR and Design Thinking classes beginning in the 9th grade. The School's STEM curriculum includes programming and engineering. The school's social justice curriculum includes classes like criminology; students also have the opportunity to earn college credit through a Dual Enrollment program affiliated with nearby Midwestern State. The walls are peppered with flyers for therapy sessions, poetry clubs, girls' groups, homecoming and yearbook reminders, and urges to free Palestine. Students participate in a range of after-school programming both in and out of school, though students travel to a nearby school for athletics like football, basketball, and softball. All of these experiences likely shaped what participants wanted from this particular after-school program. I'll say some about this when I discuss the learning ecology of our space below, and still mores in the findings chapters that follows this one.

3.5 Makerspace Design

This makerspace was iteratively designed over the 8 weeks during which students participated. Our design cycle included a "V.0" design of the space and its principles, built-in

weekly group reflections on design, and a revised "V.1" based on students' desires, needs, and experiences in the space. In my vision for V.0, I was inspired and guided by orientations toward critical fabulation (Hartman, 2008) in design (Rosner, 2018); I dreamt that participants' practices of inquiry and play overwrite traditional notions of literacy, of design, of Black technology practices. After Strohmayer (2021) I aspired to a space where Black kids traverse digital and analog modes as they collaborate and create towards a better world. I aspired to inculcate agencies that "youth have through their making to push toward new formations of place, with material and social configurations that allow for new patterns of participation" (Calabrese Barton and Tan, 2018). At the very least, I hoped to foster a space for joyous Black making (Worsley & Roby, 2021). Students and I concluded V.1 with reflections and recommendations for V.2, which will launch in the fall of 2024. The table below illustrates the V.0 principles and the V.1 principles that students collectively added.

Table 1

V.0 and V.1 Design Principles

Iteration	Design Principles
V.0 (P's Version)	Access, Agency, Autonomy, Flexibility, Free, Innovation, Joy
V.1	Accountability, Awareness, "Faaji" Integrity, Safety, Respect

3.5.1 Design Principles

The V.0 Design principles were born out of a desire to create a space in which students are empowered and agentic, able to make, do, or be whatever they can dream up. I hoped that these principles would allow me to operate as a participant-observer in the space-- able to observe the skills, practices and interactions I anticipated that youth would take up-- without

overdetermining them. Inspired by constructionists, I hoped to create a participatory culture in which our participants were positioned as active co-creators of ideas and activity (Kafai et al., 2009). After Eglash, Bennett, Lachney, and Babbitt (2020), I hoped to tap into the radical possibilities of delight. I shared V.0 design principles on a wall of our makerspace, and reviewed them with students during our weekly design talks. Below, I describe the affordances of each of these principles.

Access: It was of vital importance that our makerspace was accessible. I did not want any Lindendale student to feel as though there were blockers to their participation. To activate this principle, I included a variety of technology tools with a range of points of entry. I decided not to include any minimum attendance requirements so that students who are involved in other after-school programming, have out-of-school obligations, or limited transportation. I provided daily meals in case food was an issue.

Agency: In the V.0 design, I was committed to inculcating agency in students. I did this by. Additionally, I consistently reminded students that the tech tools were theirs to do with what they wish. I hoped to inculcate in them a belief that they can shape this space as they see fit.

Autonomy: Although I had prepared some project frames, I hoped to create an environment wherein students felt that they could do what they wanted to do. They did not need to ask my permission to use certain tools or materials.

Flexibility- It was important to me to be agile and adaptable to students' evolving needs. This meant being prepared for students to work on different projects day to day or week to week, as struck their fancy. It also meant that some days were more work oriented than others; some days were dance parties.

Free- Free emerged as a principle I wanted our space to be, in three ways. First, corollary to accessibility of the space, I did not want students or families to need to pay for anything, whether meals, ad-hoc materials, or tech tools. I wanted the space to be one where students felt taken care of. Secondly, I wanted students to *feel* free as well-- free to be their whole weird selves free use the technology in our space in ways that felt natural to them. Finally, I hoped our space would be one where students felt liberated, where they found respite from the encumbrances of enclosure, of compulsoriness, of antiBlackness-- if only for a few hours.

Innovation- I aspired for a space where creativity reigned. I hoped to curate a space in which students would be tinkering, (re)imagining, making, remixing, experimenting, and dreaming.

Joy- I really wanted our makerspace to be a place where students felt good about themselves and could have fun.

While I was inspired by research on Black Educations Spaces (Warren & Coles, 2020), I also committed to giving students the latitude to design the makerspace that they wanted and needed. After three weeks together, the students and I took a pause to revise our design of the space. A few things came of this change; chiefly students wanted more traditional crafting materials (e.g., hot glue gun, paints, etc.). I also wanted to reflect more on the principles that participants thought we were embodying in our space and ought to continue to embody. They cosigned our V.0 principles and added a few more principles to our list.

Accountability: Students wanted to share a sense of ownership over the tech and tools we have; "messing it up" would affect more than the individual who damaged or misplaced equipment.

Awareness: Because of the various activities going on-- VR, dancing, painting, robotics, etc., some people might have limited vision or hearing. Folks should try their best to be aware of who/what is around them to avoid injury.

“Faaji”: The Faaji principle, I learned, is a Yoruba word that means “the pleasure or enjoyment of being together”. It's used colloquially in London to describe a dinner party. I thought this principle really captured the spirit of the space. I’ll say more about this in chapter 4 and share some possible implications for designing K12 educational and out-of-school spaces.

Integrity: A student noted how easy it would be to walk out with some of the technologies we have in the space. “It’s up to us,” he said, “to have integrity so that all students can enjoy this stuff.”

Respect: Includes respect for ourselves, respect for others, and respect for the tools in the space. The group agreed, where we could, we should “leave it at the door”, and try to be present together here. Internally I hoped they’d bring their whole selves, attitudes, frustrations and all-- or at least feel free to, if that was their decision.

3.6 A Learning Ecology

The learning ecology of our space was shaped by the larger school environment, by the students and my own attitudes, and by the technology tools I was able to acquire. All tools and materials were available for students to use at their whim; there was no checkout procedure, and all materials remained unlocked while students were present in the space. The table below shows the tools we had at hand; it does not include tech that students brought in-- i.e. Nintendo Switches, smartphones, laptops.

Table 2

Tech Tools in the V.0 Makerspace

Category	Quantity	Tool	Misc Additions
VR	1	Meta quest 2	Gaming Apps

VR	2	Meta Quest 3	Uptale AR Authoring, Onshape, Design Apps, stands, cases
3D Printing	1	Bamboo Carbon x1	Extra filament
Laptops	2	Acer	Programming software, CAD apps, video editing.
Tablets	3	iPad 7th gen	stands , cases, styluses
360 Cameras	3	Ricoh	Stands, cases
Music Production	1	MIDI Keyboard	Production software
Music Production	1	MIDI Drum Pad	
Music Production	1	Yeti Microphone	Hi-def headphones,
Robotics	1	Makeblock Ultimate	
Wearables	1	Hexwear Kit	Soldering kit, fabrics
Programming	2	Arduino Kits	
Photography	1	Instamax 10 polaroid camera	So much film. Like endless film
Art	5+	Paint & Canvasses	
Art	5+	Posters & Paper	

Art	5+	Markers, Ink, pencils	
iPad	3	Gen 7 (used)	Cases, styluses, stands
Research	1	Swivl Camera	
Research	1	Mp3 Recorder	
Ambiance	1	Projectors	
Ambiance	1	Bluetooth Speaker	

Through and with these tools, students participated in evolving, ad-hoc networks of teaching and learning. They asked for help from me and each other; they googled and githubbed; they linked accounts across their personal devices and the makerspaces' shared devices. The wall of logins (generic accounts created for our space and/or my personal email-- another way I hoped to protect students' data privacy) grew crowded. Our learning was distributed, constructivist, connected (Siemens, 2007). In chapter 4, I'll say more about the ever-evolving shape and character of these apprenticeship networks.

The learning ecology in the space was shaped not only by the technology tools at hand, but by the environs of the school itself. Students at Lindendale, depending on their grade, have access to a number of STEM and Design classes. These range from engineering and Youth Participatory Action Research (YPAR) classes during school, to after school robotics, chess club, and academic games. Many students were active with other after-school programming—both TLS affiliated and external; participants were on student councils, in bands and choirs, rode horses, and belonged to church groups. Altogether, this meant that some students' time was

limited— they could only make it on Mondays, or Thursdays, for example. For other participants, this meant they had previous experience with engineering, programming, or music production that they brought with them to the space. As I'll describe in subsequent chapters, these ranges in expertise led to evolving apprenticeship models among students. A final component of TLS's influence on the ecology of the space is harder to quantify; many participants came to our makerspace with frustrations about their time at TLS. These frustrations often took the shape of perceived slights by teachers and administration; students also expressed frustrations with limited curricular options at the school. As I'll discuss more in chapter 4, students came to the makerspace and returned again because they felt seen, heard, and whole.

The final component of this space's learning ecology has to do with its location in the school. The space made available to us is in the basement of the liberal arts building, in one of the wings. The two rooms designated "makerspace" were dusty when I entered them, with care instructions for the tables still taped to their tops. Generally, students do not have access to the basement floor of the school, which has dozens of rooms-- too many to be monitored, given understaffing at the school. In future years, these rooms will house the middle grades. The only folks down there on a given day were me, custodial staff, the robotics team, and our makers. The sense of seclusion was complete when the hallway lights timed off. We were an island apart, within the confines of the school. Though I extended invitations to faculty and administration at TLS, though I extended invitations to stakeholders at the University of the Midwest, no one ever visited. (I'd come to learn that investors and other VIPs were given tours of the space; "so you're the graduate student we've been hearing about," one such stranger exclaimed when we met.) Thus secluded, students and I did what we wanted and needed to, remapping the space to suit our needs (Young, 2012). Whereas I suspected that a "loophole of retreat" would be generative

construct with which to frame after-school literacy development, I did not explicitly design for fugitivity. Rather, I knew that students needed to be safe, students needed to have agency, students needed opportunities to be their whole selves, and students needed opportunities for creative expression— these were my priorities (Mims et al, 2022). I hoped along the way that they would find good uses for the digital tools to which we had access. I could not have imagined that the basement makerspace at TLS, mapped yet neglected, would so neatly serve as a maroon society within the school. I'll say more about students' sovereignty as I present and discuss the findings of this study.

3.7 Participants

Participants in this study were twenty two Black students in the School at Lindendale who volunteered to engage in a self-directed investigation, ranging from 9th to 11th grade. Enrollment in the club was open to students of all races, from all grades at TLS. Recruitment processes included posters, classroom visits, and snowball invitations participants extended to their friends and peers. Additionally, I spent two semesters making myself a familiar face at TLS, building relationships with students in a volunteer capacity as a coach on the Robotics team. About half of participants in the makerspace were robotics team members; these students were not able to attend about half of makerspace convenings, as off-season practice continued in the fall. Students brought a range of technology fluencies, orientations, and practices to the space. I'll say more about how students' relative tech identities shaped how they related to the space and related to one another in more detail in chapters 4 and 5. In chapter 6, I focus on two cases, Ella and Erik, to draw out themes about how students understand their school, the afterschool space they created, and their visions of the future.

Figure 4

Some Focal Participants

Table 3

Participants and Tools

Pseudonym	Grade	Tools
Alshon*	10	VR
Aurora	9	Doodles, VR, Just Dance, Instamax
Austin	10	Music Production, Just Dance, Desktop Games
Carlo*	10	CAD Design, 3D Printing, VR
Chance	11	Music Production, VR
Christina	11	VR
Deja	11	Graphite, Paint, VR
Ella+	11	Audio Recording, Paint
Erik*+	11	CAD, 3D printing, programming, Instamax
Goku	9	VR, Robotics
Imhotep*	10	Graffiti, Graphite, Graphic novels, Instamax
Isaiah	9	Music Production, Robotics, Switch, 3D Printing, VR

James	10	Robotics, Switch, CAD, 3D Printing
Laramie*	9	Music Production, Programming
Mae	9	Music Production, Programming, CAD, Karaoke
Mara	12	Programming, Robotics
Marcus	11	CAD, 3D Printing, Robotics
Martin	11	VR
Nina	10	CAD, 3D Printing
Portia*	10	Digital Art, VR, Paint
Sasha*	10	CAD, VR, 3D Printing, Graphite, Instamax
Tianna	11	VR
Trent	11	VR, Graphite

* Denotes robotics team member. + Denotes selected case.

3.8 Data sources

Data are derived from three areas: participants' practices, participants' words, and participants' products. The broadness and multimodality of these sources was a feature of my data collection, not a bug; it comes from an understanding of the digital as something ephemeral, discursive, and material and of the many ways students might evidence their cyborg literacies. After Brock (2016) I leveraged these data to help me understand both how participants designed and used technologies and how those technologies and discourses about them affected their use

- Participants' words— how did they think about digital technology, themselves and technology, blackness/identity and technology. What did participants say about their

technology use and about decisions made within our makerspace? What, to them, were the key features and affordances of the space?

- Participants' products— what did participants, start, try, and make? What problems did they try to solve with digital technologies? and what skills do they demonstrate in the process
- Participants' practices— how they use digital technologies, how (in)frequently, with what strategies? How did they relate to each other and our space? What did they use their time together to do?

Table 4

Data Sources

Research question	**Primary Data Sources**	**Secondary/Contextual Data Sources**
How do Black youth practice cyborg literacies in an after-school loophole of retreat?	• Interviews of select cases • Observation of after-school space • Student-created products	• Ethnographic observation of school site • School engineering and robotics curricula • School and district technology policies • Artifacts for after-school programming design • Student desires for after-school programming design

The table above offers a snapshot of the data sources on which I drew. Several secondary and contextual sources of data served as a supplement and are noted in the rightmost column of the table above. These data were collected to help me clear about the space in which this after-school program operated. The data are intentionally multimodal. As I'll describe later in this chapter, these data help me to use CTDA as a framework to understand the relationship between youth fugitive digital literacies and the space youth designed to practice them in. These data include school and district-wide technology policies, the school's STEM curricula. To be clear here, this dissertation project is focused on students' literacy practices as I've defined them in earlier chapters. They are particularly useful for me as they helped me situate any insights about the cases selected for study; they were crucial in supporting the clarity of the V.0 that participants used as a launchpad.

3.9 Data collection

I leveraged several instruments and techniques to collect the desired data. In pursuing this research question, I was primarily interested in these students' extant practices and literacies, not necessarily how their practices changed as a result of participation in our makerspace. I discuss this and other limitations of this study in chapter 7. The data that were collected reflect this orientation. Throughout the data collection processes, I engaged in member checking with participants, ensuring that I correctly represent them and their activity. I selected two students' work and practices as cases to examine closely. In the following section, I discuss my plans for collecting these different types of data.

- *Ethnographic observation:* This included observation of participants during the after-school sessions, as well as during robotics class and on other occasions as they presented

themselves (e.g. in hallways, before school, during class, etc.). Regular field notes were kept. These ethnographic observations were primary data that complement the case interviews and focus groups through which participants described their activities. This process of becoming embedded at TLS began in fall 2022. Through observations, informal conversations and more structured interviews with stakeholders (e.g. students, teachers, staff, administrators, parents), I learned more about how Black students relate to and are shaped by the digital in our makerspace. To that end, participants had opportunities to record their own observations in a collective jottings journal, should they desire. These are represented in subsequent chapters as written. These observations were shared with participants as they were collected in order to ensure their accuracy and the validity of the constructs applied.

This ethnographic observation included autoethnographic jottings and fieldnotes about my own experiences as a researcher, practitioner, and coconspirator. Throughout this project, I documented and analyzed personal reflections on the evolution of my positionality and practices as I spent time in relation to the research site and participants. In the tradition of critical ethnography I aimed to "[open] open alternative possibilities for what ought to be and what can be" (Madison, 2019, p. 11). This includes new possibilities for myself as well as for these participants.. These autoethnographic data may provide useful insights for the practice of operating makerspaces and/or for comparative qualitative analysis.

- *Case Interviews:* I selected two cases for study during the second four-week iteration of the makerspace. I chose these cases because of the range of attitudes students had about the space's use, and their relative involvement in school activities. I'll introduce these

cases in Chapter six, and attend to them each individually. Each case was interviewed individually and asked about their experiences at school, in our space, and with technology. These data were transcribed and added into Dedoose, a qualitative research coding software, whereupon I engaged in axial coding that resulted in second order constructs. As these developed, I checked for the fitness of codes, refining as appropriate in pursuit of reciprocal translation.

- *Focus groups:* Collecting data with semi-structured interview questions and focus groups with selected cases allowed me to collect data about my research question. These conversations pertained to the curation of their online selves and artifacts vis a vis the affordances and limitations of digital technologies, the relationship between these online activities and their "real" lives. Students had opportunities to engage in self-directed, "confessional" style audio interviews and focus groups without research impetus. These data were transcribed and added into Dedoose, coded, and used to develop themes
- *Participant work-products:* As participants engaged in inquiry, or activity, and play, they produced artifacts (e.g. robots, 3-D prints, circuitry, art, songs, games, wireframes, etc.) These data provided useful context and/or illustration of how participants' conceptualizations of technology were embodied and performed. These data were another source of triangulation of interview, focus group, and ethnographic data.
- *Intro/Exit tickets*: The research also intermittent closed and open-ended surveys to collect data about students' beliefs about their experiences and practices, pre-, during-, and post intervention. Participants had opportunities to reflect individually and in groups. These secondary data were useful for triangulation as well as producing future iterations of student-directed after-school programs.

These collected data were stored in the locked UM Research room at TLS, within a locked file cabinet. Electronic data will be stored in a password protected OneDrive folder.

3.10 Data Coding and Analysis

My research question, "How do Black youth practice cyborg literacies in an afterschool loophole of retreat?" required me to do multiple analyses of the collected data. In the first, I carried out a grounded, inductive approach (Charmaz, 2006; Glaser & Strauss, 1967) to decipher what students' activity, products and discourses would reveal about the space they designed. Second, I use cyborg literacies and an a priori framework with which to analyze the practices in which participants engaged. In both of these approaches, I bring my conceptual framework—the Black cyborg leveraging technology to reject her victimization, and the loophole of retreat—to bear on these analyses.

3.10.1 Inductive Coding

As data were collected, I took time to clean and prepare the data for analysis. In the case of interview data and focus group data, this meant transcription, proper labeling, and uploading to the secure coding software, Dedoose. In parallel, I engaged in daily jotting, construction of fieldnotes, and audio memoing. In the subsequent stages of analysis, I took up a grounded theory approach, allowing themes to emerge from the data (Charmaz, 2006; Glaser & Strauss, 1967) as I read and reread. To carry out this grounded approach, I first engaged in open coding to develop possible initial codes in first-pass jottings. I kept a notebook through which I kept track of evolving wonderings, considerations, and trends After this, I engaged in memo writing that helped me identify categories or axial codes—particularly across the photographs of student activity and work products; this process, repeated over weeks, took me closer to the development

of themes. As I read and reread transcripts and iteratively produced codes, I continued to check for continuity and coherence, and revised codes as necessary[1]. At every stage, I checked with participants to include their instincts and findings, vet my own, and make sure they felt like they were being represented accurately and ethically. The findings from these analyses are the primary source for chapter 4 and provided clarity and context to Chapters 5 and 6.

3.10.2 A priori Analysis

I leveraged cyborg literacies as an a priori framework with which I can make sense of students' activity in our afterschool space. In chapter 2, I described the theoretical background that animates the concept of cyborg literacies. As I reviewed my codebook and re-examined data, I looked for examples of students' sensemaking, selfmaking, worldmaking, joymaking, and refusal. Although I had theorized these cyborg literacy practices, I remained open to novel and conflicting permutations of them within the loophole of retreat. I did this reading across the various modes of data collected. This analysis informs the findings of chapter 5.

3.11 Reading the Makerspace-as-Technology with CTDA

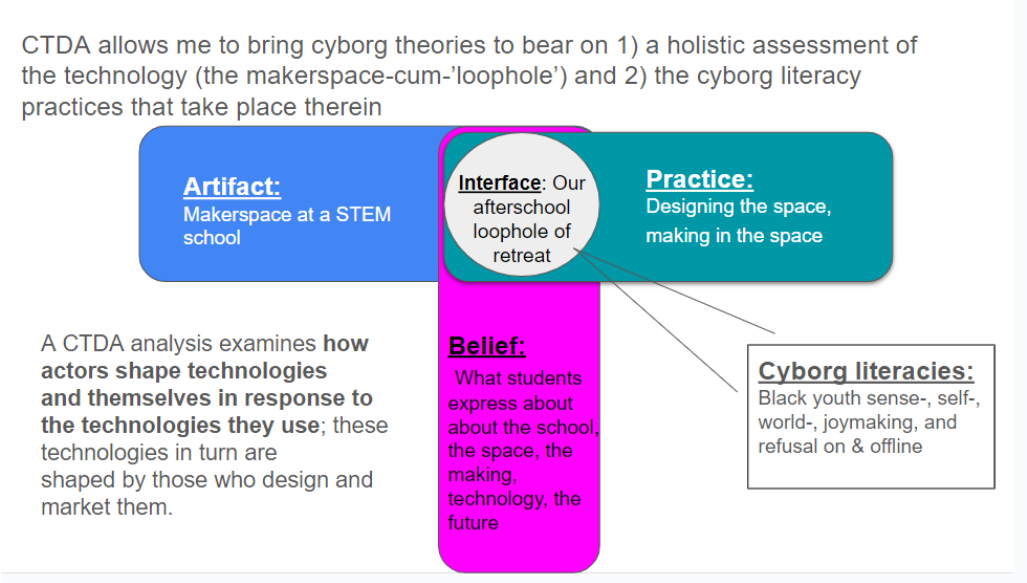
Just as I used my theoretical framework as a lens to analyze and make sense of the data collected, I used the framework as a lens to analyze the technologies with which participants engaged. I borrowed this approach to analysis of the ways people use technology from Andre Brock's (2016) Critical Technocultural Discourse Analysis (CTDA). Through an analysis of information, technology, and practice in the context of the formal and/or informal activities of groups that take up the practice, CTDA "examines how actors shape technologies and themselves in response to the technologies they use. (Brock, 2018, p.1019). These aims and

[1] See Appendix C for complete codebook

affordances of CTDA lend themselves to the research questions proposed in this research by attending to both "directions" of interaction between human users and technology in sociotechnical arrangement (Ueno et al., 2017). To that end, it was a uniquely suitable framework for the content analyses I wanted to undertake; CTDA is capacious enough to hold both the breadth of theory (e.g. fugitivity, the cyborg, literacy-as-social practice) and diversity of data necessary to accurately hold the cultural, social, and historical contexts in which Black kids at Lindendale engaged with the digital. Moreover, CTDA is well suited for –indeed requires multimodal data to account for the phenomena under investigation, This approach empowered me to consider technology-as-artifact and technology-as-belief in tandem with participants' practices with the technology. I believe that this attention to the material and discursive affordances and limitations of the specific technologies that participants used— read through theory that draws directly from the perspectives and experiences of Black students— allowed for a more complete view of cyborg literacies. Further, it allows an analysis of the ways participants interacted with and departed from the makerspace-as-technology, and in the process, developed a fugitive interface through which to practice cyborg literacies. In this way, I hope to offer all the necessary context to understand the phenomena I have observed. Figure 3.1 offers a snapshot of how CTDA is operationalized in this dissertation study, to examine participants' practices, participants' beliefs, and the technology artifacts that mediate both.

Figure 5

A CTDA Analysis of the Loophole of Retreat



In this dissertation, the technology that serves as my focal unit of analysis is the makerspace itself. CTDA's approach helps me see that the makerspace is the technology that mediates participants' activity, even as they use specific tools and technologies within it. This is not to say that I do not consider how students use these specific technologies. For instance, I did not aspire to offer full critiques of, say, the Meta Quest 3 VR Interface-- though I brought constructs from my theoretical framework to bear on analysis of participants' choice of avatar in the worlds they visited and made through the device. The ways participants designed and used these technologies for their own aims inflected them with particular affordances that shaped their use. CTDA uncovers the ways in which our makerspace, fugitive, joyous, Black, is the interface through which participants engage in cyborg literacies. I'll say more about how students designed this interface for cyborg literacy practices chapter 4 as I make an argument for understanding the loophole of retreat as an example of Black Technoculture.

3.12 Validity

The methods described above were chosen to ensure validity. I engaged in triangulation and member-check consistently throughout the processes of meaning making I describe above, through "intentional and sustained deliberative processes (Fine, 2008, p.224). In practical terms, this means sharing some of my initial coding schemes with participants as well as with my committee as a memo in the early stages of data collection; it is why I have appended my codebook in Appendix C. As an ethnographer, I will turn to consistent reflexive memoing to ensure clarity in thinking between my multiple roles as facilitator, researcher, and participant. Moreover, participants have reviewed iterations of my claims and findings throughout. in In this way, youth participants and I will "reconsider the validity of constructs, and push [our] findings beyond understanding what is to imagining what could be (Carballo et al, 2017, p. 328).

3.13 Ethical Issues to Consider

As I carried out this project, there were a few ethical issues to consider. Given the persistence and searchability of the online artifacts and discourses (boyd, 2008) I was intentional in my efforts to protect participants' privacy— including anonymizing usernames and avatars should they come under ethnographic scope. This research has an understanding of the internet net as "just as real" as the offline world; usernames, AVIs are real to their users and deserve protection (Varis, 2016). Similarly, this research takes participant privacy very seriously. As Varis writes about online utterances, "while semiotic material may be publicly available, this doesn't not automatically mean that it can be used for research purposes, or that the people behind the semiotic production accept that what they have entered online will become data unbeknownst to them" (Varis, 2016, P. 59). If and as participants and/or interact with new soft and hardware, there are increased opportunities for surveillance by corporate and/or state

interests, even if only to target more ads. These risks will be discussed with participants and informed consent and assent will be sought for each digital tool used. Although it curtailed some self-making that students might undergo, I used my personal and university email accounts for all logins in order to insulate students from some of the exposure they otherwise would have experienced.

Throughout the overlapping data collection and analysis phases of this project I made decisions to protect participants' privacy participants privacy and anonymity. Where I originally planned for digital ethnography methods such as virtual tours and walkthroughs, I walked this back, even though kids handed me their phones to see pictures, login to making apps, text their sisters while their hands were full, and more. I had plenty of references for ethical ways to use these data (AOIR, 2023; Markham, 2018), but no need to include them. I made these decisions because my positionality as a researcher was at odds with my relationship with these students as a mentor, friend, and confidant, a coach. It became clear to me that photos, products, interviews, focus groups, and direct observation were sufficient for me to answer my research question about Black literacy practices. As Simpson (2008) writes, it was “enough that [they] said what [they] said” (p. 78). IRL, additional care was taken to ensure that students’ confidence and privacy are kept**.** In fact, participants’ perspectives and decisions about their privacy are vital data in and of themselves because they reveal participants’ agency in managing their social identities. I engaged in continuous member checking so participants had every opportunity to consider and make decisions about which data are represented, and how. As collected data were stored and shared in accordance with the district’s data sharing agreement, care will be taken to protect students as well as faculty, staff, and other stakeholders.

In the next three chapters, I share the results of my analysis. First, I reflect on the co-curated affordances of our loophole of retreat and how they were made possible by our co-designed principles. Then, in chapter 5, I share findings about how participants practiced cyborg literacies in our loophole of retreat. In the third findings chapter, I use two case interviews with two Black rebel intellectuals (James, 2012) to further illuminate participants' practices and attitudes toward schooling, digital technologies, and the future.

Chapter 4 Findings: Design Affordances Of The "Loophole Of Retreat"

In this first findings chapter, I report on data analysis to reflect on how the design and ecology of our loophole of retreat fomented particular affordances for cyborg literacy practices By cyborg literacies, I mean the constellation of literacy practices (i.e. sensemaking, self-making, worldmaking, joymaking, and refusal) that Black youth use in their everyday lives—distributed online and off, and amid enduring antiBlackness. In chapter 2, I shared the origins of the loophole of retreat; inspired by the garret space in which Harriet Jacobs (1861) wrote her way toward freedom, this dissertation offers the loophole of retreat as a space where Black folks, hidden, are safe enough to dream of liberated futures and actualize them via their literacy practices— including and beyond writing. In this chapter, I describe how participants— by dint of the conditions of their school and their approach to occupying the basement rooms we inhabited-- designed for "immaculate vibes" and self-determination. The vibes, as I'll show, were curated spatially, sonically, and spiritually. Student self-determination, in turn, was a product of or design principles; students took advantage of their self-determination in the makerspace to engage in the radical Black practice of freedom dreaming (Kelley, 2002).

I will not argue that this makerspace that we designed was some sort of intervention that shaped the literacy practices that participants took up in a causal fashion; I don't have the longitudinal data or pre/post for that. Rather, I'll merely argue that our loophole of retreat leaves the door open for the opportunity to study cyborg literacies that Black youth are already up to. The after-school makerspace is simply a place where these practices took place in an observable

setting. As described in chapter 3, our space was guided the following "V.0" principles: Agency, Access, Autonomy, Flexibility, Free(dom), Innovation, & Joy; to this list, after three weeks of working together, students added Accountability, Awareness, "Faaji," Integrity, Safety, and Respect as principles they wanted to embody. The V.0 principles were born out of my desire to create a space in which students are empowered and agentic, able to make, do, or be whatever they can dream up; students added to my list after engaging in some freedom dreaming about what the space was, could be, and what they could do in it (Kelley, 2020). I'll say more about what participants decided to do-- and refused to do-- in Chapter 5. In what follows here, I share some of the ways my positionality and the learning ecology of the Lindendale School curriculum shaped the V.0 design principles.

4.1 Ecology and Positionality

I chose the V.0 design principles that animated the space because of the outcomes I desired for the space and based on the ecosystem of resources available. I imagined that students would practice cyborg literacies there because they were already going to practice those literacies as part of their mundane digital/analog existence. Therefore designing "for" cyborg literacies was not a priority. In planning this dissertation project, and following trends in makerspace literature, I had aspirations for a YPAR project wherein students' making interceded on issues in their local and global communities via technology tools (e.g., Akom et al., 2016; Calabrese Barton & Tan, 2018; Desportes et al., 2021). My experiences as a Black teacher of Black youth, as a Black person in this antiblack world inspired this effort. However as I spent time in the school collecting contextual data and engaged in critical reflection, it became clear that the task of inculcating discrete skills (i.e. computer science basics, the design cycle) was already being taken up by the school's STEM curriculum. Similarly, the school's social justice

curriculum was introducing students to issues of equity and justice, inviting them to identify and solve issues in their classrooms and city. With those bases already covered, the outcomes evolved. I desired that these Black children feel heard and whole in the makerspace, that they have a safe third space in which to be their full selves within their school building. This is how I imagined the learning ecology of the school shaped our space.

As I would find out, participants' gendered and racialized experiences in school were part of this ecology as well. Their perceptions of the gap between the school's stated aims and the realities in its classrooms and hallways led to students feeling "catfished" by the school—promised one thing and presented with something different altogether. This was the case in regards to the STEM curriculum, where students lamented a lack of physics, robotics, computer science, and AP classes generally, and the social justice curriculum, where students feel a disconnect between words and actions. To this end, Ella remarked that "this would be a social justice school if they listened to us." Deja wondered if engineering and design assignments—ostensibly part of the social justice curriculum— would ever be more than exercises, noting "they're not 'community' projects, they're assignments, and they never go anywhere. It's just like 'think about this… blah blah, make a prototype… ok that's done." There is a sense, overall, that school administration and many teachers "are the opps"—literally, the opposition. Where in years past, students felt as though they had advocates in the building, this year at least, "we don't have people who advocate for us, because the people who did advocate for us and got stuff done are gone." The stuff those departed teachers got done included computer science, calculus, and robotics classes, and the chess club. These factors, too, are part of the learning ecology of the afterschool space students and I co-designed.

My positionality continued to play a role in how I interacted with the space and students. I was very distinctly not a teacher, though I did some knowledge dropping in whole-group and individual contexts. My performances in the space stepped into and out of teaching stances as needed by students. My previous teaching and mentoring experience gives me an easy rapport with Black youth. To boot, some of these youth knew me as a coach on the Robotics team. To other students, I was just some guy when they began to join the space. So, I had a range of titles depending on the student and the day. Students hailed me as Coach P., Mr. Parker, Mr.. P., Mr. Miles. Parker Miles. P. Miles, Alexander, Sir, playa, big dog, "dad # 3". I answered to anything, since no one was ever disrespectful. However I was hailed, I tried to have helpful answers; where I couldn't, I was a hub, a connector of people to people, ideas, information, and tools. To protect students' data privacy, I used my UMidwest and Gmail accounts to log us into the tools, sites, and apps.

I operationalized this positionality by trying my best to get out of the way and stay there. I know that in this body, as a Black, male, thirtysomething, the students with whom I work may feel some affinity, some connection. However, I don't imagine that identity alone is enough for them to trust me; being liked or likeable is cute, but insufficient. Moreover, my presence alone—my Blackness alone—is not sufficient for creating safe spaces for Black youth. It especially is not sufficient to generate or even tolerate Black freedom; after all, there have been Black overseers, Black cops and prison guards, Black teachers too quick to stifle Black brilliance or call security. By getting out of the way—by excising the cop in myself, by refusing to police the language, perspectives, or activity of Black youth, I hoped they would be able to design the makerspace of their dreams. This commitment to let the space and activity be truly student directed, something that became apparent in how participants customized It to suit their needs.

The space was theirs, not mine, not The Lindendale School's, not the University of the Midwest's. So, I committed again and again to deprioritizing myself, my needs, this dissertation project, and its attendant data. I would learn what I could, keeping in mind that I was in this space only to provide a springboard for these youth to activate their needs, their skills, their desires. In turn, youth took ownership of the space and the tools in it. These are predilections for youth agency that can be emulated by anyone with the political will, regardless of identity. I think my efforts to get out of the way had tangible impacts on the spaces and how students designed it. Where I offered a wall to bounce ideas off of, I refrained from directing their activity, from directing the ethos of the space.my When students wanted my input, I was glad to offer it. But when my presence was a hindrance, I got out of the way. When me gathering data would have interrupted what students wanted to be or do, I got out of the way. When conversation drifted to the social and students didn't want an adult's oversight (and one can generally tell these things from side eyes and pregnant pauses), I got out of the way. When the girls needed to talk, I got out of the way. In all these efforts, my aim was to let students me captains of the ship, and I got out of the way. As I'll share in the following section, participants drove the design of and activity of our makerspace, fashioning it into a loophole of retreat.

4.2 Design affordances

Analysis of my collected ethnographic, interview, and focus group data revealed two themes-- two specific affordances of our design features-- which augmented students' capacity to be cyborg. The first of these affordances was the "vibes" we were able to curate together; through spatial, sonic, and spiritual manifestations of our design principles, students felt heard, felt whole, and had fun in the makerspace. The second affordance of the space's design was student self-determination; participants felt free and in control, which inflected their activity. In

what follows, I explicate these themes and discuss their relationship to my initial design principles and the design principles students added; I conclude the chapter with an illustration of the affordances of our loophole of retreat and the cyborg literacies they fertilize.

Table 5

Design Affordances

Theme & Definition	**Quote**	**Impact**
Vibes: The way it *feels* to be in the makerspace; the attitudes, energy, and ambiance.	"I really like the environment and the vibes of this club", Trent, sophomore	Inculcated feelings of safety, of camaraderie, of joy, which led to fuller expressions of Black personhood
Self Determination: The freedom to explore, the freedom to be; the freedom to refuse	"I don't feel like I'm obligated to do stuff in here which makes me WANT to do stuff", Deja, junior	Inspired students to pursue creative interests, expanded the range of possibilities for projects and play.

4.3 Vibes

One of the affordances that came of the design choices that shaped this makerspace was "the vibes." Students remarked often and repeatedly that they enjoyed and appreciated how it felt to be in our makerspace. The data suggests that the ways the students and I curated the space with Joy, Autonomy, and 'Faaji' as guiding principles helped make these "immaculate" vibes possible. Students got the sense both that it was "fun down here", and that our space was "a place where kids can grow [...]I can already tell" – even upon their first visit. Analysis of collected

data revealed several ways in which we created and maintained the vibes of the space. Vibes were created spatially, sonically, and spiritually.

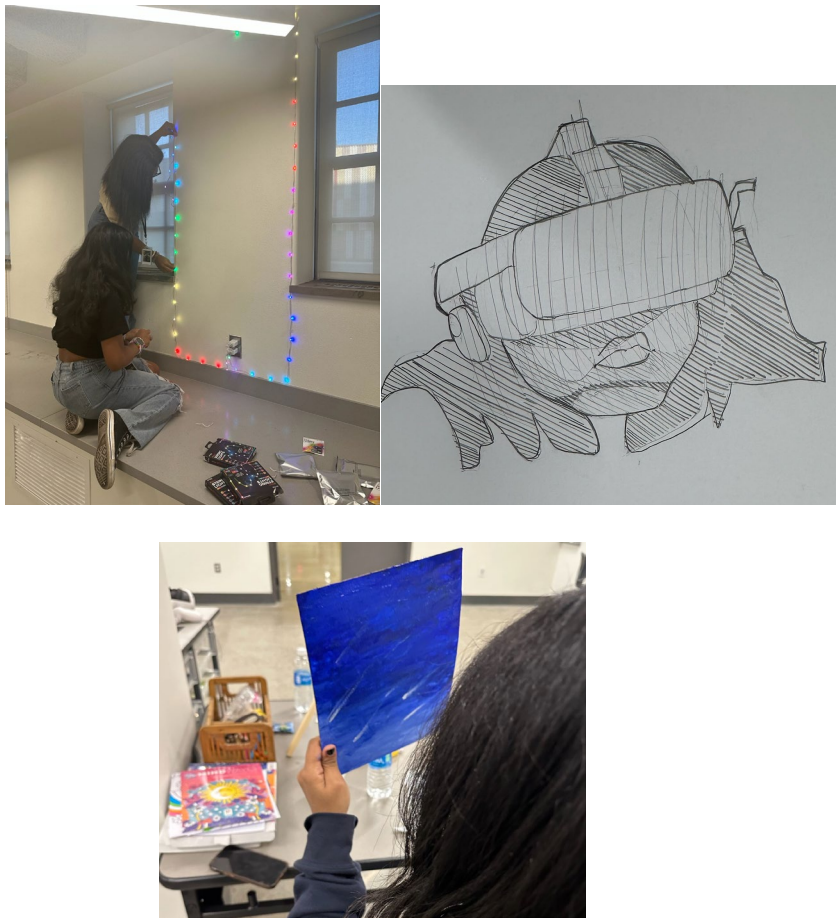
4.3.1 Curating the Vibes Spatially

Participants shared that one of the things that helped create the vibes of the makerspace was the physical space itself-- its layout, its decor, its structural features. The basement where the makerspace is housed is typically off limits for students; they took one of two flights of stairs or the forbidden-to-students elevator to reach us**.** Before we got access to it, the space was unused; Like the garret space above the pantry in Harriet Jacobs' grandmother's home, it was a space without a purpose until we occupied it (Green-Barteet, 2013). Students appreciated the distance from teachers, even as they were grateful to have a place to be together that was still on campus. These architectural circumstances, combined with the dimensions of what I reminded them at every turn was *their* space, allowed students to practice agency, one of my initial design principles. Meanwhile, students appreciated the large amount of floor space we had, and they were thoughtful in partitioning space in the room for specific activities; over the course of a few days and iterations, they identified ideal locations to use VR safely, to optimally set up music production and robotics stations. While the bulk of participants made and played in the first (assigned) room, others-- particularly one group of juniors-- used the second (acquired) room to chat and work on school and homework assignments. This student-directed organization and reorganization of our space--one room for "work" and one for making illustrates one of the ways students exercised agency to design the makerspace that they desired. After Coles (2021), this recognizance of student desire-- particularly of Black students-- illuminates the ways that the students deigned to and use the after-school space and did so in practice are "forms of Black spatial resistance against White spatial entitlement" (Radney, 2019 p. 319) that determines how

they move in their school building, where, and where not, and with what punishment for stepping, as it were, out of line. Students and I contributed also to the vibes of the space with our approach to decor and artifacts.

Figure 6

Curating The Vibes Spatially



Students' artistic expression shaped the vibes of the makerspace. From our first days, students were sketching and scribbling portraits of each other and me. Our first day, before we even had tape, they were using sticky notes to adhere these sketch-pad portraits to the wall, and graffitiing a welcome sign. The artistic output increased after I was able to purchase paint and canvasses, but the thrill of applying some double-sided tape to their brilliance and putting it up on the wall remained throughout. Relatedly, I took orders for decor from “Five Below-- they

wanted LED lights and a poster of Hubie from *Spiderman: Across The Spiderverse*. I added my own flair— a coach of the year award from last Robotics season, some pro-Black art— but my major contribution was a wall I would fill with my hasty script: documentation of our design principles; of their vision for the space; for the tech tools on hand; of student ideas about how technology could save the world, or end it. Altogether, these pieces of decor may have inculcated in students a sense of ownership over the space (though they'd still need reminders to clean up after themselves), a sense of pride in their making, whether digital or analog, planned, polished, or impromptu. All these were ways that the vibes of the after-school loophole of retreat were shaped spatially.

4.3.2 Curating the Vibes Sonically

Participants in our makerspace also shaped the vibes of the space sonically. Students identified two sounds that contributed to their experience of the makerspace's vibes: music and laughter. Music was a constant in our space, whether it was playing from a phone, from a laptop, or from a Bluetooth speaker. These speakers, all tiny, were generally cranked to maximum levels; the day's DJ were often asked to "turn that up" when somebody's jam came on. In our first week, participants started a Spotify playlist to which songs could be quickly added. We'd spin it daily. I was often surprised by students' knowledge of songs that were decades older than them. In these moments, in true "Unc" fashion, I'd demand to know "What y'all know about that right there?" But of course, students knew plenty about Crystal Waters; Stevie Wonder; Earth, Wind, and Fire; Tupac Shakur; Prince; and Michael Jackson; though they had the freedom to play contemporary artists (and did— we listened to plenty of lil Durk, of Childish Gambino, of Tyler the Creator), students inherited their parents' favorites, the same way I inherited mine. Regardless of the artist, genre, or epoch, it was rare that a song played unaccompanied; someone

was likely singing along. More than once we devolved into ensemble karaoke performances, involving multiple parts, fake microphones, and backup dancers. Siblings Aurora and Austin were good for a choreographed number from “Just Dance”, especially Boney M’s “Rasputin”. Naturally, we erupted into gouts of laughter between and after songs; the sound of all this cutting up also shaped the vibes of the space.

Another sound that shaped the vibes of our makerspace was cutting up. Cutting up is a black cultural practice that signaled Black aliveness (Quashie, 2021)**.** It is jouissance materialized**..** In our space, this cutting up often sounded like laughter. When it did, it ranged from whispered giggles to the burst of cackles that punctuates a small group’s conversation, to whole-room, full-throated reactions to comic re-enactments. Their cutting up sounded like the dozens. It sounds like that high-volume speaking black folks do that sounds like arguing to the uninitiated. Ways of speaking in the space-- like the ways of being-- were unapologetically Black and augmented our abilities to communicate with one another and leverage technologies to the ends students desired.(Baker Bell, 2020). Moreover, the signifying in which students engaged in their cutting up practice communicates culture-- reiterates their Blackness, in a layer of shared meaning supplemental to the textual level of their communication (Hall, 1997).

It would be myopic of me to suggest that students did all this cutting up simply because “Joy” and “Faaji” were some of our design principles. These youth were practicing age-old ways of being Black. That Joy and Faaji were design principles merely meant that students would not be castigated for cutting up. These design principles afforded students the range to express and be themselves with fewer filters than they normally would need within the confines of school. None of to say that this school in particular stifles Black students, but that schooling does, by dint of its purposes, its design principles. This is instead to say that antiBlackness is a feature of

this world, its epistemologies, and the tools – like schools—through which the social order perpetuates itself (Dumas & ross, 2016). These sounds together-- the music, the cutting up, the laughter-- contributed to the vibes of the space. They made it, at worst, a place where it felt good to be. This brings me to the final way in which vibes were co-created by these youth and me: spiritually.

4.3.3 Curating Vibes Spiritually

In addition to, and perhaps as an extension of the ways that students and I co-curated vibes spatially and sonically, we curated them spiritually. First, the makerspace was a space where students had fun. This was a direct consequence of our design principles, Joy and Faaji. Students evidenced this through their activity and descriptions of the space. For instance, Students played games in our space. They played games in VR, on laptops, on Nintendo Switches (with no less than four controller configuration), played games projected onto second screens and blank walls. They played the same hand games I learned from the big girls in preschool, and they taught them to anyone curious. They played Uno. They retaught me Tonk. I taught them Spades. Along with this, as noticed above, there was lots of laughter in our space. This play, coupled with the spatial, the sonic dimensions of their activity, is what Coles (2021) calls "Black youth aesthetics," the propensity to leverage whatever is at hand--including their knowledge, their experiences, their inheritances, and their multi-modal expressivities— in the service of free Black being. The fun that youth had in the space transferred, via the vibes, to their "serious" play as well**.** (Gee, 2003)**;** Programming, mechanical engineering and CAD design were something students had fun doing in the loophole of retreat. In chapter 5, I'll say more about the specific joymaking practices youth took up in our space. In the discussion that follows

the findings chapters I offer some recommendations to educators and practitioners for how to inculcate Black aesthetics alongside Black youth .

Our makerspace was also one where students noticed and expressed gratitude for feeling heard, which contributed to the vibes. I struggle to pinpoint exactly which of our design principles led to students feeling this way, or if was more a function of my positionality and personality as a Black, male, non-teacher with the time and inclination to ask them about their lives, but as individuals and groups, participants commented on the comfort they felt in our space. students were vulnerable. Repeatedly in their focus groups and exit tickets, they listed "talking to [me]" as one of the things they enjoyed and looked forward to. Mae thanked me regularly after venting about her mother. Ella indicated surprise when she first came to attend the makerspace. "Wow," she said, "you actually listen to us." This feeling heard led to students sharing stories about their home lives, their families, their dreams. They told "this one time" stories to make each other laugh and "I can't believe she did that" stories to be mad together; they told quiet stories punctuated with tears, the kind you can only finish if someone is holding your hand. In Chapter 5 I share the bones of one such story, something the participant "never said out loud to anybody before." Through their engagement in the makerspace- the way they created these vibes, students made a Black place, a "marginal space" (Hooks, 1990), a where, historically and today, "Black people could affirm one another and by so doing heal many of the wounds inflicted by racist domination" demanded by the world in which they live.

By dint of their design of and activity in the space, these students "nurture [their] spirits" (hooks, 1990, p. 42). Laramie summed up how she felt during a student-led focus group near the end of the study. Two students who answered before her described specific technologies that were their favorite thing about coming. In a comment to her peers she said, "my favorite thing to

do is just to be in here. Like, just being in here is my favorite. It's not a specific thing I like to do, it's just… existing in this room, right now is my favorite thing to do." In an unrelated conversation earlier in the term, her sister Sasha said she liked our space because she "[didn't] have to change myself to make anyone else feel comfortable." This comfort was held in contrast to how participants felt about their normal school day

I'll say more about student's creating "homeplace" (hooks, 1990) in the next chapter as a cyborg worldmaking literacy. I'll also describe in the subsequent chapter how students' inclination that they were heard and were safe led them to share critiques of power, including critique of TLS teachers, administration, and school district decision makers more broadly. In this way, the vibes were an affordance that made our makerspace fertile ground for cyborg literacies. Another affordance borne of our makerspace's design principles was student self-determination.

4.4 Self-Determination and Freedom Dreaming in the Loophole of Retreat

The design principles of our makerspace afforded participants a sense of self-determination. By self-determination, I mean "the ability to exercise one's agency autonomously, without restrictions resulting from external, extemporaneous factors" (Warren & Coles, 2020) My initial design principles, including (Free)dom, Agency, and Autonomy had an impact on these ways in which students took control of and in the loophole of retreat. I operationalized these design principles in small ways, including daily and repeated reminders that the tech tools were theirs and TLS's, not mine; this was a common refrain for newer students who would ask if they were "allowed" to use a given tool or tech. Students embraced this ownership, adding Integrity and Respect as design principles that represented how they ought to relate to the tools, to each other, to our space. Analyzing the collected data shows that this sense of self-

determination made itself manifest in several ways. Participants were afforded the freedom to direct their activity every day. They had the freedom to dream. Ultimately, students had the freedom to refuse.

Students were afforded a sense of self-determination in our makerspace, which they exercised by choosing to make what they wanted every day. Participants reported the "freedom" they had to "explore" different technologies as a key feature of the makerspace. A student who learned to 3D print on Monday might join a group constructing a robot on Tuesday, lend her vocals to a song Wednesday, then scare herself silly in VR on Thursday-- all shaped by her whims. This self-determination led to some "false starts" and projects that never really got off the ground. For example, several students dreamed up a podcast about school news, began practicing interview questions using an audio recorder, then never brought it up after that day; when I asked them about it a few weeks later, they didn't remember what I was talking about. In the interim, the three students worked independently and together on 3D prints, painting, and sensemaking about the very issues they originally sought to podcast about. Students could determine the level of their involvement for themselves, based on who they were and what they needed, every day. Because of our design principles, and my desires for the space, students and I had to engage in what Stornaiuolo, Nichols, and Vasudevan (2018), invoking Comer (1999) describe as "de-territorialization;" in this 2018 study, participants' desires to use their literacy lab for "unanticipated functions: as a gathering space, art studio, tutoring room, public forum and writing workshop" (p. 365). As opposed to that making space, there was no friction in students' "de-territorialization." After all, per our design principles, it was their territory to do with as they saw fit; after all, remapping is an age old Black fugitive practice of worldmaking, of carving a way out of no way (Young, 2012). My initial intentions to foster social justice interventions

through the emergent tools on hand were always only ever one of the manifold ways that I hoped youth would use the space and the tools on hand. In chapter 7, the discussion, I say more about what educators and practitioners working with Black youth can gain from such an approach.

A participant articulated how the self-determination she has was an affordance that shaped her practices in the makerspace with the following response to one of our check-in questions. I asked, "what do you like about coming here? The student replied: "I don't feel like I'm obligated to do stuff in here which makes me WANT to do stuff." After Green-Barteet (2013), I read these students' self-determination as a recognition of their own power. Like Jacobs, the ways in which participants in the study "actively manipulate the interstitiality" of the makerspace "to [their] advantage that enable [them] to claim agency over [themselves] (Green Barteet, 2013, p. 57). Green-Barteet (2013) goes on to argue that this "interstitial position" allows Jacobs to "challenge the physical and metaphorical boundaries that have been places on her" (p. 57). So, too, do the participants in this study. Instead of waiting for me to tell them what to do with the technology at hand and indeed because I didn't tell them what to do with the technology at hand, participants engaged, they pursued their interests. They tried and failed to, for example, 3D print a fidget spinner or sample the sound of their own snapping fingers; and then, because they didn't have to, they tried again. No longer are such micro failures representative of who they are, what they have the capacity to do. Rather, they are merely expected moments in the design process about which students are learning in school; they are forgettable and foundational expressions of agency.

Through the self-determination that they were afforded in our makerspace, students had the freedom to dream. This was the case for everyday dreams like plans to game all break, to join the US Air Force after high school, to drive a cool car one day (but not with "these potholes they

got out here”)**.** Students also were afforded the space to engage in the Black radical practice of freedom dreaming (Kelley, 2020). Some of these dreams included more extreme visions of what students might make in our loophole of retreat. For example, two students, sisters, were reveling in the possibilities engendered by our space when they dreamed of apocalypse.

“You mean we can really do what we want?” one sister asked.

“Yeah,” the sibling clarified. “Like, can we really run amok in here?”

“You sure can,” I replied.

With this confirmation, the two squealed, ecstatic, and the first proposed: “Let’s build a killer robot and unleash it on society!” and her sister rejoined, “Yeah, that’ll show them!” They threw their heads back and laughed like supervillains.

I asked the pair what they had against society. These girls, Afrolatina, already knew American society to be racist, sexist, and xenophobic. With society destroyed, they could rebuild it “to be better for everyone.”

To be clear-- these students never attempted to build a “killer robot.” We shared a maniacal cackle that day, but the idea never resurfaced (outside of when I followed up to make sure I was representing what they said and why), and these girls’ making in our makerspace was much more mundane (if no less cyborg). This moment is revelatory, though, as a moment where students had the freedom to express their wildest fantasies for justice and retribution. Free to “run amok”, they dream of freedom to enact retributive violence that would be necessary to achieve liberation “for [their] people, for [their] Black people” These students dream of revolution, about taking action “to change the order of the world” or decolonizing (Fanon, 1963, p. 36). They had the space to do this freedom dreaming because of the spirit of self-determination that our design principles engendered; given the space to do and say what they

want, these students refused the implicit rules of society itself, of its organizing technes of race and gender. Such an apocalyptic vision is another storied Black tradition, particularly in Afrofuturist and Black speculative traditions, a rejection of a world built on Black abjection (Maynard, 2018; Miles, 2022).

Participants in this study, en route to using the technologies *within* our makerspace to engage in tacit and explicit refusals of a violent and violating world order, leveraged the makerspace as a technology for doing this freedom dreaming. This is itself a fugitive use of technology, a "reconception" after Fouche (2006), an "active redefinition of a technology that transgresses that technology's designed function and dominant meaning" (p. 642). What students designed on the bones of what would have been a tech-rich makerspace was an example of Black technoculture; they used "agentic technical virtuosity" to create an interstitial space within enclosure to pursue the sovereignty and good vibes they feel they are denied in their everyday schooling experience (Fouche, 2006, p. 642). Students created a loophole of retreat. I'll return to this idea in Chapter 5 as I explore students' refusals in our makerspace, where participants exercised their self-determination locally. I return again in Chapter 6 as I consider the uses of Black women's anger and the ways in which participants in this makerspace leveraged it to imagine a "henceforward," the moment of ultimate struggle against oppression, in a refusal of oppressive futures (Fanon, 1963).

For sure, just as this learning ecology, my positionality, and these co-curated design principles fomented affordances within our loophole of retreat, they presented a stark limitation: I had little control over the space. This is not to say that students or their behavior was out of control, but it was not contained. Students exercised their agency and did what they wanted, when they wanted, how they wanted. As I mentioned earlier and will explore more in the

following chapter, students therefore put the kibosh on my plans to shape their making around interventions and/or investigations of their school. This limited the kinds of curricular interventions I could make-- though students did plenty of self-directed learning.

The design of our after-school makerspace shaped the ways students interacted with one another, which afforded us horizontal learning through temporary apprenticeship models. Originally, I designed for student agency autonomy such that participants would not feel limited in the kinds of technology they could use or the kinds of projects they could take up. In support of that vision, I planned to lead participants through the design cycle-- a practice they are taking up in their in-school coursework already. To begin this, I led students through discussions of frustrations and issues they noted in their neighborhoods, their school, their city. However, I pivoted away from this plan as students expressed disinterest in approaching or solving these problems in this way. As a result, I relinquished control of students' time; I became a sort of floating encyclopedia, swooping in to troubleshoot as I made my laps around to observe and document. With the autonomy the norm and the vibes established, students stepped into impromptu roles as teachers and experts of the technology tools with which they worked.

We were also limited by logistical challenges. I was unable to source enough funding to hire a research assistant, limiting the kinds and amount of adult support that students could get. I was unable to source enough funding to get as much tech equipment as I wanted; I imagine what could have been if we had two more VR headsets, another 3D Printer and two more laptops/ Students worked around these logistical limitations, committing to Integrity as a principle so what tech we did have wasn't stolen, despite "how easy it would be to walk out of here with something", and Accountability as a principle so that no one was dominating the use of, for example, a VR headset.

The vibes and student self-determination that our makerspace's design principles afforded participants made our makerspace a "loophole of retreat." As such, after Brock (2020) I read this imbrication of fugitive Blackness with the makerspace-as-technology as Black Technoculture. In addition to the ways makerspaces inculcate skill and identity development, in parallel with the ways makerspaces can foment consequential and meaningful making activity, students infused Blackness into existing technology to reconceive what the technology does and is for (Fouche, 2006). Students designed an "interweaving of technology, culture, self, and identity", a place where they were whole and sovereign (Brock, 2020, p. 221). These affordances—vibes and self-determination—like those of Harriet Jacobs' hideaway above the pantry, provided students a kind of petit marronage--a temporary flight, within the internal colony. An ephemeral escape from the school-prison nexus affected the literacies that participants practiced in our makerspace. As I will describe in chapter 5, participants in our makerspace practiced cyborg literacies; they engaged in practices of sensemaking, self-making, worldmaking, joymaking, and refusal. I'm not prepared to make a causal connection between the design principles of the space and the literacy practices in which students engaged— my whole argument is that students BEEN been practicing these literacies. Instead, I want to suggest that these design principles allowed students to be their whole selves, and be free, which, in turn, made our makerspace a Black space; insofar as they designed such a fugitive space, I argue that students leveraged designed a loophole of retreat. It just so happens that these conditions create a lush environment for cyborg literacies to germinate. The discussion that follows the findings chapters of this dissertation explores what it may mean to design for Black sense, self, sense, joy, and worldmaking, and for Black refusal within third spaces.

Chapter 5 Findings: Cyborg Literacies in a Loophole of Retreat

In this, the second of three findings chapters, I present the literacy practices I have documented through the ethnographic observation data collection and analysis procedures that I undertook in this dissertation. I offer an answer to the research question that animates this dissertation: *how do Black youth practice cyborg literacies in an after-school makerspace?* The chapter is organized into three sections. First, I offer a vignette, a sort of "day in the life", that gives a sense of the vibes that the students curated in the makerspace. Second, I'll leverage the elements of cyborg literacies as an organizational framework through which I have documented and analyzed the practices I observed students engaging in. I'll use photographs, snippets of transcribed conversation, written student responses, and my own ethnographic jottings to illustrate what students made, said, and did in our after-school makerspace. As described in chapter 2, the practices of sensemaking, selfmaking, worldmaking, joymaking, and refusal in which Black youth engaged are networked rejections of victimization (James, 2013) that are distributed across online and offline existence (Haraway, 1984); that is to say, they are cyborg. To that end, I use cyborg literacies in this chapter as an a priori framework through which I can make sense of the practices Black youth took up in the collected data. These findings contribute to what we know about the literacy practices that Black youth use in their everyday lives.

5.1 Vignette: A Day in the Life in the "Loophole of Retreat"

It's only a matter of seconds after the announcements end when I hear the first footfalls clattering though the basement hallways, activating the automatic lights as they go. James beats

Isaiah in their daily race downstairs, their laughter bubbling in ahead of them. We exchange daps and pleasantries and they head to check in using a QR code. Erik strolls in next. He extends a fist for a pound.

“Did you hear?” he asks. I haven’t heard.

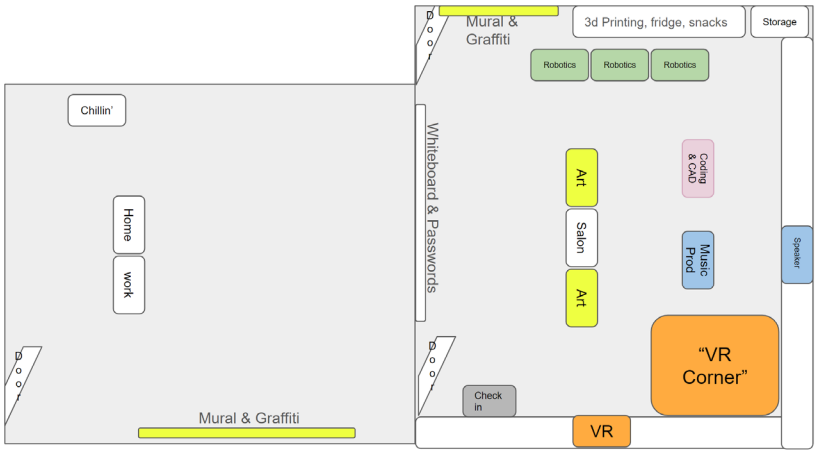
“Apple’s dropping the M3 chips and the new iMac.” He rattles off specs and timelines, before pontificating. “I wonder how Android will respond.” He has suspicions.

He scans the QR code on my tablet to check in before plopping down at a laptop that he’ll give up for a younger student later. Erik is usually the first of the juniors to arrive, and the first of the robotics students. When I look over his shoulder, he’s watching a YouTube tutorial on Computer Assisted Design (CAD) on his Google Pixel phone; on the laptop, a gear that he diagrammed rotates-- an offseason challenge extended by the robotics coach.

By 4:15 or so, the full cadre has arrived. Waters are distributed, lips smack on chips and fruit snacks. I circle, saying wassup. For the next hour or so-- until the pizza arrives and I send someone to grab it-- attendees do what they want.

Figure 7

Sketch of the Afterschool Makerspace



Picture a workshop. 40’ by 40’, well lit, with 5 windows on each of the two external walls, pictures and posters between them. 90s house pumps tinnily from a Bluetooth speaker, audible under conversation but only between gouts of laughter. The third wall, all glass, has been tattooed with my choppy script—usernames and passwords, a tally for pizza topping votes, a growing list of design principles. On the other side of this glass wall is a second making room, vacant except for dusty tables, a crusty sink. Eventually, we’ll annex this as our membership swells.

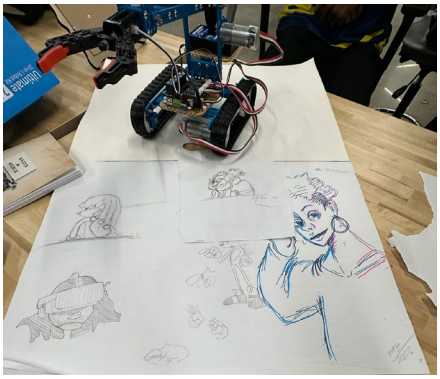
On the 4th wall, a mural is under construction, bracketed with other art-- canvases, paper scraps, portraits of participants, sketches of thicc Patrick. To the right, the 3D printer extrudes a doorstop, a mathematical proof, a Hello Kitty Army, depending on the day. A dozen power cables descend from the ceiling, a pair for each of the waist-high tables that occupy the back third of the lab. Around each table, kids cluster. At one table, the producers and designers, at another, the video game programmers, at this third, a pair of roboticists watch someone play “Fridays at Freddy’s”. At their elbows, the bot twirls, impassive; the teens scream at a jumpscare, more amused at the animated animatronic antics than troubleshooting why the “straight” direction on the Makeblock phone app sends the bot to the left. At two tables stretching across the middle of the room, a prairie of sketches blooms. My several notebooks sprawl, amid iPads and between watercolor brushes; today, nearly ten of us felt like drawing. Toward the front of the room—the glass wall side--an open space. Room here for the dancers, the skippers, the headsetted (i.e. the climbers, the architects, the boxers, the quarterbacks, the DJs, Goku himself, the soldiers, the frightened, those in flight). Here, a whiteboard is profuse with anonymous answers to today’s invitation: what do you think the future will be like?

I offer this vignette as an example of the cyborg literacies that youth practiced in our after school makerspace. In this vignette, exemplary for its mundaneness, students engaged in practices of sensemaking, self-making, worldmaking, joymaking, and refusal. As I described in chapter 4, students enjoyed the twin affordances they co-curated in the after-school space: Vibes and Self-determination. This space--their space-- was one in which they had room to be and enjoy themselves the freedom to chart the course of their activity. In the following, I work through the facets of cyborg literacies, one by one, to read the practices in which students engaged. Along the way, I contextualize them with relevant data from contemporary studies about the literacies of Black youth which situations participants' activity in a long tradition of Black liberatory and radical thought.

5.2 Cyborg Literacies in Practice

Figure 8

Artefacts of Cyborg Making

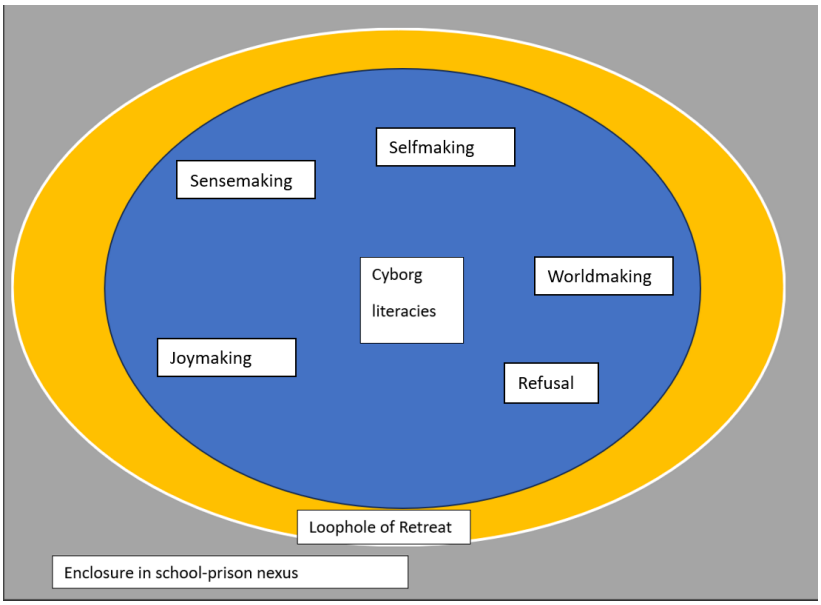


Participants in our afterschool makerspace engaged in cyborg literacy practices. Our space functioned as a loophole of retreat in which Black youth could be whole and create freer versions of themselves. As I outlined in Chapter 2, this means that these Black students blurred the boundary between online and offline and/or they leveraged in fugitive practices to engage in sensemaking, self-making, worldmaking, joymaking, and refusal. For each of these components

of cyborg literacies, I'll offer a range of observed activities and products, then select one or two exemplars on which to elaborate. In Chapter 7, the discussion, I'll reflect on the ways in which the making ecology of the school and my design choices afforded and limited these students' practices, and what all this means for those of us who love and teach Black high-schoolers.

Figure 9

Cyborg Literacies Expanded



5.3 "Call me Goku": Self-making Practices in the Loophole of Retreat

Black youth in this study engaged in practices of self-making. Self-making is a Black literacy practice that goes back a long time. Harriet Jacobs wrote herself free in the garret space, even writing a new self—Linda Brent— with liberatory agency. These self-making practices have developed/mutated with the proliferation of digital tools, particularly as tech users have the opportunity and requirement to create representations of themselves online After all, as Ballenson & Segovia (2010) note, we find virtual versions of ourselves in many places (qtd. in Procter, 2020). It was interesting to observe that, in our space students' offline selves were shaped and reshaped by their uses of digital technology. Student self-making practices took a

number of forms that span a range of activity. These activities included using YouTube and Scratch community channels to teach themselves programming; designing and 3d printing earrings and pins to wear; following queer influencers; practicing programming skills or preparing for Robotics season; obfuscating digital selves from parents, teachers, corporations. To illustrate these practices, I highlight two moments where Black youth cyborg self-making practices are illustrated via the imbrication of their online and offline selves. In the first, "Goku" leaves VR to join our space, IRL; in the second, two students use open source design software to edify themselves and their peers. In both of these examples, the boundary between human and technology is blurred; in both of these examples, Black youth agentically author new, more powerful visions of themselves.

Figure 10

Customizing The Self in VR

Like many Black youth who interface with the digital, some of our participants' engagement with the digital presented new possible identities that traverse a path from online to off. In the case of "Goku", one of our participants, the process of creating an avatar in a social Meta Quest 3 app inflected his performance in the after-school space, even when he didn't have on a headset. This student even went so far as to choose "Goku" as a pseudonym for himself.

Goku is a character from the Japanese anime franchise, “Dragon Ball.” by invoking him, our Goku was able to unleash flurries of energy attacks on opponents in-game. Given the way VR works, this meant that IRL, cyborg-Goku’s whole body is drafted into the effort, from the “fighting” stance he put his feet in, to the arm-waving marshaling of spirit energies before firing them from “his” hands at his virtual enemies (DeFreitas & Veletsianos, 2010; Procter, 2020). Like the participants in Lewis Ellison’s (2014) study, Goku’ offline self took on the characteristics of the digital avatar; just a freshman, he would be emboldened to talk junk to his taller and older peers, boasting as if he were the legendary Super Saiyan— his peers played along, attaching the rest of the character’s lore, cajoling “that’s why you don’t take care of your kids!” As Boellstorff (2008) notes, avatars are “sites of self-making in their own right” (p. 149). This participant “became” Goku to interact with the digital; when he took the headset off, he brought Goku back offline with him. Tisha Lewis Ellison (2014) calls these hybrid online-offline selves “dig-entities”, possible as the desires and capacities of virtual game characters and real, offline become mutually constitutive. Similarly, recall Isaiah, whose invented fisherman persona emerged in the anecdote that opened the first chapter of this manuscript. This blending of online and offline, of human and machine, in the creation of the aspirational Black self, is cyborg.

Like Goku, Isaiah created a nascent, offline, analog personality that was a hybrid of a VR game protagonist’s characteristics and his own. Cyborg Isaiah— “Jim Bob” as he named himself to our collective amusement— strutted about the makerspace bragging of his fishing prowess in the accent Isiaih imagined he should have. He imitated casts, pantomimed setting the hook, exaggeratedly reeled for his life, recounted the story of the fight, all things he would later reveal that he had never done in real life. These versions of Isaiah only became possible as he was imbued with Jim Bob’s virtual life and experiences. Although seemingly frivolous, this kind

of self-making shows the ways that Black youth are shaped by their technology use. A companion to the extended self (Procter, 2021), and re-embodied selves (Buongiorno, 2019), the cyborg self can be an articulation of the multiple, mutable relationships between Black high-schoolers' online and offline selves. The degree to which this self-making reads as a rejection of victimization (Costa Vargas & James, 2012) seem tenuous at first. After all, how is this incorporation of a known anime media character (Goku) and an unnamed, anonymous fisherman into these Black youths' conception of self an example of the rebel intellectual rejecting victimization? First of all, as I'll suggest in the joymaking section below, that these youth experiment like this, that they don, doff, and muddle selves for the pleasure of it, is itself a rejection of victimization. Next, I share some less frivolous examples of this cyborg self-making to shed light on the ways these practices of self-making can interrupt dominant narratives of Blackness.

Figure 11

Black Youth Authoring Their Future Selves

Throughout our time together, participants used digital tools to try on new versions of themselves, to grow themselves, to expand their capabilities-- with and without specific goals. Two students, among the cohort of robotics team members that made up about half of our regular

attendees, had explicit skills they wanted to develop so they spur their team to greater heights. They used the space and opportunity to try offseason Computer Assisted Design (CAD) challenges established by their robotics coach. Though these challenges were purely optional, these students chose the mantle of leadership on the robotics team. So, they used our laptops to teach themselves to use TinkerCAD, an online, open-source design software, then printed one of several design challenges that the coach sent in Discord. Their goal was not only to build skills for themselves, but to become sources of expertise on which their peers and team members would rely. Like Harriet Jacobs herself, like participants in Lewis Ellison (2014) and Garcia, Fernandez & Okonkwo (2020), Black students in our makerspace used technology to author their future selves. Erik, pictured above, explicitly sought to develop skills he'd need to get into the engineering college of his dreams, en route to a career as mechanical engineer; here in our space, he continued the development of his stem identity (Hines et al, 2024). In our after-school makerspace, like everywhere else in their lives, the digital mediates and reshapes Black kids' offline creation and expression of self.

Other students in the makerspace leveraged the technology on hand to practice skills because they simply wanted to improve their skills and capabilities. Students commonly used multiple devices in their skill development. For instance, Mae, a freshman, would pull up drawing tutorials on Tiktok or Youtube, then use one of our tablets as a sketchbook to practice. This multi-device model also worked for students teaching themselves programming, teaching themselves music production. They switched focus between screens fluently, managing physical keyboards, touch screens, and styluses; they zoomed, scrolled and enabled closed captions; they paused playback so they could practice new skills on their own. As they leverage this bevy of digital tools and artifacts to author these aspirational selves, Black youth author counter-stories;

rather than merely responses or contradictions to dominant narratives of Blackness, of Black youths' imagined technology literacy (or lack thereof) these youth's practices are "unheard stories that do not actively resist dominant perspectives but still offer insight into strategies of survival and resistance" (Levya, 2021, p. 129). That is to say, via their self-making in the after-school makerspace, participants conjured versions of themselves that do not emerge as efforts to correct racist and deficit archetypes of Blackness, but as efforts to be whole and self-determined. These cyborg selves are products of Black being, imbricated with technology. Goku, Isaiah, Erik, and Mae all leveraged digital technologies in their processes of self-making, a cyborg literacy practice. It remains to be seen how these participants' future selves are shaped by these cyborg activity, but the students are at least exercising agency in who they want to be and what skills they want to develop for their personal goals. Participants in the makerspace also used digital technologies to engage in sensemaking about themselves, technology, and their racialized and gendered experiences in school and the world.

5.4 "Multiple nice buddies help[ed]me make my first 3D project XD" Distributed Sensemaking in the Loophole of Retreat

Participants in this study engaged in practices of sensemaking in our after-school makerspace. Black youth sensemaking practices have long been studied in qualitative education research, at least since we wondered why all the black students were sitting together at the lunch table (Tatum, 1997)**.** The ways that Black youth engage in sensemaking has evolved with the proliferation of digital technologies. In many ways, their sensemaking is distributed, is networked. For Black adults, this has been studied in the use of social media sites like Twitter (Fischer-Preßler et al., 2019; Johnson, 2020). In our makerspace, Black youth engaged in a range of sensemaking activities, including *c*ommandeering recording equipment to conduct mock

interviews about experiences in school; discussing which teachers to take and avoid, and best practices for avoiding discipline; naming and discussing experiences of enclosure in school; critiquing depictions of Blackness in media, opining about abusers in music discourse (e.g. Trey Songz, Chris Brown, Blueface) reading about boycotts of McDonald's and Starbucks in support of a free Palestine on TikTok. For the purposes of this dissertation, I want to highlight one particular sensemaking practice that I observed among participants: youth took on impromptu apprenticeship models to learn and teach others how to design and print using our Bambu Carbon X1 3D printers. I'll say more about youth's critical sensemaking at the end of this chapter as I return to the vignette that began it. In taking on these apprenticeship models, Black youth engaged in cyborg literacy practices, leveraging digital technologies to develop knowledge, skills, and ideas.

Figure 12

Horizontal Learning CAD for 3D Printing

Throughout our time together, Black youth demonstrated cyborg sensemaking practices via the temporary and evolving apprenticeship models they adopted as they learned to use our 3D printers and teach others to use them. In the image above, two students navigate these stances preparing a 3D print of a fidget toy. The product itself was a common genre of print for first timers. At this moment, during Carlo's (left) first day joining us, Marcus (right) is walking Carlo through the earliest stages of the print process, selecting a design template from one of the many open source repositories (e.g. thingaverse.com). Over the next minutes, Marcus would walk and talk Carlo through preparation of the Carbon X1's print plate (removing detritus from previous prints with a scraper, applying adhesive, aligning the cool plate in the printer properly), sending the job (adjusting filament color and print seize, on this occasion through the Bambu computer program; though Marcus had already downloaded the Bambu app on his phone and logged into our workspace account). Their exchange was dialogic; Carlo asked questions and sought confirmation on his understanding of the process; Marcus didn't always know the whole answer-- there was a fair bit of clicking around as Marcus tried to remember the clickpath he followed in the Bambu program. It was quite understandable: Marcus was a novice himself, who had only completed his first print (a fidget spinner) the day before, after a student-led walkthrough just like this one.

This horizontal skill transfer happened all the time in our space. This practice fits previous empirical research about the apprenticeship models Black youth use to make sense of digital technologies (Lewis, 2014). Moreover, research confirms that Black males in makerspaces gain agency and STEM identity affirmation through their activity (Green et al., 2019). Through a posthuman analysis of these students collaborative activity it becomes clear that through interaction with both his peers and the digital-- in this case the sociotechnical stack

that is “3D printing”-- Marcus and other participants stepped into and out of expertise, generating digitally enhanced opportunities for skill and relationship building (Lupton, 2012). Lizarraga (2021) used “meshwork” to describe “participation characterized by dynamic, multi-directional, non-hierarchical, relationship building and collaboration, as well as selection and sharing of digital artifacts that were self-organized and self-configured” by participants in their dissertation study. The meshwork framework illuminates the ways in which Marcus and Carlo’s activity is distributed between material and digital planes, cyborg.

In another example, Laramie reflected on a mundane of this sort horizontal learning. In a focus group conversation on how students helped each other, Laramie recalled after some thought:

> I learned JavaScript by watching a video that somebody in the club recommended to me. It was very helpful. Also used Scratch, which recommended by another person. Kudos to them. Oh and I did help someone with something. I taught them how to get the mouse working on the computer… that’s something I guess.

Laramie, a freshman, was new to some of the technology in the space that interested her—particularly the coding required to operationalize the video game she and Mae were codesigning. Several peers recommended tutorials, creating “meshwork” type collaborations, distributed between the material makerspace and the digital (Lizarraga, 2021). In the second part of her remarks, she admits that she too, was a source of knowledge for her peers, even with something as seemingly trivial as helping to figure out how to use a USB mouse. I find these practices vital, a component of communal practices in the loophole of retreat. Mae, seated next to Laramie for this recording, agreed. “That *is* something!” She congratulated Laramie. “You ate!”

In addition to interfacing with the digital to carry out their task, these students' emergent understanding of 3D printing altogether is reliant on the digital; the dissemination of knowledge from one student to the other similarly leaned on the laptop over which the two students leaned. Moreover, James' (2013) cyborg is networked; the rebel intellectual only steps into her true power as she recognizes her sameness with others distributed among internal and external colonies. A fully Cultural Historical Activity Theory (CHAT), a DBR, a sociotechnical lens on these students' activity is ripe; bringing Engstrom (1991, 2011) and Latour (2007) to bear on this conversation could shed light, and is beyond the scope of this dissertation. I say more about how this— and the tradition of connectivism—would offer generative provocations to this work in the Discussion, chapter 7.

5.5 Hewing Homeplace & Designing Futures: Worldmaking in the Loophole of Retreat

In our after-school makerspace, Black youth practiced the cyborg literacy of worldmaking. Worldmaking practices are those through which Black youth can affect the world-- both materially through production and action, as well as symbolically through any number of modes of "writing and rewriting our world" (Stornaiuolo, 2015, p.561). Observed worldmaking practices included designing and programming a video game to educate people about mental health issues; digital art re-storying the school and community; starting a discord channel; networking with other Black tech makerspaces to shape future iterations of our space. Two of these examples-- activity toward making our making space and the development of a video game to educate people about Black youth mental health issues-- are analyzed below, as they reveal the multiple scales at which Black youth engaged in cyborg worldmaking practices. Participants in this study engaged in multiple layers of worldmaking through their literacy practices. These practices ranged from the micro construction of homeplace (hooks, 1990) to macro efforts to

have an impact on the world, “transforming it through conscious, practical work” (Freire, 1987. P. 35). These are cyborg practices that I can trace back to Harriet Jacobs. Participants in this study used the basement rooms to which they had access in the same way as Jacobs used the attic space, marking the world to suit their needs, their agency, their quest for freedom.

Figure 13

Stage One of Vision Boarding: Polaroid Self-Portraits

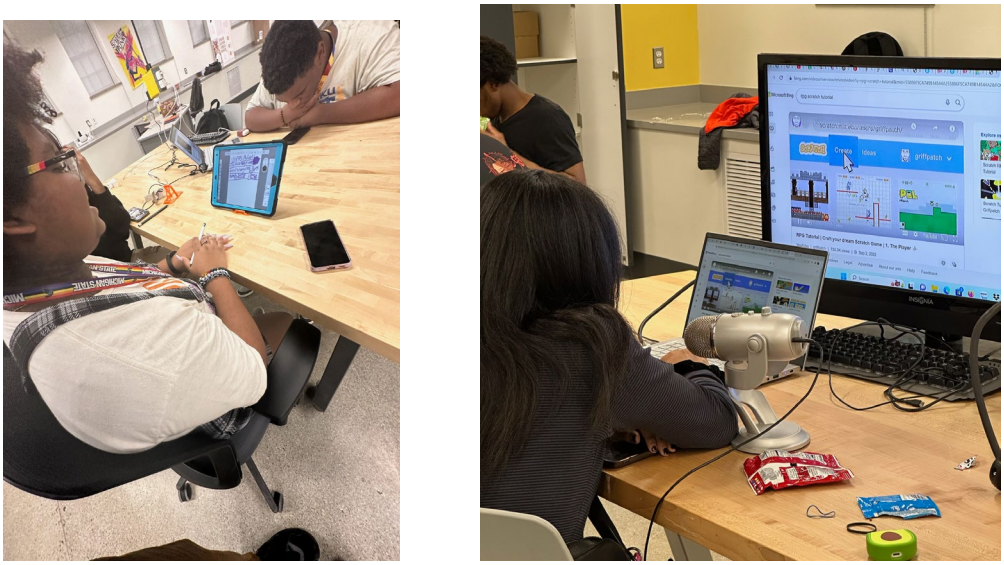
On one level, they contributed actively to creating the loophole of retreat we inhabited. Their attitudes, desires, and needs made our space, since they had the trust to reveal them, and the freedom to act on them. Through their interactions with each other and with the resources available, students engaged in worldmaking; as Goodman (1978) writes, “the making is a remaking” (p.6). Participants used this agency to create a homeplace (hooks, 1990) wherein they can feel whole. Students made requests for LED lights and plants to add to the ambiance of the space, and I purchased them. Students requested more traditional crafting supplies (e.g. markers, paper, paints, canvas, hot glue). They painted portraits of me, each other and of their dreams, then used double-sided tape to place them on the walls. Using the Instamax camera I purchased, students started pinning photos of themselves, each other, the space, and their projects. Their plan was originally to create a vision board, but what they produced was a sort of visitors and

activity log that lives on one of our walls and is updated at students' whim. One student, Austin, started a shared Spotify playlist for our workspace, which was updated remotely by folks as well as on his laptop, which he left open for that purpose. The student-generated playlist spanned genres and generations of Black art, from 70s legends like Parliament-Funkadelic, Stevie Wonder, and Earth, Wind, & Fire, 80s and 90s R&B like Toni Braxton and Dru Hill, and contemporary avant-garde musicians like Childish Gambino, Hiatus Kaiyote, and Tyler the Creator.

As noted in Chapter 4, these worldmaking practices are some of the ways in which these students curated the vibes of the space, spatially, sonically, spiritually. This placemaking included the decor on the walls, the ambiance that students created by dint of our shared playlists, our laughter. More than merely these, however, participants' placemaking-- particularly the girls'-- were efforts to create a homeplace (hooks, 1990), space for affirmations of their Blackness, a place where they could "nurture their spirits" (p. 42). In the long tradition of Black fugitive practice, these students did what Hartman (1997) called "stealing away" to "social space in which the assertion of needs, desires, an counterclaims could be collectively aired, thereby granting property a social life and an arena or shared identification with other slaves" (p. 69). I make no claims that students at TLS are slaves; merely that they live, in that building, on that campus, in their city, and in a nation "in the wake" of slavery (Sharpe, 2016). In turn, after Coles, I read these participants' placemaking as "a fugitive counterpoint to the negative ways Black people are treated in this nation (and in the world)" (Coles, 2021, p. 17). This is to say that students engaged in cyborg worldmaking practices in their efforts to create homeplace, rejecting victimization by creating their loophole of retreat, a Black space, a safe space, a free space.

Figure 14

Designing Virtual Worlds



On another level, participants interfaced with digital technologies to create new and future worlds. Two students created worlds through co-design of a video game" to educate people about mental health issues." This project came to be through music production. Laramie was teaching herself to use an open source production software, and after a few sessions, she had some excerpts to share with the group. One of them was an up-tempo breakbeat with a meandering keyboard melody. Upon hearing it, the group was excited; not only did the excerpt sound good, but it reminded us all of video game music. Mae, who had been working on building a robot with some other students at a different table, skipped over.

"Ooh," she exclaimed, "we should make a video game! Laramie agreed, and they got to it. Mae drew on her previous experience and began teaching Laramie (pictured above, right) how to program a role playing game (RPG) through the open source tool, Scratch; the pair discussed the aims and feel of the game they wanted to make; Mae (pictured above, left) began crystalizing their ideas via an impromptu storyboard.

Through their digital making, these students sought to create a world in which Black folks can live healthier fuller lives. The skill building and dialogical evolution of these students' game making could also fall under the self-making and sensemaking umbrellas as I described them above, as they are examples of what Guterrez (2008) describes as "syncretic" making. However, I want to attend to the ways in which these youth are "imagining themselves in relation to others [and] the world more broadly" via designing and programming this video game (Stornaiuolo, 2015, p. 562). After all, the aim of the game is to educate and raise awareness about issues facing Black youth. These students understand the ways difference manifests for Black youth and seek to intercede in the violence that can happen there. These youth, as they work to build a tool for making the world, exhibit an "understanding [of] the ways the world is broken and how Black people counter such brokenness in their everyday lives (Coles, 2021, p. 17).". This awareness of one's Black self in/as the masses of others who endure antiBlackness is a key feature of Joy James' cyborg rebel intellectual. These students, of their own accord, dreamed of using digital technologies to intercede on behalf of Black folks who they feel are ostracized by society. These students made with a specific impact in mind; other makers in the space did so purely for pleasure.

5.6 Thicc Patrick and the Hello Kitty Army: Joymaking in the Loophole of Retreat

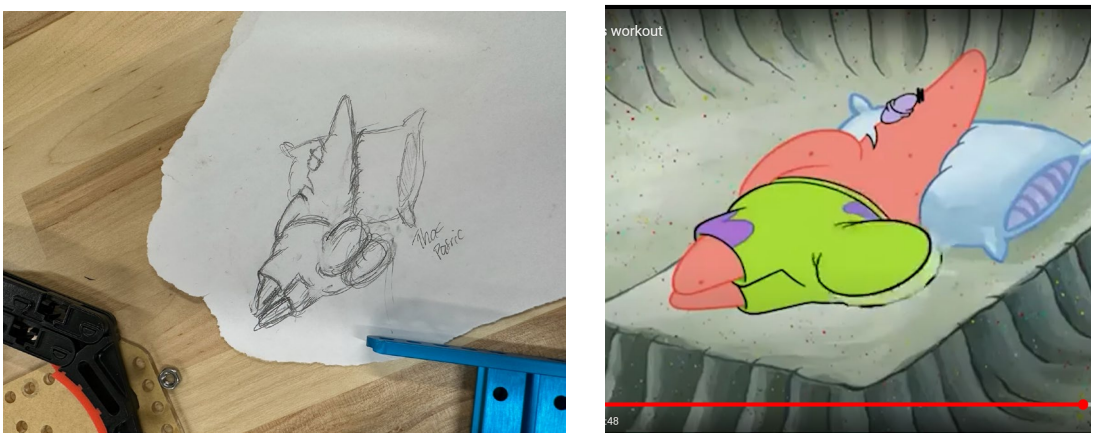
Within our after-school makerspace, Black youth engaged in joymaking practices. Joymaking has a long tradition in Black life. These practices, as opposed to efforts to affect or improve themselves and the world, were intended only for pleasure, for laughter, for fun. Joy is so important to center, especially when it occurs in schools because so often, schools are sites of abjection for Black youth (Muhammad, 2024); much recent education research has explored the school-prison nexus (Meiners, 2011; Sojoyner, 2018). The ways in which schools' explicit

function to socialize future productive citizens are rife with antiBlackness (Dumas & ross, 2016). In recent literature about Black youth and schooling, the need for and benefits of leisure, pleasure, and joy are numerous (Greer et al., 2024; Mims et al 2022; Muhammad, 2024). In our after-school makerspace, Black youth engaged in a range of cyborg joymaking practices. The observed practices included projecting music videos; 3d printing toys and trinkets; photographing impromptu dance parties; drawing digital caricatures; memeing; watching manga; gaming; producing a song using open source software. In what follows, I use two examples--thicc Patrick and a 3D printed Hello Kitty "army" to illuminate how participants' interfaced with the digital to create joy within our loophole of retreat.

Throughout our time together, I often asked participants why they did what they did. My favorite answer was a consistent refrain: "because it's funny." One such example was these sketches of thicc Patrick, which were jotted by several students across notebooks, sketch pads and scrap paper. I include this instance of joyful making because it is only possible because of interaction with the digital. Patrick is an animated pink starfish, sidekick to the titular character in Nickelodeon's SpongeBob SquarePants. The show has a large following among millennial aged folks, as it aired though our adolescence and young adulthood. Through online meme culture, however, SpongeBob lore has gained a second life. Thicc Patrick is one such meme, having re-entered the zeitgeist in 2019; the original animated clip, from an episode called "Krusty Krushers", aired in 2009. In the cartoon, Patrick has so thoroughly exercised his glutes using the "Iron Buns" workout that he can flex them in his sleep, so powerfully that they emit a clapping noise. Perhaps to no surprise, high schoolers find this hilarious; what's interesting is that they had not seen the episode from which the meme originates.

Figure 15

Thicc Patricks



In sketching Patrick's infamous clappers, participants demonstrated complex literacy practices. Students drew Thicc Patrick "because it's funny," but that they know of him without knowing the source material reveals an involvement (or at least exposure to) the digital discourses from which the meme "originates"-- though students report knowing the meme from Instagram, it's 2019 resurgence was based on a twitter post before catapulting through reddit and other online communities, where the aggregators got ahold of it and cemented its omnipresence. There is deep skill to distill an animated clip (wherein Patrick's cheeks are in motion, opening and closing with a distinct sound) into a still image with lines suggesting motion. The artistry notwithstanding, through their reproduction and remixing of the image, these students engage in communal transmedia practices, inviting other participants to recall the meme, recall the discourse, recall other SpongeBob memes, to be in community with them as they share a joke: "lol butts" (Blommaert et al., 2019). More, what appears to be a misspelling of "thick" is another layer of in-group signaling among online communities, where "thicc", like other Black English slang was appropriated and proliferated as part of "internet" and "youth" cultures. Finally, the pencil-on-paper rendering of an online meme illustrates the porous boundaries between "online"

and offline"; in this way and others, what Black youth experience as mediated through technology travels with them away from the keyboard (Russel, 2019). Though their joymaking can be read through these lenses, it's not what participants were "trying" to do. Participants in our space drew Thicc Patrick because it is funny to draw, funny to see, and funny to leave around the room. Perhaps counterintuitively, making to this end is meaningful, as it is rooted in communal mores and practices; making to this end is consequential because it matters that Black youth have opportunities to be youth (Calabrese Barton & Tan, 2018); in word that continuously adultifies them and their actions, where their jouissance is always already overpoliced (Brock, 2018), joymaking is a cyborg literacy for psychic survival. Participants drew on animated digital media as sources of joy through their 3D printing practices as well.

Participants used 3D prints to make joy in our after-school makerspace. 3D printing was one of the activities students were most excited to engage in. In learning the software and hardware involved with 3D printing, they made some utilitarian objects, like phone stands and Airpod holders; two students and I conspired, wickedly, on a "Game of Thrones" "Hodor" doorstop, which tickled us pink. Students also made all manner of toys and trinkets, from keychains to fidget spinners, to this next object of analysis, an "army" of Hello Kitty's.

Figure 16

The Hello Kitty Army

Another instance of youth transmedia authoring, the Hello Kitty army was the brainchild of Sasha, one of the robotics team members. Her uses of the 3D printer varied from coach-recommended skill building challenges in TinkerCAD to the Carbon X1's built-in plans for a phone stand, to an open source Indy car, a solid "gold" Prince insignia for her dad, and these gals— twenty four two-inch emblems of joyous Black girlhood.

Through printing the Hello Kitty army, Sasha embodied cyborg joymaking through her joyous Black girlhood. She said she printed these for two reasons: because they were cute and to give them to her favorite folks around school, teachers and students alike. They caused quite a stir in the hour and change it took them to print; A chorus of "aww!"s and "can I have one?"s effused from the crowd of participants (mostly girls) that gathered around Sasha as she peeled the army from the cooling plate, one by one. A couple of the trinkets broke as she removed them, heads popping off from the bodies; a couple more broke when they were dropped on the table or floor, torsos skittering. Some students, looking closely, commented that the dolls look spooky— the eyes too far apart and fixed in a thousand-yard stare. Sasha didn't care. It didn't matter that

the quality of the item was lower than expected. Ater relinquishing a couple to some friends in our makerspace, she scooped the remnants of the Hello Kitty Army into her bag and ran off to deliver them around the school. The Hello Kitty Army was frivolous, poor quality, and not that cute up close, but as a source of joy for these Black youth, the making of them is deeply consequential.

This joymaking, like sketching thicc Patrick, deviates from some notions of what making is "supposed to be;" the only intervention students endeavor to make is pleasure for themselves and their community; this hedonistic use of technology is cyborg (Maines, 2009). In using our space for pleasure, for joy, Black youth are authoring counterstories about what consequential making can be. This attendance to joymaking is a rejection of the deficit narratives that suffuse discourses about education wherein Black youth and their communities need saving, need training, must intervene in pursuit of an equitable share in the bounties of liberal democracy (Love, 2019). Reflecting on the findings from Chapter 4, I can see connections between the design principles of the space and students' joymaking.

Our design principles-- namely Joy and the student-generated "Faaji"-- afforded participants the self-determination and proper vibes for this kind of multimodal transmedia joymaking. They knew the space was one where something so frivolous and distracting as the waving cheeks of an anthropomorphic starfish or as wasteful as a horde of open-source two-inch tickets was celebrated, let alone tolerated. Sure, through "play" and the remixing that it affords, youth can develop critical thinking, digital media, and other traditional literacies (Davis et al., 2021; Gee, 2003). More, some of the lesser quality cartoonists may have benefited from their sketching of Patrick; Sasha may have crystallized a design skill she was already fluent in, may have piqued another participants interest or modeled discrete technical knowhow in the Bambu

app on her phone. This would be terrific, and in line with what research has shown us is an outcome of STEM-rich making spaces. I wonder if it is not equally important that Black youth play for the sake of playing. Making joy in this world, under these conditions is a Black cyborg literacy; making through digital discourses and technologies are cyborg practices. In the discussion chapter that follows the findings chapters, I say more about how educators and practitioners ought to privilege "Faaji" in the design of learning experiences. Joymaking is a rejection of victimization (James, 2012); as such, it is linked closely with the last facet of cyborg literacies: refusal.

5.7 "Iono… I ain't feel like doing it": Refusal in the Loophole of Retreat

In our after-school makerspace, Black youth engaged in cyborg practices of refusal. Black practices of refusal span from to rejecting victimization and abjection necessitated by Western liberal democracy (James, 2013). They are practices Black folks in America have used to carve spaces for themselves, physically and psychically, since there have been Black folks in America (Roberts, 2015). In our makerspace, I observed cyborg refusal practices such as discussing plans to skip an assignment, a class, or school altogether on Discord; "escaping" into VR; and nonparticipation in school events, including our makerspace's planned projects. Two of these practices are particularly insightful examples to explicate: nonparticipation and rejection of antiBlackness in their school experiences. Through these practices, Black youth exercised cyborg literacies in pursuit of freedom.

Black youth in our after-school makerspace engaged in practices of nonparticipation. This nonparticipation ranged in impetus and scope. In the most micro sense, participants engaged in small refusals related to my data collection efforts, even after consent and assent procedures and through member checking conversations about the project's aims, my inklings, and

preliminary findings, conversations during which they were active participants. For instance, every day, we followed the same check in procedures—a QR code on a tablet on a table by the door launched a google survey with a few questions about their day, their preferences, their visions for the future. I have gone so far as to make a check in reminder announcement (replete with the eye contact and thumbs up/head nod that educators pretend means acquiescence) then observed a participant stand by the QR tablet while their peers checked in, and never move their phone. A few who I asked individually to complete it pretend to scan the QR, only to go back to their conversations without completing it; one time, I asked why this student did this. "Iono," he shrugged, sheepish. "I ain't feel like doing it." This kind of refusal shaped the activity of the space as well. It is not malicious; it is an expression of agency, one that I tried to hear and respect. This refusal extended to the uses of the space more broadly.

Participants engaged in practices of refusal as they engaged with the technology tools in our after-school makerspace. Though this was not a YPAR or SDE project, I wanted to give students an opportunity to intervene in their schools and communities. As we got comfortable with each other and the technology tools on hand, I led students through discussions about issues and frustrations they have at school and in their lives, about things they wish they could change in their day-to-day experiences, about what they would do if they could change the world**.** I offered examples of ways folks were using digital tools to investigate and speak out, like 360 cameras and Airtags to document police activity and grocery store locations or podcasts for critiquing racist and sexist policy. But as I pivoted to trying to guide students through operationalizing the changes they wanted to see in the world, they lost interest. As noted in chapter 4, the learning ecology of Lindendale afforded students opportunities to do this kind of design thinking during school hours. So, heads dipped toward phones. Side conversations

bubbled up. With the temperature of the group thus established, I thanked them and moved the whiteboard out of the way. The group dispersed, and I pouted for a minute. Then students went back to doing what they were already doing in our makerspace-- digital art, music production, building a robot, coding, shooting the shit, debriefing the day, fighting Zombies in VR. Participants (gently) refused my aims to direct their making, and exercised their agency. This refusal— this self-determination vis-a-vis the "appropriate" uses of technology in our space— is cyborg. Participants reiterated, in voice and action, that what they desired was a place where they can, as one student described, "be myself and not have to worry about doing anything." In these moments, participants embody the practices that make this space a loophole of retreat.

The data suggests that to some participants, school already feels like a place where they cannot do what they want or be who they want. TLS offers students more choice than they would get otherwise, especially in comparison to other Midwest City schools; Mae noted that "there are more than just sports. I can be more creative. There's this club, there's robotics. Like what if someone doesn't like sports; you gotta be more creative, more diverse, like this is." But options for student agency within the school are limited by its very function. Attendance is compulsory. Refusing assignments has repercussions. In the same breath as participants note the existence of the school's Social justice and STEM curricula, they note its shortcomings. During in-class STEM work, Mae noted that "we never got to do what we wanted; it was always something for the district." Similarly, reflecting on the social justice curriculum, Deja recalled that "yeah, we have community-based projects, but they're not for community, they're assignments." Mae cosigned: "and they never go anywhere. It's just like 'ok think about this.. blah blah… make a prototype… ok that's done." None of this is the school's fault; it is a school: equity, excellence, participation-cum-individual responsibility are the coins of the realm. (Sojoyner, 2018). As noted

in Chapter 4, students felt unheard, disenfranchised during their school day. Often, they leveraged refusal. In our time together, students offered a laundry list of ways they engaged in what Campt (2017) called "creative practices of refusal—nimble and strategic practices that undermine the categories of the dominant" (p. 32). Ella quit the student council. Deja refused induction into the National Honor Society. These girls and others noted a faked participation in the restorative circles that administration implemented to attend to discipline issues (despite which students were still removed from class and school for infractions; after one such experience, called the school's social justice values into question: "if you're going to just call the cops on us for acting up, this might as well be Bancroft"—the failing, overpoliced Midwest City school with which the magnet TLS shares a postal code and from which it draws students) (Wilson, 2020). This dissembling, too, is Black practice of refusal.

Figure 17

Boolin, As One Does

Even though my visions for how students might use technology tools would, I thought, help them build literacy skills, they rejected them in lieu of literally anything else (through the course of which, as I've indicated throughout this chapter, they built literacy skills). The data is clear: students came to our space because it was one where they could exercise their agency--

they could refuse— without consequence. This freedom, in turn, spurred activity. As one student wrote about what they enjoyed about attending our space: “I don’t feel like I’m obligated to do anything in here, which makes me WANT to do stuff” (emphasis in original). Participants’ refusals made our makerspace one where their time, their effort, and their labor was theirs to control.

To conclude this findings chapter, I return to the vignette that began it.

On any given day, conversations evolve among the 12 of us, these 11 underclassmen and me. Today we’ve returned to a common refrain: injustices students experience in school. I try to understand where they’re coming from, and they reassert what they’ve observed and experienced. X teacher is overworked but solid, Y teacher really cares, and Z teacher is racist. Older students confirm, relating their experiences with X,Y, and Z. Now, two girls, both juniors, have shifted their unit of analysis from individual teachers to administration.

“No,” Deja says, adjusting her glasses. “Because I feel like I got catfished by this school.”

“But forreal,” Ella assents.

“Like, this is supposed to be this STEM school, but all they have is engineering. I mean technically there’s robotics,” Deja concedes, gesturing to the cohort of robotics team members in earshot. “But that’s after school, and I’m already doing academic games and student council. I don’t have time for all that.”

“They been been breaking promises. Ever since 9th grade, when they said we could design the campus, Ella cosigns. “What happened to that? And when I bring it up, they get mad. That’s why they’re always in my business now. They treat you like a rebel when you speak out.”

Behind her, James summits Everest in a Quest 3 headset. Erik and Sasha are taking selfies and portraits for the vision board with the Instamax. I welcome a new visitor; she came

after chess practice and is too busy to join us, but she heard about the club from a Mae and wanted to come check it out; Mae, bored with "Fridays at Freddy's" by now, has leapt over, beaming, to pull her friend by the hand to Makeblock robot. There, she explains, she's tinkering with the motor controllers to see if a crossed wire is behind the bot's wayward movement.

Their polaroids develop; their sketches take shape. Conversation evolves, students describe various moments when they were let down by the school or left unprotected. The girls reflect on a spate of inappropriate behavior by a boy in the school who has since graduated. "And after all that," Deja concludes," they just put him in a different class, so he could sexually harass more people!" The group shakes heads and sucks teeth in disapproval.

"Wow," I manage.

"I've never said that to anyone before," she adds. "Thanks for actually listening to us. I like it down here."

I return to this vignette because it encapsulates the gamut of cyborg literacy practices that were analyzed with this chapter. In this vignette, Black youth have made a world wherein they can be the selves that they are hewing anew with every utterance. They cackle and dance and shriek in "Faaji", the pleasure of being together. In this moment they have eschewed the digital tools around them to make sense of their experiences as students; they are leveraging the technology of their loophole of retreat to do dark sousveillance (Browne, 2015). These agentic orientations to technology and to the antiBlack world in which they live are cyborg literacies (Haraway, 1985; James, 2012). Deja and Ella in particular used moments like this to sensemake about their experiences of misogynoir; one of the uses of this loophole of retreat, like has been done by Black women throughout history, is to surface the ways the technes of race and gender shape their experiences (Jacobs, 1861; hooks, 1990; Maynard, 2018). They engage in refusal as

Tina Campt (2017) defines it: “a rejection of the status quo as liveable and the creation of possibility in the face of negation, i.e. a refusal to recognize a system that renders you fundamentally illegible and unintelligible” (p. 83). These girls' commentary reveals the gap between the expectations they have for a safe learning environment, and what their school is able to provide, despite its lofty aims for restorative and reparative modes of addressing student behavior, STEM learning, and social justice values.

After Hartman (2019), I argue that these findings show young Black “radical thinkers who tirelessly imagined other ways to live and never failed to consider how the world must be otherwise” (p. xv). With these mundane practices, students reject their powerlessness, their abjection. They reject deficit-laden gazes; the after-school makerspace was just another place— perhaps the safest place— for them to do so. In the next chapter, I examine case interviews from two students within our makerspace to consider the influences that shape their activity in our loophole of retreat and insights they share about the space, about digital technologies, and about the future. In the discussion that follows the findings chapters, I consider what’s at stake for educators making Black making spaces.

Chapter 6 Findings: "Hitler" Or "Henceforward: Influences And Insights From Two Rebel Intellectuals

"she dreams of possibility from within impossible

strictures of enclosure and confinement /

her escape is immanent, as her imagination is boundless

(Campt 2019, p. 2)

In the previous chapter I shared some of the cyborg literacy practices that youth took up in our makerspace this fall. In that chapter, I reported on the cyborg literacy practices of a breadth of students. In an effort to tell a more complete story about the students, I selected two case studies for examination. In what follows I share more details about two Black cyborgs, Erik and Ella. Based on ethnographic observation of students practices within the loophole of retreat and analysis of longer case interviews, I continue to explore the assemblage of histories and relations that shaped our makerspace. I do so by attending to some of the influences that shaped their activity, and insights from the students themselves. In both of these case interviews—as well as the larger cohort of participants— student verbally described and produced work artifacts that signaled the influences that shaped their relationships to digital technologies; these influences span students' home lives, in-school experiences, and online experiences. Similarly, in both the case interviews and the broader group of students, verbal exchanges and work products illuminated insights that these Black cyborgs have about our makerspace, about

technology and its uses, and about the future. For narrative purposes, I'll attend to each of these cases individually as I describe their influences. Then, to conclude the chapter, I bring the two cases in conversation and indicate the ways in which the insights they shared are representative of the broader set of participants in the dissertation. The chapter concludes with a rumination on the role and effectiveness of Erik's and Ella's refusals, locally in our loophole of retreat and in their lives more broadly. Table 5 provides a snapshot of these. I begin with some introductions.

Table 6

Influences and Insights from Two Rebel Intellectuals

Theme	Subtheme	Examples
Influences		
	At home	"My father is a big nerd, like me" -Erik
	At school	"If you speak your mind, they'll target you."-Ella
	Online	"I just screenshotted it [...] as evidence, because I'm not about to delete that. […] And I came to her with it. I was like 'Oh so you're talking all this stuff on Instagram, what's up now?" -Ella
Insights		
	About our makerspace	"I really likes coming here because I don't have to change myself to make anyone ese feel comfortable." -Laramie
	About technology	""Especially with technology. […] I feel like if, sometimes if people take a step back and realize that,

		yes this [technology] is pleasurable, [...] but you gotta realize that the cons outweigh the pros" -Eril
	About the future	"we have for the longest time been warned about climate change and whatnot. If [in the future] we're still ignoring that, I fear that we won't face climate change, like the fear that the world would probably be likened to a state of irreparability. That scares me; it's like, a looming threat over my head. I wish I could make people think like me and hold themselves and the world a little more responsibly
Refusals		"That's what they don't understand, dog. Like, I do not care. Like, I do not give a FUCK." -Ella

6.1 Introducing Erik

Erik is a junior at TLS. He strives to be great in school and out of school, pursuing the best grades, the highest PSAT score, a higher class rank. He was appointed captain of the school FIRST robotics team by his peers. He shows up early and stays late to Robotics events, and expresses a commitment to the team and its success; he's a stalwart at offseason, weekend, and summer events, volunteering, mentoring, fixing. Erik gets adultified because of his stature, despite the peachfuzz; He's 6'2 with broad shoulders, made even taller by a foot of twist-out that cascades from his scalp. Erik seems comfortable with silence. He speaks quickly and quietly when he does, zinging deadpan one-liners. He can seem self possessed, self aware. He has a clear vision of who he is and what he wants to do with his life and why. If I ever forgot his age I'd be

reminded by the boyish performances of strength-- Erik is always picking somebody up-- and his commitment to trolling anyone at any time for anything.

Erik is selfless, passionate. I chose Erik as a case because of his deep affinity for technology and his explicit desires to use our makerspace as a way to experiment with tools and build skills— skills he can use in the upcoming FIRST robotics season, skills he can use to pursue his hobbies, skills with which he can be more prepared for college and a career as an electrical engineer. About half of the study's participants were on the robotics team and used the makerspace as a chance to enrich skills pursuant of their team's goals. As such, he represents one end of the spectrum of students who participated in the study. Moreover, his consistent presence and commitment to supporting other students' learning made him a leader in the space with an outsized impact that shaped the way others engaged. To boot, I admire him.

6.1.1 At Home

In their case interviews, Erik describes the ways technology is used at home. Erik's father's collection of digital tools for their house includes an array of digital artifacts--computers, laptops, VR, gaming consoles, etc.-- and his father models the agentic use of them. Erik says that while he's more tech savvy than his mother, "[his] father is a big nerd like [him]," knowledgeable about how to use and repair technology. When it comes to newer and future technologies, however, Erik's robotics experience and curiosity about the frontier of consumer technologies gives him a perceived edge over his father in terms of tech savviness.

Erik's parents' understanding of the purposes and uses of technology also influence them. Erik's father encourages him to achieve through academics-- specifically, Erik has been exposed to and encouraged to pursue STEM careers since middle school. He dreams of attending an elite

college and being a computer scientist or mechanical engineer. Erik therefore sees school as a vehicle for achieving that success.

Erik's at-home experiences shape how he engage in the school building, including out of school activities and among these, our after-school makerspace. After Gonzalez and Moll (2001), I consider these funds of knowledge-- experiences, skills, understandings from outside of school youth bring to bear on the in-school selves they construct. These funds of knowledge shaped students' desires for the space, shaped their relationships to technology, to school. For example, the difference in their parents' uses of technology at home might shape how these two students seek to develop tech literacy or not. To that end, these at-home engagements with parents and technology are apprenticeship models (Lewis, 2014) that guide how Erik approaches technology tools. Just as students at home lives shaped their activity in our makerspace, so too did their in-school experiences.

6.1.2 At School

Erik's relationship to the digital and to our makerspace was also influenced by his experiences in the learning ecology of The Lindendale School. Erik describes his experiences in school as "mostly positive." He mentions his teachers as parts of that positive experience, as well as the opportunity to learn from like-minded peers as the major draws of the school. He notes feeling frustrated by a perceived lack of STEM class offerings. Classwork, too, is "tedious and monotonous, sometimes;" is "a lot. It's very tiresome to do," which leads him to feeling that the school is "like jail." Due to the loss of a last year's robotics teacher, the lack of a physics course, for instance, or the slow pace of the computer science class, he finds himself using "YouTube university" to supplement his learning about programming languages and technological innovations. Erik is also a mechanical lead on the school 's FIRST robotics team. The

competitive nature of FIRST robotics' complex design challenges (and the ways FIRST brands itself as college and job training) keep him inspired. He's a stalwart at these practices, often the first to arrive and the last to leave. The kid lives TLS robotics, and it's adorable. The team is a "second family [...] a home away from home" for Erik. He loves going to competitions against whiter, richer schools around the state and having the opportunity and "responsibility" of "representing [this city] in the best way I can possibly represent it." Erik is committed to living in pursuit of his passions; so doing, he embodies a subjectivity that exceeds what the white imagination expects of him, his school, his city (Hines et al., 2024). This too is a refusal, a rejection of dominant narratives of Blackness.

6.1.3 Online

Erik's online experiences influenced his relationship to our after-school makerspace. Like many people his age, Erik uses a suite of social media and other digital apps as part of his everyday life (Ito et al., 2010). Erik describes how he uses YouTube to keep up to date with the cutting edge of consumer technologies and the discourses around them:

> This is one podcast I watched from Marquis Brownlee, he's a big youtuber right now. And he has this podcast called waveform where he sits down and talks to his friends about the newest technology. like, for example, when Apple first released their M3 chips, they sat down and talked about "hmm, should you like, get an M3? What if you have an M2?" And whatnot.

Erik uses his online activity to deepen knowledge in his interests, and connect with like-minded peers, like many youth. In addition to gaining information about new technologies from YouTube, Erik is also able to see his future self represented there. Lewis Ellison (2014) describes the kinds of hybrid online/offline projective identities that Black boys create through

their interactions with digital technologies. In Marquis Brownlee, Erik sees a successful Black technologist. Coupled with his father at home, and his robotics coaches at school, Erik has plenty of examples of Black male technologists, templates against which he can trace himself in his self authoring. This combination of digital and analog aspirational and informational sources creates otherwise unknowable versions of Black youths' future selves. As I'll described in Chapter 5, this shaped the way Erik and other Black boys used the after school space. I haven't yet watched Brownlee's content, so I can't offer analysis of his content. I personally wonder about the ways advertising is shaping knowledge production vis a vis influencing and the ways all that is wrapped up not only in the labor of Black youth under platform capitalism (McMillan Cottom, 2018), but the ways youth understand themselves and society in relation to technology.

These influences-- at home, at school, online-- shaped how students used our makerspace. First, students' at-home influences shape how students use our after-school space. For example, Erik's orientation toward technology— his digital literacy— was shaped by the notion that tech knowledge could be acquired and used to advance his educational and career goals-- an idea that comes from his father. For him, using technology is already related to labor; coupled with his robotics experience, this led Erik endeavoring to build discrete skills with specific goals: CAD for robotics, computer vision programming for career aspirations. When he wasn't doing these things, he was being a source of knowledge for students. He lists helping others with programming, CAD, and VR as one of the things he most enjoyed about our time together.

Erik's in-school experiences also shaped the way students used our after-school makerspace. As noted in Chapter 4, the learning ecology of the school had an impact on the kinds of activity students took up. The project-based learning around which the school's STEM

and social justice curricula are designed seemed to satisfy what need students may have felt to use our makerspace and its technology to intervene in their school or community; students were free to use their time however they say fit, in accordance with our design principles. For Erik, this could have meant deeper dives into specific projects that he started in school or robotics; he did some of the latter, particularly in the first few weeks of our time together. However, as time passed, Erik deigned instead to step into an advisory role-- he saw the potential of the makerspace as a place for students to express themselves freely while building literacy skills and wanted to support its function and their development. He noted not only how "very stoked to be here" he was, but how enjoyable it is to teach other students, how he "[loves] coming here to see how the place has improved. Like, how has it gotten better since yesterday." This commitment to the collective is a characteristic of the rebel intellectual, the Black cyborg (James, 2013). I say more about the ways in which Erik sees himself in James' theory to conclude this chapter.

As opposed to stricter, structured ways that he works on projects in school and at robotics, Erik reveled in the freedom of the makerspace: " I feel like there's like stuff I still didn't get around to doing or finishing, like the vision board or the mural, but I feel like having unfinished projects to me is okay, because that makes me super excited to come back next year to finish and start even new, better stuff. And I'll do it more efficiently, because I know how to navigate around defending it and using it more the second time around." This quote illuminates how Erik experienced self-determination in the makerspace (Player et al., 2020). Because there were no grades, no expectations for completion or compulsory activity, he can follow his desires and interests as they meander day-to-day. Designing for this kind of flexibility opened doors for students to be and do in way that they otherwise would not be able to in a school building. Sometimes, the hybrid space we created was used as a means to activate content specific

literacies (Moje et al., 2004) like computer science, design, and other STEM skills. However for Erik, the makerspace became a Black space for him to "chill" while supporting his peers' literacy development, and playing with them to boot.

Students' online activity shaped how they deigned to use their time in our after-school space. This is the case in addition to the everyday ways in which they used their smartphones for sociality. For instance, for Erik, Ella, and others in the space, digital games were a common pastime. Students who played video and computer games had a penchant for immersing themselves in them; students described not only playing a game (e.g. Super Smash Bros, Fortnite, or Roblox) individually and together, but watching competitive tournaments and walkthroughs, interacting with favorite streamers. Our space did not have any pure gaming consoles that students had at home, such as Xbox, PlayStation 4 or PlayStation 5, and our laptops lacked the processing and graphic specifications to be any use for gaming. However, students engaged in these peripheral, participatory and discursive activities around video games in our space, debating preferred characters and techniques, recalling the history and evolution of their favorite games. A few students brought in their Nintendo Switch consoles when merely arguing about who was the superior player grew boring. These gaming activities were a great source of joy for participants, and for a few, like Erik, it was closely related to developing understandings of hardware specifications and sensemaking around the relative capabilities of various consoles. Erik's interest in discussing the specifications and capabilities of emergent technologies carried into our space. He and another participant, Marcus, often led these discussions. They were able to recite information about various chips and processors, able to explain, in lay terms, how differences between them materialized in gameplay. Beyond just gaming technology, the pair scoured the internet for interesting tidbits. During a discussion of the capabilities of the Bambu

X1s in our lab, the pair whipped their phones out to pull up competitors specs and show me the next tool I should acquire for the space-- cutting edge hand-held 3D printers that extrude filament like ink, allowing artists to "draw" in 3d. On their phones, sitting on either side of me, they pulled up diagrams, prototypes, time lapse videos and a range of manufacturers to compare price, quality, mechanics, and limitations of the machines. "This, right here, is the future," Erik told me. And I'm inclined to believe him. These students have unique perspectives on what the future can look like, based on their expertise and lived cyborg experience.

6.2 Meet Ella

Ella is also a junior at TLS. Ella cannot wait to graduate, to be free of this school which she says has "catfished" her. Ella accumulated enough credits to have graduated this year, but was not allowed to take two science courses in the same year. She resents the school for this, among other reasons. Among these other reasons, Ella believes she's being targeted with surveillance and discipline since she staged a student walkout her freshman year. She feels teachers and administrators at the school "body shame" her and other "thick" Black girls, for wearing the same outfits as their slimmer peers. Ella was one of the Junior class representatives until she quit in November because of perceived disrespect. She is a self-described "rebel," unafraid to implicate individual teachers, school administrators and/or county officials for their roles in shaping a learning environment for her that has at times been frustrating, stifling, and unsafe. She cares deeply about what's happening to her. I've heard Ella and other students wrestling with the implication that they are supposed to be appreciative of Lindendale even though their experiences have been suboptimal. As opposed to many of her classmates though, Ella keeps the administration's feet to the fire.

Ella is brilliant, caring, curious, daring. She regards her besties with hugs, her peers with firm daps and everyone with some shit talking and firm boundaries. Her laugh lights up the room. I chose Ella as a case because of her commitment to use the makerspace like Simone de Beauvoir at the salon. Though she was excited to learn to 3D print, to create art, to conduct interviews, her energy was most often spent in relation to her peers or in critique of her school and of schooling more broadly; these are the ends to which she made and imaged in our space. Moreover, I selected Ella because her outspoken nature and consistent attendance made her a leader in the space, shaping conversations and ethos alike. Ella represents another end on the spectrum of students in our makerspace, those who came to see about new technology but stayed because they were accepted wholly. Finally, I selected Ella because I admire her.

6.2.1 At Home

In their case interviews, Erik and Ella describe the ways that they used technology at home. Ella gushed about her dad's digital literacy, calling him " a computer genius [...] he] loves computers." She sees herself as less technology literate than him because she's seen his expertise at managing the wiring of their TV and surround sound systems. Participants' parents' understanding of the purposes and uses of technology also influence them. Ella remarked in her interview and on other occasions that her father encourages her to stand up for herself. She described several occasions where his recommendation for her to solve a conflict was to fight. Where she's being wronged by those with power, his advice remains the same. This parental influence inflects how Ella views school and how she approaches interpersonal conflicts there. She primarily views school as an obstacle to overcome, a temporal roadblock between her and the rest of her life. Ella has rejected the idea of four-year colleges, wondering, "why would I be broke for four years just to graduate and not have a job?" She plans instead to follow her

boyfriend to the armed forces-- the Air Force for her; he is a Marine-- so she can start making money, and then to become a therapist. Like all students, Ella's home life influences how she shows up elsewhere, including in our makerspace. As I'll say later in this chapter, Ella learns much about what it means to stand up for herself from her father. Just as these students at home lives shaped their activity in our makerspace, so too did their in-school lives.

6.2.2 At School

Ella's relationship to the digital and to our makerspace was also influenced by their experiences in school. Ella describes her experiences at school as mostly negative. She has a laundry list of grievances with the school's curricular offerings, policy, and leadership. She notes curricular frustrations she has faced in her three years at the high school. First of all, she's ready to graduate. By her calculations, she has accumulated enough courses to graduate early, this year, as a junior, but she won't be allowed to because she can only take one language arts class per year. Further, she feels like the school's STEM offerings have been limited-- especially with the attrition of beloved Robotics and math teachers in the last year. When pressed, she admits that it isn't all bad-- that some of the teachers are good at their job and care about their students. She describes favorites and memorable "interactive" assignments, like a mock trial that accompanied her Language Arts class's reading of Octavia Butler's *Kindred*. Like most of the study's participants, she is active in extra-curriculars, participating in the school's competitive quiz team and a club for "Empowering Black women. Or women in general." Ella's biggest frustration is the way she has been typecast as a rebel. Ella has been outspoken about how she thinks her education should work, and has been so all three years of her career. In a previous year she staged a whole-school walkout to demand locking doors after the school experienced a gun scare. She wouldn't recommend others be so outspoken; in her experience, "If you speak your

mind, they'll target you." Ella describes a disproportionality in the schools response; another student, an older boy, also vocally in support of the action, didn't face scrutiny or negative attention from the school. In fact, she says, "they put a [superlative] category trying to be funny in the yearbook, and put him. That's crazy."

None of this has stopped her from speaking truth to power. "That's what they don't understand, dog. Like, I do not care. Like, I do not give a FUCK." Which is to say, Ella gives so many fucks about ensuring that her educational experiences serve her that she is willing to suffer the consequences for standing on principles on and offline. These are risks Black girls and women often take to affect change in their schools and lives (Leigh Kelly, 2018**)** this activity and its ethos are staples in Black women's intellectual tradition. I read Ella's respectability-free critiques of the ways power is leveraged as a permutation of Brittany Cooper's (2016) crunk feminism. Ella intuitively understands what Audre Lorde (1981) identifies as the uses of anger; among them: "the basic and radical alteration in those assumptions underlining our lives," which for her, includes stifling her elf expression, policing her body, and constraining her agency. She brings this intensity to her interpersonal relationships as well; much of this relationship management happens online.

Ella's in-school experiences particularly shaped how she leveraged the affordances of our after-school space. Many days, Ella and her peers used the space the same way Simone de Beauvoir and her contemporaries used the drawing rooms of the Parisian aristocracy: they held a salon. For Ella and other students, the makerspace was a space to speak freely as they decompressed from the day and to digest their experiences. They engaged in cyborg literacy: communal sensemaking-- telling anecdotes, verifying the appropriateness of individual and institutional behavior, seeking and giving advice— over light snacks. Students' use of this space

once again illustrates its function as a loophole of retreat; though physically still located in the school, they felt the makerspace was a safe place for them to do this thinking, this dreaming of how things could be better, this conspiring against the forces that they feel have constrained their freedom. After Tina Campt (2019) I read these Black girls' activity as within our loophole of retreat at that which "extends ongoing dialogues, creates new relations, and nurtures our collective intellectual and creative labor. It is a retreat that continues the legacy of Jacobs in stealing away and anticipating freedom in the confines of enclosure. It is a gathering and assembling that attends to urgent questions" (p. 2). Like the assembly of Black women intellectuals who gathered on the Guggenheim's dime to celebrate and serve as interlocutors for Simone Leigh's artwork, these Black girls engaged in collective sensemaking in pursuit of a more just world.

6.2.3 Online

Ella's online lives influenced her relationship to our after-school makerspace. Like many people their age, these students use a suite of social media and other digital apps as part of their everyday life (Ito et al., 2010). They use these apps to keep in touch with friends. For example, Ella lists her phone as the primary way she uses technology. "Outside of school, I use my phone to talk to my boyfriend." Ella uses digital technology mainly to manage relationships, with family, with her boyfriend, with friends. She has experienced cyberbullying and also been accused of it, but she's adamant that she "just be joking". When she's serious, though, she is a "cyber expert"-- especially when exposing people's bad behavior. Many Black youth-- girls in particular-- are skilled in this sort of activity. In a 2017 Harvey and Ringrose study of Black London youth, researchers describe how girls use social media to point out bad behavior and hold people accountable for it. Ella, like these Black high schoolers, also leverages her

networked sociality to verify online performances with folks IRL. For instance, a schoolmate was publicly questioning Ella's fidelity in relationships on Instagram, Ella didn't respond virtually, but moved the conversation offline. "I just screenshotted it [...] as evidence, because I'm not about to delete that," she told me. "And I came to her with it. I was like 'Oh so you're talking all this stuff on Instagram, what's up now?'" This interaction is another one of the ways that online life is "real" for Black youth; their digital selves are extensions of self-- virtual prostheses. Cyborg, Ella and other Black youth exercise agency that is mutually constituted online and offline, fully aware that what one does digitally has impacts in their material world (boyd, 2008; Vickery, 2015). They read and act in their worlds accordingly. Ella and other participants in this study had this complex understanding of using their prosthetic virtual selves—this cyborg literacy—before they walked into our doors. These ways of being online and off shaped students' activity in our makerspace.

These influences— at home, at school, online— shaped how students used our makerspace. Ella's activity, too, was shaped by factors at home. Although she used the tech tools in our space when she felt like it—3D printing interested her, in particular—Ella was not compelled to build particular skills there. She was "content" with her level of digital literacy. She instead spent her time engaging in sensemaking about her experiences in school and managing sociality; both of these, in the cyborg fashion employed by Black youth, were managed through her smartphone and its accompanying ecosystem of apps. In the next section of this chapter, I share some of the insights that Erik and Ella shared during their interviews, insights about technology, about the future, about the loophole of retreat in which they participated this fall.

6.3 "Hitler" (Ella, 2023) or "Henceforward" (Fanon, 1963): Insights from Rebel Intellectuals in a Loophole of Retreat

Throughout our time together, including during these in-depth case interviews, Erik and Ella shared many insights about their experiences, about what they thought was going on in our space, in their schools, and in their lives. Like Coles (2020), I'm inclined to trust these students to be experts in their own experiences, to tell me what it means to be Black in the spaces they inhabit how they see themselves now and in the future. In this section of this chapter, I share some of their insights about the future, about the uses of technology, and about our makerspace. About the future.

In our interviews, Erik and Ella shared their insights about what the future will look like. These visions spanned their personal futures as well as the futures of their city and the world at large. I asked them about the future generally, then asked for two specific time markers: 10 years and 100 years from now. Their answers show an awareness of the ways structural and global factors impact them at a local level, how race and capitalism are imbricated-- a critical consciousness (Freire, 1976); their answers reveal how their participation in our loophole of retreat opens up radical possibility for "henceforward," a future where "the interests of one will be the interests will be the interests of all" (Fanon, 1963, p. 132). In their views of the future, Erik and Ella demonstrate a radical Black imagination, a capacity for freedom dreaming (Kelley, 2002) about how their world can be better and what agencies they can marshal to affect it in positive ways.

In her personal future, Ella's plan is crystal clear. Priority number one: graduating and getting back to her man. Her ten-year plan involves "settling down" with him after an eight-year Air Force contract, to "just chill." As mentioned earlier, Ella has rejected the expectation that she

attend a four-year university after graduation, citing economics and the way she was treated by white folks when school programs took her and her peers to visit different campuses. Her experiences with schooling as a Black girl shape her desires in this regard. Farther in the future, Ella expects the divestment in her city to continue. When I asked her what the future looks like in her city, she imagined there would be "a lot of flooding". She suspects that the same infrastructural failures that led to flooding of area roads and homes over the last few years will only worsen as time passes and the effects of climate change compound.

Looking farther ahead, Ella's vision of the future is dire. I asked her to imagine the world 100 years in the future. She said:

> Hitler, Neo Nazis, new generation fascists. Because white people never stopped wanting to be… not white people…. White supremacists never stopped wanting to be on top. You can see it today. I'm pretty sure you're going to be able to see in 100 years now [...] so if people consistently want to run off greed and want to run off their own idealisms without thinking about the other person, which is very consistent with this generation, and the generations before us, I'm pretty sure we're not going to teach our kids that we shouldn't be selfish.

Here, Ella articulates an acute awareness of the ways that white supremacy has shaped the world she lives in today. She points to the selfishness, the individualism, the greed that undergirds American politics and economics, and correctly identifies the ways capitalism is aligned with "white supremacists wanting to be on top." Like Laramie who earlier wanted to "build a killer robot to overthrow society," Ella recognizes that there needs to be some drastic changes to the statis quo if Black folks are going to live fully. to Such a sophisticated analysis reflects cyborg literacy in action; here, Ella has read the world—she has come to the conclusion that the western

democratic values that got us here will continue to erode social and political life if left unchecked. Joy James suggests this is precisely the stance the rebel intellectual would have (James, 2013), a recognizance of the ways whiteness works, based on knowledge of history and the possession of a radical imagination.

Erik sees his future in terms of employment and impact, and he's concerned with what he can do today about creating that future. He says that he thinks a lot about test scores and how to improve them, about what components will go into a competitive college application portfolio, about "how [he] should hold [himself] accountable to getting [himself] to that destination." In ten years, Erik will "hopefully be inspiring people to do engineering." Erik feels fear about the more distant future, about the "mad" world that might exist then. Specifically, he's wary of climate change—and our collective failure to hold ourselves accountable to the planet. He notes that:

> [W]e have for the longest time been warned about climate change and whatnot. If [in the future] we're still ignoring that, I fear that we won't face climate change, like the fear that the world would probably be likened to a state of irreparability. That scares me; it's like, a looming threat over my head. I wish I could make people think like me and hold themselves and the world a little more responsibly.

Like Ella, Erik places the blame at the feet of capitalism, more specifically, on "manufacturing. And ignorance. I know we're manufacturing, and it helps us get the products we want;" but, he wonders, at what cost? Both these students point to the need for a reckoning among society such that "the interests of one [are] the interests of all", such that society advances to the "henceforward" (Fanon, 1963). In this way, both these students are cyborgs, are rebel intellectuals.

6.4 Uses of Tech

Erik and Ella have disparate ideas about the ways they will use technology in the future, but they both address its inherent risks. Erik, the engineer in training, looks forward to the ways that emergent technologies like AI can make things better for people, makes it easier for people to express themselves He and Marcus in particular expressed interest in the ways AI will be used in education "to make teachers' life easier. Still, Erik is worried about the cost of innovation if it continues at this pace— the cost for people and the planet. "Especially with technology," he says, "I feel like if, sometimes if people take a step back and realize that, yes this [technology] is pleasurable, [...] but you gotta realize that the cons outweigh the pros of actions like that." Erik is cognizant of the ways that progress leaves certain people behind, the "cons [...] of actions like unchecked manufacturing and the use of AI in warfare," even as he aspires to success in STEM fields as a robotics engineer. With this last, he has already proved himself right; in early 2024, OpenAI recanted its commitment to keep its AI software out of military applications; Nvidia stock soared. Since then, "Project Lavendar" and "Daddy's Home" have been used by Israel to carryout wanton destruction of Palestinian people, homes and society; Google, who provides the systems on which these AI targeting systems rely, has had no comment.

For her part, Ella recognizes the ways that digital mediates social and civic life. "The world would be in shambles if the internet went away," she says. Ella points to the continued development of technologies for convenience in the United States, and links it to what she sees as an obesity problem. She argues, citing her father's observation that the proliferation of affordable automobiles since the 1980s affected obesity rates in the Black community, that as technologies make consumption faster, more automatic, Americans will only get more sedentary. More, she highlights both the distractions that digital tools bring, and their capacity to

overwhelm. That imaginary future day when there's no internet, "the world would somewhat wake up, because they'll have to observe what's happening in front of them." Technology— social media particularly— offers people a distraction through which they absolve themselves of responsibility. Because, "it's things happening in the world right now. People are so caught up on what's happening with the Kardashians that they missed what's actually happening;" She lists genocide in Palestine, and recently passed laws to legalize selling lab-grown meat as places where people aren't paying enough attention to intervene on the issues facing them. On the other hand, she suggests, the amount of information available to us now is enough to overwhelm, noting that she sometimes lets herself use technology as a distraction as well, lamenting, "it's just too much to take action sometimes." This distracting quality of technology is something that she uses agentically in other contexts as well. Ella describes using her phone as a distraction in class to avoid engaging with folks-teachers and students alike, that she doesn't like. I'll say more about this and other practices of refusal that Ella takes up in the final section of this chapter.

6.5 About Our Space

Erik and Ella are two very different students, with different home lives, different relationships with schooling, different uses of technology in and out of our makerspace, and different visions for the future. One thing they share: an appreciation of the freedom they feel within our loophole of retreat. Both of these students, as well as the larger cohort. talked at length about what it's like in our space and why they keep coming back. For both, the vibes and the self-determination— affordances I described in chapter 4— were contributing factors.

Both these students were effusive in their praise of the vibes of the makerspace; their behavior backed this up. Ella discussed how our space downstairs was a "chill, relaxing environment"; Erik described being "stoked" to come to this place, one where he "loves the way

we could show up." He talks both about the comfort he feels in the space and the excitement he feels about the prospect of developing new digital literacy skills there. These reactions stand in stark contrast to how these students describe how it feels to be in school. Research notes the benefits Black youth experience from having out of school experiences like these where they can feel free to be themselves. Other participants in the space echo these sentiments. For instance, Laramie, another regular, noted that she "really likes coming here because I don't have to change myself to make anyone ese feel comfortable." Erik is already looking ahead to next year, when his digital literacy skills will be stronger and he can return to unfinished projects. but he imagines the next iteration of the makerspace will be larger with more tools, more projects, a greater impact; he hopes to come back to help the space have "more glory and, like, improve over the years." The comfort factor that Erik notes resurfaced consistently through analysis. Throughout their time in the space, these participants and others displayed vulnerability-- and an acknowledgement that they don't always get a chance to feel at school. As noted throughout these findings, this comfort, this sense of safety-- of homeplace (hooks, 1991)-- led them to share personal stories, to become more fugitive in their activity.

Students were also enamored with their ability to freely explore technology in ways that felt best to them. Ella worked on a range of "mind stimulating activities" She learned to 3D print, "love[d] working with the cameras" made art, and played in VR "like one time, but that man (in the Creed boxing game) was basically knocking me out my shoes," she admitted, giggling, "and that wasn't cool." Other participants echo this sentiment. Mae compared our space to other schools she has attended, in addition to the Lindendale school, noting that she "Was in a digital media class" previously, and "we never got to do what we wanted." Austin described the importance of free exploration, noting that he appreciates "the way students in here can have the

access to use technology the way they'd like to, and to use their imagination and creativity to use all this cool stuff." In all these cases, it is never exclusively the technology that participants are excited to come and use. Rather, it is the autonomy they have to use it "the way they'd like to." Another participant, Deja, described it thus: "I never feel like I'm obligated to do anything in here. which makes me WANT to do stuff." This experience of sovereignty, of course, is foundational to the loophole of retreat.

Moreover, Ella says what she likes about our space is that it is "very chill, a relaxing environment, better than the stresses of school, even though I sometimes do schoolwork down here." She describes the ability to "get away" from other people in our space, to take a few moments or the whole day to be with herself and her thoughts-- opportunities she does not get during the school day. Participants appreciated our loophole of retreat because it was "two hours to chill, relax, get work done if I want, bullshit around, eat food." Still another expressed gratitude for the art supplies on hand. While ink and canvas are not high-tech, she still was grateful "because I've been meaning to see if I can do that and I'm glad that I'm able to try." The "seeing" is what students appreciated about the space, the being "able to try;" for Black kids whose self-determination is truncated by the worlds and schools they inhabit, the "bullshit[ting] around' is the point. Similarly, Erik appreciates the capacity for self-expression that students get to have here. Toward the end of our time together, I took our students to Google's Code Next makerspace, so they could see other examples of tech-based making spaces that prioritize students' agency. Erik says he appreciated what they had going on at Code Next, but noted that participants there were required to make something or work productively every day. "That's a very efficient way to get results," he notes, but it was not the vibe we have at TLS, where curiosity and open experimentation are the coin of the realm.

6.6 “[They] don’t understand that can also be revolutionary”: Refusal and the Rebel Intellectuals

In these case interviews at the conclusion of our makerspace, I asked Erik and Ella if they felt that Joy James' definition of the cyborg applied to them. Ella said, “it describes me a lot”. She feels that way because of her refusal to tolerate mistreatment, disrespect, and her willingness to speak out against injustice, even if its not affecting her directly. Erik agrees. He says, “I do consider myself a rebel intellectual,” Pointing to his agentic use of digital technologies, he notes, “there are definitely some times when I think of using technology in a way that, like, it wasn’t created to be used.” The loophole of retreat that we created downstairs afforded him more opportunities to imagine such fugitive uses of technology tools. These students and others describe the refusals through which they exercise agency. As noted in chapter 5, these refusals are cyborg literacies in action-- fugitive practices of self-determination wherein they reject the victimization demands of them in its perpetual boundary drawing (Costa Vargas and James, 2012).Through these fugitive practices, Erik, Ella, and others in our makerspace take “action to remove oneself from an oppressive situation in hopes to arrive at some new and distant liberatory space, a space not rooted in oppression (Player et al., 2020).

For example. Erik refuses deficit narratives about Black kids in his city. Then, through his burgeoning digital literacies, he authors counterstories about himself and it. His vision of the future of his city too, describes a rejection of the neoliberal logics of gentrification. To Erik, the rebuild of the city can’t only be downtown, but must “extend outside of downtown and slowly start affecting other communities, especially communities of color. He also notes the lack of mobility that Black folks in the city face: “I don’t see a lot of kids from different [racial] descents here because as a race , we get put into, like, this set group. And not many people leave or, like,

people don't migrate into or out of the place." Erik is keenly aware of the multiple layers of enclosure that exist for Black folks. In the face of this enclosure, he not only achieves at a high level academically and pursues a career in which Black folks are notoriously underrepresented due to several layers of antiBlackness. Erik's refusals are intercessions on the ways technology is marshaled for progress, for convenience, for profit, and the racialized ways these processes unfold.

Ella's refusals are more local, more vocal. She has been refusing the conditions of her education at least since her freshman year, in which she staged a walkout to protest a perceived lack of safety after a gun scare. She keeps that same energy interpersonally and in her relationships with teachers and administrators at school. She simply opts out, when she decides it's appropriate. "if I don't like a class, I'm not going to participate, even if I know the material," she told me. This approach extends to after-school and enrichment opportunities. For example, she has refused to participate in several clubs. She was nominated for her school's National Honor Society, but "decided not to do it [because] they were too unorganized." She left her grade's student council because she felt the principal didn't respect her time or intellect. More broadly in her schooling experiences, Ella refuses to sacrifice her autonomy. She resents the compulsoriness of assignments, of being forced to engage with people she doesn't like due to the school's restorative justice policies, for having her movement constrained after "taking too long of a bathroom break." She is vociferous about her mistreatment, why it won't stand, and what would be appropriate alternatives. Ella eschews respectability with regard to her responses; this is an approach she uses online and off. "There's a certain decorum that people have," she says, "I don't have that decorum" on social media or in the classrooms and hallways of TLS.

Inspired by her father, Ella has plans to be a revolutionary— but in her way, not his; not through high achievement and a college degree, not even necessarily “at protests” or “on the front lines.” She says “I want to be the person behind the other person. [The one] who's actually in control. Like, I feel like the person who people show you, they're not actually in control, the people behind them are in control. And I'm going to be one of those people. And [he] don't understand that that can also be revolutionary.” Even without being on the “front lines,” Ella embodies the fugitive stances of the rebel intellectual.

Both these students imagine the henceforward and the consequences if change don’t come. These students and other Black youth in our loophole of retreat are acting in the ways that feel right to them to intercede today and tomorrow. These mundane practices are revolutionary. They describe a “consciousness of shared connectivity with death or salvation” (James 2013). This is no hyperbole; Erik and Ella both evoke the rise of white supremacist neo fascists and racial capitalism’s commitment to destroying the planet in order to turn a profit. These practices are a 21st century equivalent of those in which Harriet Jacobs engaged in her loophole of retreat; they are acts of petit marronage. Through their making hybrid selves, through the making of their space into a Black space, as safe space for collective advancement, through the making of new worlds via their making, through their understanding of the ways antiBlackness shapes society, they engage in cyborg literacies. They offer ready examples of what Black free being can look like, sound like, feel like, even from within educational systems designed to interpellate them in to the status quo. Erik, Ella, and others practiced an educational freedom that is largely tangential to learning. This is who these kids already were already were, who they were being trained to be by the influences local and global, who they learned to be from parents, peers, and from history. They engaged in the kind of sovereign being, the kind of Black learning that Okello (2022)

would call marronage. As ever, the maroon worlds exist outside the white imaginary. There, "within those worlds, exploration about what could or should become in the actual world takes precedence" (Okello, 2022). Here, in the loophole of retreat, these students were just a little bit freer to be sovereign. I return to Okello's notion of education as marronage in the concluding chapter of this dissertation.

Chapter 7 Discussion: Faaji First, Or Considerations For Inculcating And Studying Black Cyborg Literacies

This equation of blackness and death is indisputable and enduring, surely, but if we want to try to conceptualize aliveness, we have to begin somewhere else. (Quashie, 2021, p. 1)

In this dissertation I wondered: How do Black youth practice cyborg literacies in an after-school loophole of retreat? In so doing, I hoped to bring constructs from Black studies and STS to bear on the ways we conceptualize and study a demographic that has traditionally been maligned in research and who endure anti-blackness in their real lives, on and offline. To answer this question, I turned to ethnographic methods—designing, thinking, making alongside participants in situ. I gathered observational data through these practices including jottings, field notes, and photographs of activity and products; these I complemented with analytic memos. In concert with this ethnographic data collection, I collected artifacts from participants' activity and design of the makerspace; these were complemented with focus group discussions. Finally, I used case interviews with two focal participants to flesh out my understanding of how they were experiencing our makerspace, their schooling, and the technologies that suffuse their everyday lives. These data we intentionally collected to be multimodal, so that I could leverage Critical Technocultural Discourse Analysis (CTDA) to develop an understanding of participants' technology literacies.

Through CTDA I aimed to generate a more complete assessment of youth literacy practices by attending to participants' artifacts, practices, and beliefs related to their technology use. In this dissertation, CTDA provided a way to understand how participants leverage the technology of the makerspace itself—as well as how they leveraged technologies within it. CTDA also requires the application of a theoretical framework to understanding of participants' practices and the technologies at hand; to boot, I read the makerspace-as-technology- through the twin lenses of cyborg literacies and loopholes of retreat—the conceptual frameworks that undergirded this dissertation. Moreover I used both inductive and deductive analyses in this dissertation. Through CTDA I engaged in inductive analyses that identified themes generated from the collected data. In addition to this, I used cyborg literacies an a priori framework to analyze participants' making within the makerspace. The discussion that animates this chapter seeks to zoom out from the hyperlocal practices participants took up within room 29 of the Lindendale School to consider what they imply for education design, research, and practice.

In the chapters that preceded this one, I shared evidence that supports my hypothesis that Black youth would practice Cyborg literacies in an after-school makerspace. I'll begin this discussion with a brief recapitulation of the findings of this dissertation, chapter by chapter. Then, I sit with what it means that students' practices were cyborg (James, 2013) and cyborg (Haraway, 1985). There, I contend with if and how posthumanisms are useful in research about Black youth. In the penultimate section of the chapter, I spend some time reflecting on the student-generated design principle, "Faaji," the embodiment of which, I'll argue, may offer a necessary template for designing Black learning experiences. Finally, although I'll suss some out along the way, I'll conclude this chapter with a consideration of the limitations of this

dissertation project and where further research could build on the frameworks and findings herein.

What unites these three findings chapters is the power and potential of radical Black youth to refuse the status quo in pursuit of something different, something that serves them and their needs. In Chapter 4, we saw what happens when Black youth are given the chance to design with support and autonomy; participants leveraged the technology of the makerspace in unforeseen and unintended ways; they imbued it with Black aesthetics and style to make it something altogether different, a fugitive space, a loophole of retreat. This technocultural reconception of the makerspace-as-technology created a fertile environment for participants to engage in the cyborg literacy practices I theorized they might engage in because they felt safe and whole. Chapter 5 offered a sampler of these literacies in situ, some snapshots of these practices by which Black youth leverage the technologies at hand to get through, get by, and get over; these cyborg practices of rejecting victimization saw them distribute learning across online and offline networks, imbue nonhuman actants with agency, and develop present and futures selves that are only possible through their interfacing with the digital. Chapter 6 delved more deeply into the influences and insights of two leaders in the space. Despite their differing lives, relationships to technology, and experiences in school, the pair, much like their peers more broadly, contributed to a space where they were free to be themselves; they used refusals, small and large, to make the space so.

I designed and conducted this dissertation work as a kind of answer to the question Green (2020) poses: What can we scholars, researchers, and practitioners learn from invoking our imagination?" (p. 116). For me, this meant trying to hold Black educational studies in tandem with science and technology studies. I felt compelled to do both simultaneously because of what

seemed to be a dearth of qualitative research about Black kids in non-compulsory settings that were not about Black lack, Black deviance, Black degeneracy. I uncovered a couple dozen that managed both, studies not only about the ways Black youth brough their Blackness online with them, or created extended versions of themselves online, but how what happened online affected them when they logged off or hung up. As I began to wrap my head around what it meant for Black youth to be online, about the ways in which online and offline were imbricated (Sassen, 2002), the education literature seemed to all be about white kids. So much of the education literature that managed to account for the omnipresence of the digital-- for the ways in which online and offline life were muddled and mutually constitutive was from Scandinavia and Australia, studies in which race was never considered, let alone "accounted for." Hayles, and hand, it seemed, STS studies were really sitting with the ways Black folks were using digital technologies-- social media in particular-- to act, to be, to live in new ways, and the same old Black ass ways (Brock, 2012; Florini, 2014; Williams, 2016) More, Donna Haraway, N Katherine Hayles, and Legacy Russell were shifting the ground beneath my feet (keys beneath my fingertips?) as they reconciled the ways in which we are materially and socially entangled with machines and algorithmic thinking.

Now, mind you, Black studies' antihumanisms were becoming legible to me at this time, too. Suddenly the veil was lifted for me-- "human" was a myth (Haraway, 1985) like America, with arbitrary borders that shifted to serve the powerful. This I had known. But now through Beth Coleman, Sylvia Wynter, Hortense Spillers, gender and race-- parallel technes of organizing who is born to be free and who not-- the borders were sketched and shaded, but never erased. I found myself with too many ways to try to think about just what it was that Black kids were up to as they interfaced with the nascent digital technologies and discourses about them--as

well how they navigated as the age-old antiBlackness that animates life here. Cyborg felt good from a socio-technical standpoint. Literacy-cum-identity as a social practice clarified the kind of everyday-being-in-contextualized-worlds that I suspected could account for the ways of knowing and doing that Black youth be up to. But how to hold that along with the racial realism (Bell, 1992) that permeates the air? Along came a Black cyborg (Costa Vargas & James, 2012), that also leaned on Fanon to address the facts of antiBlackness, of coloniality. All this is to say that holding both of these cyborgs together offers a useful theoretical framework with which to read Black youth practices. I hope this can be a meaningful point of departure for education research and for STS research

Conceptually, Cyborg literacies have a transdisciplinary origin story that I think will make them useful in future education research. That I bring them together in this way-- including temporally connecting Haraway and James with the legacy of Harriet Jacobs, another cyborg (Maynard, 2018), is no accident. (One day, I'll say more about how this move is Afrofuturistic; given how that would necessitate a whole separate conversation about the potential incommensurability between Afrofuturism and Afropessimism, it remains out of the scope of this project. Alas. But let us reorient.) It could be the case that through this project I find myself offering what Black people and Black studies always have, what McKittrick (2022) calls a "textual accumulation" of "black miscellanea", an interdisciplinary methodology "to explain, explore, and story the world, because thinking and writing and imagining across a range of texts, disciplines, histories, and genres unsettles dismal and insular racial logics" (5). That might be the only thing I have to offer in terms of novelty: an attempt to respond to Quashi's 2021 provocation that opens this chapter to "begin somewhere else" in order to conceptualize the aliveness of Black youth. These youth reminded us that Black joy—that unruly, uncontained,

and unbothered commitment to fomenting community, rooted in inherited aesthetics—is a rejection of their abjection that is demanded of them; the youth showed this by dint of their activity , their artifacts, and their utterances. The findings of this study contribute to the tradition of qualitative research about Black educational spaces (Warren & Coles, 2020), of the Fugitive Literacies Collective (Ohito, 2020; Player et al., 2020) of Lauren Mims' Homeplace Research Collective. Later in this chapter, as I describe the limitations of this study, I'll say more about where subsequent research about cyborg literacies could expand on this dissertation project.

7.1 Summary of Findings

In chapter four, I explored the affordances of the loophole of retreat that students and I co-curated via two themes that emerged through analysis of the data: vibes and self-determination. The vibes of the after-school makerspace were a function of the design principles of the space, both my postionality, "V.0" principles, and student-generated' "V.1" principles. Due to these vibes, described as "immaculate", among other superlatives, students expressed feelings of safety, joy, and camaraderie in the space. In the chapter, I discussed three ways in which students' curated the vibes: spatially, sonically, and spiritually; these curatorial practices, I argue, are placemaking practices Black folks have long used in the exercise of freedom (Coles, 2021). My positionality-- my commitments to Black being, black aliveness (Quashi, 2021) played no small part in this. The other affordance of our co-designed principles was student self-determination. Participants in the makerspace exercised sovereignty over themselves and their space such that they could "autonomously exercise their agency in ways they believe will best achieve their desired end" (Warren & Coles, 2020). This self-determination manifested in me ceding my plans for YPAR-esque, technologically mediated literacy projects such that students could pursue their own interests, in the ways that felt right to them. They used this freedom to

have fun, as kids do, and to engage in the Black radical practice of freedom dreaming (Kelley, 2002). In this chapter, I suggest that the after-school makerspace has characteristics (safety, affirmation, Black aesthetics) of what hooks (1991) called homeplace as well as those of Jacobs' (1861) interstitial garret space— fugitivity within enclosure.

These findings have implications for designing learning experiences and research with Black youth participants. The data reported in chapter four indicate that Black youth exercised self-determination in the design of the makerspace itself, a capacity for which there was ample room because I—that is, researcher-I, learning experience designer-I, educator-I, proprietor of social mores-I—got out of the way. Students definitely felt affinity for me, but I contend that my Blackness was not gave students the green light to bring their whole selves to our space. The catalysts were my choices, conscious and sustained, to care more than I knew. Participants thanked me again and again for making them feel seen and heard, without pretense or prequisite. The resulting opportunity—a truly youth-designed, youth-led makerspace— may be a useful model for researchers and practitioners interested in makerspace and other out-of-school time activity.

Participants were able to create a space in which they felt good, felt heard, and felt free to experiment with new technologies at their leisure. They were committed to building skills and growing their knowledge of digital technologies, but only in ways that felt good to them, for whys that felt good to them (Lorde, 1978). Some students--chiefly the robotics team members--were explicitly interested in STEM skill development and college/career preparation through their making. This fits what we know about what happens in STEM rich making spaces (e.g., Calabrese Barton & Tan, 2018; Greene et al., 2019). As they reveal a commitment to Faaji, though, these findings also indicated the presence and necessity of joy in Black making spaces;

these students engagement towards and within the loophole of retreat is an example of the Black ratchet imagination— "a performance of the failure to be respectable" (Stallings, 2013, p. 136; Love, 2019). Participants' commitment to joy aligns with contemporary research about Black joy and play as a primary outcome of making spaces (e.g., Worsley & Roby, 2021). In either case, making in an identity-affirming space, especially when doing so includes de-prioritization of the adult or expert or researcher "in charge", provides opportunities for development of agencies and literacies for Black youth. As such, youth-led design and joyful making remain vital areas of exploration for researchers. Moreover, as described in Chapter 4, participants' self-determination was sometimes operationalized as a refusal, from micro-refusals to check in or use certain research instruments, to macro refusals of my V.0 YPAR aspirations.

These students' practices have implications for designing and researching learning experiences for Black youth. In this context, to center Black youth's self-determination and agency is to carve interstitial spaces wherein Black youth can experience living beyond the constraints of anti-Black societal structures—including citizenship, productivity, and schooling, all of which interpellate Black youth into a subjecthood that requires violence against their bodies and imaginations (Hall, 1985). In contrast, Okello (2024) writes of three ways that Black joy is uniquely manifested within the loophole of retreat: interior elaboration, cramped creation, and otherwise imagining. For educators and researchers, designing for these kinds of Black joymaking and refusal practices may mean rejecting traditional relations between the actors involved—and first, admitting to ourselves that many of the adult-child relationships in schools, especially as it pertains to Black youth, are indeed colonial, paternalistic, and antiblack (Kearl et al., 2023). Participants' use of refusal as a design strategy has implications for anyone who works or research with Black youth, and especially for those engaging with Black youth

technology practices. In Chapter 4, I indicated how the ways in which these participants leveraged technology were examples of fugitive Black Technocultural practices. More than the unauthorized or unintended uses of the technologies *within* the makerspace, the data indicate that these participants exercised agency with the technology *of the makerspace itself*. These fugitive Black making practices exist beyond school setting, for Black refusal is a design strategy (Campt, 2017). These findings extend conversations about the digital literacy practices that Black youth employ in their everyday lives and how they shape the technologies that organize their lifeworlds; as the digital and analog become increasingly imbricated, youth's capacities to "read the world", online and off, only redouble in importance.

Educators, researchers, and practitioners—particularly those who share identities with the Black youth with whom they work—should continue to interrogate to what ends they oil the machinery that is schooling and the academy, given its effects and its histories. Instead, we might open ourselves to "forms of relation [that] might produce generative understandings of self and community life in and beyond" schooling contexts for Black students (Okello, 2024, p. 23). For researchers these may include YPAR, co-design, and other youth-led formulations that refuse that refuse the power relations that organize schooling and knowledge production alike. Perhaps others exist as well, beyond category, in excess, opaque, undisciplinable, trans. Such is the joy made possible by and within the loophole of retreat.

In chapter five, I offered examples of youth sensemaking, self-making, worldmaking, joymaking and refusal practices in our makerspace and situated these practices in a long tradition of Black literacies. Brief vignettes explored how students engaged in each of these practices. In our makerspace, Black kids authored new selves that only became possible through interfacing with digital tools and discourses; they did this in frivolous ways (remember Goku and Isaiah)

and in an effort to create future selves that can use digital technologies to act on the world. These cyborg selves, autopoietic, may prove to be examples of the kinds of prosthetic identities that can be fomented in youth to advance their skill development, their self-esteem. In this way, they align with extant conceptualizations of Black youths distributed selves (Greene Wade, 2024; Lewis Ellison, 2014; Russell, 2019). Students in the makerspace used digital technologies to make sense, including distributed and horizontal learning models where their acquisition of digital skills is networked, is meshwork (Lizarraga, 2023). As such, these findings invite continued exploration of apprenticeship models that Black youth take up in their digital literacy development (Lewis, 2014) Youth engaged in worldmaking in the makerspace; they both made the space into what they needed (curated the vibes, if you will) and tried to make better worlds via digital tools-- in this case, a video game teaching youth about mental health issues in the Black community. These making practices align with extant worldmaking literature (Stornaiuolo & Hull, 2015). This includes the micro-level design of the makerspace, as noted above. But they also extend to the fictive worlds Black youth can make vis a vis the digital, be they online worlds of extant worlds and universes that proliferate online and live in platform video games. They also invite further study of the ways in which Black youth make the present in the ways necessary to foment the futures they desire.

Students also made joy in the after-school makerspace. Through analog making with pen, pencil, marker and paper, students drew a series of “thicc Patrick” memes, just because it was funny. Similarly, Sasha printed a “Hello Kitty army”, for the uwu alone. These making practices interrupt traditional notions of who makes, what counts as making, and for what purposes making is done. What these youth got into was a departure from the traditionally make, traditionally white making that comprises much of the literature (Barton and Tan, 2018). The

pleasure was the point; the purposelessness does not invalidate the complex knowledge or the deep skill participants leveraged to generate these artifacts of joy. It wasn't for a grade, or toward my plans for skill development, or for the greater good. It was making that some might call wasteful, and its making about which there is a dearth of literature. Beyond this dissertation's contributions to literature, I hope it inspires more resources invested in the joymaking practice of youth vis a vis emergent technologies, not merely how they can use this tech to be productive, or to achieve excellence. This dissertation study endeavored to demonstrate the ways education researchers working with Black you can help to unearth Black joy (Muhammad, 2024).

Finally, participants engaged in practices of refusal: they rejected miniscule data collection efforts like check ins and surveys, they refused my invitations to work on social-justice oriented projects, they refused to tolerate sub-optimal (read: anti-Black) educational experiences. Through practicing these cyborg literacies, participants generated data that further implicates the porous boundaries between online and offline; these data suggest that Black youth engage in fugitive practices, networked, that reject the victimization upon which western caste is organized (Fanon, 1963; Wynter, 2003). They did this in ways that usurped my plans for the space and the study. Their refusal operationalized the practices they wanted to take up with the technologies on hand. These practices are literacies, and to study these contemporary Black literacy practices is to study Black technoculture. The study of Black technoculture, of Black refusal as a making practice, is a contribution to makerspace literature that itself extends the traditions of the discipline. Moreover, these practices— practices used at least since Harriet Jacobs carved a gimlet hole in her master's attic—remain prescient skills for navigating an increasingly datafied world rife with oppressive structures and so-called predictive technologies.

Moments of Black sovereignty are precious in such a world; the practices through which Black youth inculcating them are diamonds.

In Chapter 6, I used case interviews from two participants to illustrate the range of students that made a homeplace in our after-school makerspace. Erik, a technophile, and Ella, a troublemaker (Shalaby, 2017) both loved to come to our makerspace. That they did so was a function of their experiences at home, at school, and online. These funds of knowledge (Moll et al., 1992) shape what they brought to and desired from our school space. The interviews I did with students also revealed their insights about the future. These students fear that the world as currently contracted and operated, will careen toward political, environmental, and humanitarian disaster unless the forces that shape it--e.g. the profit motive, antiBlackness--are curtailed. Their vision for these risks spans the hyperlocal of their homes and schools, their neighborhood and city more broadly, and the whole planet. I argue that these students, in their distinct ways, are examples of Black cyborgs—rebel intellectuals rejecting victimization. From within enclosure, they levy their brilliance toward freer futures for themselves and those around them. These interviews reveal the character of these two cyborgs, self-defined rebels, already revolutionary.

7.2 Implications: Faaji First

Over and over in our makerspace, students were led by pleasure. “Joy” was one of the principles I hoped would animate the space, but aside from its place on the wall among the other “V.0 “ design principles I dreamed up, it was not “enforced” as such. It seemed students would have been committed to joy regardless. They skipped into our loophole of retreat and made the most of the shape of the supervision and the freedom that came along with it. Students were so committed to prioritizing the enjoyment of their time together that they offered “Faaji” as a design principle. Faaji, I would learn, is a Yoruba word that roughly translates to “the pleasure of

being together." It was an ethos for students and consistently appeared in the data as students' favorite quality of the makerspace. Even as they labored to teach themselves and each other discrete tech skills, they danced about it, they rapped about it, they laughed about it. After Shivers-McnairTo this end, my recommendation for educators is to prioritize Faaji in the design of educational experiences.

Since Gee (2003), we've known what games can teach us about learning and literacy. As it turns out, play is a social activity that helps children learn literacy (Caracho & Spodek, 2006). This dissertation research contributes to the conversation by showing the ways in which this playful, joyful literacy development extends beyond texts, to and through screens, to include the development of literacy as a social practice (Aguilar et al., 2013). To that end, researchers have established that centering joy in Black learning experiences leads to more positive outcomes on Black youths' skill development, identity development, and literacy development (Edouard, 2023; Love 2018; Mims et al., 2022; Muhammad, 2023).

Specifically concerning the ways Black folks engage with the digital, participants in this study express the jouissance that exemplifies Black life and Black digital practice. Black being in relation to technology is one that can reject mores of respectability (Brock, 2020). This dissertation research contributes to this conversation by offering data about the mundane ways students were able to pursue and achieve wholeness and aliveness via their self-directed, joyful making practice. Their frivolous making in the loophole of retreat is the embodiment of cyborg literacy practice. In that vein, this dissertation research could be read as what Eve Tuck (2009) calls "desire-based research," committed to "the self-determination of lived lives" (p. 416), messy, complicated, contentious, that these participants live. In our makerspace, protected from repercussions, participants straddled the line between digital and analog to reject victimization

and— by accessing age-old Black aesthetics and ways of being— may pioneer new ways to be in this antiblack world (James, 2013). For more of these Black digital literacies, see the work for Tiera Tanksley, Mia Shaw, Autumn Griffin.

As I found in this dissertation study, researching loopholes of retreat requires a delicate touch and some sleight of hand. Okello (2024) describes the "unspeakable joy" Harriet Jacobs narrates from within the confines of the garret: unspeakable because it is complex beyond typical conceptions of the word, unspeakable because to utter any noise from within her enclosure is to risk exposure, discovery, and capture. If this is the case, then the researcher's role must be, after Shange (2018), to care about these youth more than we know about them—or at least more than we deign to publish. How can we be coconspirators if we profit from translating these age-old Black practices for the academy? Instead of the gaping, gulping apertures an IRB may allow, and which open Black youth to scrutiny for the sake of positivist epistemes that Black living exceeds (Wynter, 2019), researchers might only need a gimlet hole, bored an inch wide, to observe Black youth's interior lives.

7.3 Limitations & Further Study

This dissertation project had limitations that constrained the scope of its findings. In the following I consider these and offer some recommendations for further study. The first of these limitations is temporal. While some students' projects were completed, still others did not see fruition at the end of our few weeks together; other students worked on the initial skills they'd need to accomplish larger projects or tasks. Given more time and longitudinal data, I could make different kinds of claims about how students' cyborg literacy practices developed or changed or were intervened on by our after-school makerspace; for the current project, it was enough to observe them empirically and situate them theoretically. Additional observation of students' in-

school experiences could allow me to indicate more specifically where the loophole of retreat offers something that TLS does not; for the purposes of this project, it was "enough that [students] said what [they] said (Simpson, 2008). Moreover, it was sufficient to consider students' in and after school experiences as part of a coherent learning ecology in which students engaged in cyborg literacy practices.

Another limitation was the kinds of data I felt comfortable collecting with this vulnerable population, even with IRB approval, participant assent, and parental consent. Because of choices I made to protect the privacy of students' digital activity (e.g. eschewing walkthroughs and virtual tours), the study is limited in its ability to describe participants' online doings, relying instead on how students describe and characterize their own activity. I continue to have ethical concerns with exposing and reporting on youths' intimate, plural, socially located digital selves, perhaps out of my own positionality and experiences with context collapse between my various, distributed selves. I say this with some modicum of data literacy, knowing the ways in which Apple, Meta, Tiktok, and Alphabet, are already exploiting and extracting data, but for me, the capturing of such data in an effort to pin participants' Black selves down and make them visible and digestible. Perhaps this feels ironic given the role the cyborg plays in the conceptual framework of this project, but it felt in alignment with my commitments to protect participants. That said, such an investigation could shed light on the interplay between youths online and offline selves, and how these selves are mutually constitutive. Nethnography (Hargittai, 2020) and technobiography (Kennedy, 2003) are two of a constellation of digital qualitative methods that privilege the experiences of participants' online selves and their attendant digital artifacts. For examples, see Harvey and Ringrose (2017), Lane (2016), and Greenhow, Cho, Dennen, and Fishman, (2019).

There are additional frameworks and theories from posthuman paradigms that could animate further study of Black youth's cyborg practices. Further study could be enhanced by network analysis methods that map the flows of activity and energy around our space and between students (Jocson & Dixon-Román, 2021)— as well as affective flows through students' online networks. Theories of connectivism loom large here. Similarly, socio-technical and Cultural Historical Activity Theory (CHAT) perspectives would further contextualize these youth's activity (Engestrom, 1991; Latour, 1988); a networked examination of the agencies of the human and nonhuman actants in the loophole of retreat similarly would advance this research agenda to consider the dual imbrication of race and/as technology and man/machine. I look to examples like Lizarraga's 2021 dissertation. Their concept of *meshwork* could be useful to help me make sense of the syncretic making in which youth engage (Guttierez, 2008). Finally, questions of re-embodiment and the prosthetic function of digital technologies in the cyborg literacy practices of Black youth are ripe (Buonguiorno, 2019). Avatar studies, too, are a promising lens through which to examine the distributed selves that Black youth wear and exchange. As Gough and Gough (2016) note, still other posthumanisms are being brought to bear on education research that are beyond the scope fo this dissertation. These are alternative ways that I could learn about cyborg and posthuman conceptualizations of youth literacies, and they offer me some options as I look ahead to fleshing out this research agenda.

As I continue to reflect on this collected data, some new research questions begin to emerge. First, I have not taken a gendered approach to understanding students' activity in the makerspace. It may be revelatory to examine, for instance, how Black girls' experienced school and their makerspace. The traditions of both cyborgs and of the "loophole of retreat" lend themselves to such an analysis. Another question that could move this research forward is to

consider the relationship and the distinctions between our makerspace and the robotics team, a STEM-oriented extracurricular space in the basement of TLS with much more stringent expectations for students' activity and an explicit bent toward career and college readiness. As Erik shared, the robotics team is also engaged in the authoring of counter-narratives against dominant deficit framings of his city and the students--particularly the Black students-- that come from there. A closer look at the team and the international robotics competition of which it is a part could shed some light on the ways out-of-school time STEM activities are organized for what benefit, and at what cost.

In addition to these new questions that have emerged as I analyzed the data, I continue to collect data toward another iteration of this makerspace to take place in the Fall of 2024. As an addition to focus group data and artifacts through which participants have advocated for the changes they want to see for next year, I'll be partnering with seniors at TLS to collect survey and interview data about students' experiences and desires for after-school programming. Participants and I will discuss this data and use insights from it to shape what the space looks like in the fall. In the more immediate term, makerspace participants have taken advantage of several opportunities to share their experiences and activity with Midwest University and community partners since the conclusion of the study. In the following chapter, the conclusion of this dissertation, I sit with the necessity and potential freedom dreaming and marronage in Black cyborg literacy practice and what that means for teaching Black youth in an age of automated necropolitics (Mbembe, 2003).

Chapter 8 Conclusions: Faaji Forever, Or Stem For What?

In this dissertation, I offered cyborg literacies as a framework for conceptualizing Black worldreading, wolrdmaking, and worldbreaking. I have argued that Joy James & Costa Vargas' (2012) Black rebel intellectual cyborg and Donna Haraway's (1984) hybrid of human and machine are helpful for understanding the conditions under which Black youth live in America today. I have advocated for Black making spaces that privilege Black students' self-determination and pleasure, and I've delved through the history of Black fugitive literacy practices to draw analogues to Harriet Jacobs' Loophole of Retreat (1861). The findings of this dissertation offer educators, practitioners, and researchers some insight into how to think differently about what Black youth do and need in their after-school programming. I want to conclude the dissertation by doing two things: first, I resurface marronage as a framework for Black activity by looking to Okello's (2022) "Name Yourself": Marronage and the Unmaking of Black Educational Futures. Then, with the stakes established, I offer some contemplations on our societal relationship with technology by considering the utility of STEM learning in this epoch.

My thoughts in this conclusion chapter evolves from students' practiced commitments to both "Faaji" and to critiquing the society in which they live. As I've argued throughout this dissertation, the literacy practices in which these youth engaged are part of a Afrodiasporic tradition of pursuing liberation (Leath et al., 2023). These Black practices, processes of imagining, designing, and working toward more just worlds are examples of what Robin DG Kelley (2020) calls "freedom dreams". Through acts that ranged from silent to seismic, Black

folks have been freedom dreaming since the middle passage. Caribbean studies and the digital humanities are rich with examples of these practices, from seeds secreted in stealth to overthrowing French colonial domination in Haiti. Through it all, Black folks fled slave ships, fled plantations, fled imprisonment, This flight— this marronage— afforded Black folks self-determination outside the control and consequences of the state and capital (Roberts 2015). Although American chattel slavery ostensibly ended 150 years ago, we-- and our children-- still live "in the wake" of slavery (Sharpe, 2016), which is to say that the logics of the plantation continue to suffuse American life.

It is incumbent on us to think, after Okello (2022), of education as marronage. To do so in regards to this dissertation (and so remain in conversation with Roberts (2015) theorization of marronage) is to consider the ways in which Black students in our after-school loophole of retreat embodied Roberts' four dimensions of flight: Distance, movement, property, and purpose. In our enclave, students were distant, physically removed from the main floors of the building, in forgotten unused space; moreover, as I argued in Chapter 4, the vibes of the space, the black aesthetic (Coles, 2021) inculcated there took students on a sort of "fantastic voyage" to a different state of being—freedom. Relatedly, the self-determination that the space afforded participants (Also fleshed out in Chapter 4) allowed for their "ability to control their motion and direction[...] physically, spiritually, cognitively, and emotionally"— their *movement* (Okello, 2020, p. 3). These Black youth exhibited a collective ownership over the space and the tools in it, a right to *property*. Their *purposes*— the reasons for their flight— were free self-expression, free exploration, freedom to feel whole, beyond enclosure. Their uses of technology in the space were pursuant of those purposes.

Students' literacy practices in our after-school program were maroon practices of fugitivity. Through their activity-- their refusals, their sensemaking, their dark sousveillance, they sought to author more liberated selves and worlds (Browne, 2016)**.** Aside from STEM skills, students in our makerspace taught themselves about how to get by, how to get over; this fits in the long tradition of the fugitive teaching-and learning that occurs in Black learning spaces (Givens, 2019). I argue that these fugitive practices are as important as the STEM learning, if not more so. This dissertation has therefore been in some conflict with equity-oriented education that positions itself as "the key to freedom and mobility" (Okello, 2022, p. 3). Of course, participants are already getting plenty of opportunities to develop STEM skills during school hours, plenty of opportunities to endure professionalization, and to be prepared to be productive democratic citizens in the American empire. In the loophole of retreat, students could build on those skills using the technology tools to which we had access. Or, they could imagine a world less broken than this one. Their choice and capacity to do-- especially through the digital tools on hand-- were cyborg. That said, this cyborg activity does not assume linear progress, does not assume that access to technology will inherently solve problems. For example, In Chapter 6, both students that I interviewed indicated ways that individuals, corporations and governments use technology was making the world worse and may continue to do so, even as they acknowledged the ways in which they are themselves cyborgs.

Through their cyborg fugitivity— their refusals, their unauthorized uses, their defiance with and through technologies— participants in this study engaged in practices of joymaking and freedom dreaming (Kelley, 2020). This ranged from using the space to rest and play, to using the space to critique their school and schooling, to plotting on "a killer robot to overthrow society." These practices invite me to wonder about alternative ways educators and practitioners can teach

and to be in relation to technology. Keeping aside school-time curricular conversations, which are beyond the scope of this dissertation, students' desires for how they use an after-school makerspace and the digital technologies therein invite me to wonder: who is STEM learning for? The attendance to STEM as career-prep feels to me a continuation of the push for "excellence" in education, which itself is shorthand for prepping students to win the "competition" for global supremacy that has shaped schooling since "A Nation at Risk". Returning to Haraway's (1985) indictment of C3I (command-control-communication-intelligence) regimes) turns my gaze to the social production of today's workforce. What is the purpose of STEM learning when the defense sector wants our best and brightest to develop more effective killing systems? When weapons contractors hold closed job fairs at the engineering schools of college campuses? Why develop better computer vision if it is being used to surveil Black communities at disproportionate rates or to identify targets for autonomous drone strikes? What, to these youth, are 21st-century job skills when the big tech companies underpay Black employees relative to their white peers, give them less stock equity and advance them more slowly? How to celebrate #womeninSTEM, when recent research shows that the greatest factor impacting Black women's advancement in tech companies is the number of white people on their team when they start? What is college preparation for students who will be subjected to racist violence interpersonally and curricularly, in STEM majors?

In the last calendar year alone, the tech sector has laid off tens of thousands, citing the economy, pursuing "agility", and starting with Black employees in DEI roles-- and generally increasing shareholder value hand over fist. Moreover, I have all these concerns before considering the AI gold rush and its attendant glut of shovel salesmen (Doctorow, 2023). "Innovation" and the riches it promises those who achieve it has been sufficient justification for

the development of terrible technologies; now, the zeitgeist is convinced that "Artificial Intelligence" can and should replace people in every role in an organization (except the C-suite, naturally). Are we reorganizing schools around the "hard" skills they'll need to do jobs that will no longer exist by the time they graduate? Black folks, indigenous folks, immigrants, women, the poor, the disabled all know: we are automating inequality through the use of these tools (Eubanks, 2018; Noble 2018). It's beyond the scope of this dissertation, but I hope conversations about the future of work can trickle down to k12 practitioners and researchers before its too late. In the meantime, I at least hope that out-of-school time spaces that center Black youth's wholeness, aliveness and freedom dreaming continue to proliferate (Quashie, 2021).

Some folks are doing STEM and Computer science learning in ways that attend to the primacy of Back students Black identities. Big ups to them: Mia Shaw, Tiera Tanksley and others are doing fugitive STEM learning that affirms student's Blackness and incites them to freedom dream**.** Indeed they are working on the technologies we will need to save the world, or break it, technologies with which Black youth are already carving new ones. These are models that should be replicated. I take inspiration from the ways in which these scholar-activists embody and advocate fugitive STEM learning in the tradition of Carter G Woodson, the ways they and the Black students with whom they work are thinking deeply about the ways that algorithmic thinking perpetuates antiBlackness. STEM learning with this impetus-- the development of skills which to counteract datafication and surveillance in the control society are indeed vital lessons for cyborgs (James, 2013) and cyborgs (Haraway, 1985).

As Carter G Woodson, as bell hooks, as Damien Sojoyner teach us, Black educators of Black youth have a particular obligation to inculcate self-determination, refusal, and joy in their pupils. For so long, these lessons have been fugitive, taught under the table, behind the closed

door (Givens, 2021). But imagine with me: what could schooling be if schools' daily operations were in the service of Black aliveness (Quashi, 2021)? Freedom schools offer a ready example but are too few and far between[2]. Kearl et al. (2023) argue that public K-12 education should serve these interests; they call on teacher preparation programs to reinvent themselves as "training sites for building out education as a site of Black Joy" to "serve as more complete critical accounts of antiracism"; they argue that preparation programs "must resist the urge for a rulebook;" "must embrace Black joy as experiential, vulnerable and relational;" and must "ask how and if they allow Black students and faculty to *be Black*" (p. 8)**.** In so doing, more schools and educational spaces could become what Warren and Coles (2020) call Black Educational Spaces, wherein Black youth's self-determination, self-actualization, and self-efficacy are paramount. These are the learning spaces Black youth are owed.

To offer a concrete answer to the question: what can schools do to inculcate cyborg literacies? I synthesize the literature above to offer a concrete (if complicated) answer. Get out of the way. Public K12 schooling—even in schools with Black leadership— has a whiteness problem that it must sort out. It has a savior problem that perpetually casts Black students, families, and communities as deficient. It has a truncated imagination for whose knowledge and expertise is valid and what modes of expression are acceptable (Baker Bell, 2020). It has a DEI problem has undertheorized who benefits from diversification, what equity ignores about the justice demands, and what violence inclusion requires Black folks to accept. Schools need to get better at getting cussed out and called in. Public education, K12 and higher, must reckon with its design, reckon with who it serves and who it doesn't, with who gets rich working in it and who

[2] The Children's Defense fund, for example, operates more than 130 summer programs serving more than 7,000 students.

gets ground into dust. I concede that many of the frustrations I express here have structural origins and that structural factors exacerbate them on the ground.

At risk of sounding pedantic, there seem a few necessary changes that can be accomplished at the school-level. Teachers and schools must listen to students and actually hear them. Feel their pain. Feel their parents' pain. Offer neither platitudes, nor task-forces, nor Band-Aids, nor more broken promises for novel curricula and reformed discipline. Stop calling the cops on Black kids; excise the cop within you. Advocate for reinvestment in Black communities—not gentrification masquerading as "revitalization." Get organized to resist the anti-intellectualism and anti-historicity of "Don't Say Gay" and anti-CRT legislation. Reconsider stances that consider students to be customers and users. Only then can schools ethically and practically avail themselves of the mundane cyborg joy that Black youth leverage in secret, for their own protection. These are all ways that schools can interrupt the status quo that they are designed to reify. And there are more.

At a more fundamental level, schools' function as citizenship and productivity factories must cease. Rather than how to be good workers, rather than the power of the individual's vote to decide which white supremacist to elect president, schools must teach and embody an ethos of collectivity and care (Goldman, 2024; McNiell et al., 2021). Teachers and schools must resist the allure of racial capitalism and the myths of America, of the category of human, of the antiBlack narratives of progress behind which it hides. Teachers and schools must alert young people to the dire risks the planet and its inhabitants face and empower them to engage in the radical restructuring of society that is necessary to stave off the atrocities and cataclysms to come. Help them to become more unruly, less knowable, more ungovernable. Help bring about the henceforward. In brief, the best thing schools can do to support the self-determined, joyous,

mundane thriving of Black students is to get abolished (Coles et al., 2021; McNeil et al., 2021). Universities, too, could use abolition; they too are a site where the carceral logics of antiBlackness are reproduced, professionalized, and proliferated (Harney & Moten, 2008; Okello, 2024). Short of that: run them pockets, give the land back, and get out of the way.

Given what we know about schools, about the academy, and about the long lives of data in this algorithmic era, researchers, educators, and community members have responsibilities to foment Black youths' dreams of being healthy and whole. I look to Tiera Tanksley and Mia Shaw for examples computer science pedagogies and third space research that prioritizes the Blackness and the wholeness of their youth participants. I look to Lauren Mims and the BlackCreate network for examples of the kinds of fugitive, identity affirming spaces that youth need to grow into their agencies. In so doing, I'm compelled to hold a mirror to myself and the institutions whose interests converge with mine, or don't, so that my work doesn't reify extractive, colonial research practices (Leheude, 2024). After Harney and Moten, (2013) I continue to sit with what it means to conduct research from the undercommons. After all, if a third university is possible (La paperson, 2017), it will be built, brick by stolen brick, within the loophole of retreat.

In this dissertation, I don't purport to have answers as such. Rather, I hope that this work has offered a useful lens for understanding these youth and this moment. I hope that I've made it clear that as much as Black youth need hard technical skills, they need an orientation to technology that interrupts its automaticity, which rejects technosolutionism even as it recognizes the realness of what happens in virtual worlds. More than these, Black youth need to feel whole, feel heard, be joyous, be free. In our loophole of retreat, students and I were able to create an ephemeral space for respite and self-determination, a petit marronage. Maybe the skills and

predictions they developed there will spur them to create the technology that will save the world. Maybe they just basked in the pleasure of being together. Both are necessary for folks who want to do more than survive (Love, 2019). Both are Black literacy practices that public education would do well to build in 2024 and beyond.

Appendices

Appendix A: Consent and Assent Forms

SCHOOL OF EDUCATION
UNIVERSITY OF MICHIGAN

CAREGIVER CONSENT FORM FOR STUDENT PARTICIPATION IN A RESEARCH STUDY

Title: *Cyborg Literacies in an Afterschool Makerspace* | **eResearch ID:** HUM00234880
Investigator: Parker Miles, doctoral candidate pamiles@umich.edu and 703.731.4213

DESCRIPTION OF RESEARCH
We are exploring the literacy practices that Black kids use as they engage with digital technologies in an afterschool makerspace. Research activities will involve co-design of the afterschool space, observations of student practices there, interviews, and focus groups; students will have an option to share their work and products as well. These activities will take place after school, on campus, and will not interrupt their learning opportunities. Participants will have a chance to use and think about VR technology, coding and wiring, GPS technology, and other tools.

WHAT WILL MY CHILD'S PARTICIPATION INVOLVE?
Your child is being asked to be in this research study because they self-identify as a Black/African American . This is what will happen:

- We will have your child attend meetings after school up to four times a week for 8 weeks this fall. Meals will be provided
- We will invite your child to work with other youth in the space to explore various digital technologies. There, they will be able to create and implement a project of their choice, extend in-class work, solve a problem in their school or community, and/or build skills
- We will interview your child intermittently throughout the afterschool program, at least three times (i.e. before, during, and after). Some of these interviews will be in groups (focus groups)
- This research will take up to the length of one school year

YOUR RIGHT TO ASSENT
For students to be in this study both student and the parent (or guardian) must agree to the student being in it. It is the adult's job to make sure the benefits and risks of this study are okay for the child. Research is a way to learn more about something. It is okay to ask questions about what we are telling you. Circle or highlight things on this paper you want to know more about. If you don't understand something, just ask us. We want you to ask questions now and anytime you think of them.

BENEFITS + RISKS OF THE STUDY
If you do not consent to the study, your child will not be interviewed, and your child's work will not be analyzed in the study. If your child begins participation and you change your mind, you may end your child's participation at any time without penalty. Your choice of participation will not affect your child's grade in the class.

If you consent to your child's participation, then they will participate in the items underneath the "**WHAT WILL MY CHILD'S PARTICIPATION INVOLVE?**" section. Some of the ways your child could be helped are that they may:

- experience an increase in your digital literacy skills;
- learn more about how technology can that solve real world challenges;
- feel good about helping other youth in your school; and
- design and implement an afterschool program for years to come

One of our larger aims is to use this research project as a "pilot" or test run, that could help Marygrove design more afterschool programs in the years to come. That said, we do not know for sure if you will be helped by being in this study. This research study poses little risk to your child; however, some students may feel uncomfortable talking about their projects with

the researcher. The researcher will not use your child's real name or names of other people or places in written records of this study. The researcher will take steps to lessen these risks including asking permission before recording an interview, removing analysis of appropriate data if you or your child decides later that you do not want your child to be included, and protecting your privacy and confidentiality by safely storing all audio and written records.

Results of this study, including samples of student work, may be used for teaching, research, publications, or presentations at scientific meetings. If you consent and your child's results are discussed, their identity will be protected by using a pseudonym or fictional name. Their name will never be used in any report. Personal information about them will never be reported to their teachers, school administrators, or peers. Their confidentiality will be protected to the maximum extent allowable by law. If they participate in this study, we would like to be able to quote your child (repeat exactly what they say) without using their name.

HOW WILL AUDIO RECORDING HAPPEN IN THIS STUDY?

Interviews and group conversations will be audio-recorded. Audio files will only be seen by members of the research team who will save the files using fake names on password protected computers. Any transcripts of the files will also use fake names and will only be viewed by members of the research team. Unless required by law, only the study investigator, members of the research group, the investigator's staff, and the University of Michigan's Institutional Review Board (IRB) will have authority to review the study records. They are all required to maintain confidentiality regarding your identity.

HOW WILL VIDEO RECORDING HAPPEN IN THIS STUDY?

Some of our meetings will be video recorded. These recordings are only for internal note-taking practices. Unless required by law, no one besides the study investigator will see these videos. They will not be transcribed, coded, or otherwise analyzed for research purposes. These files will be saved without individual details, on a password protected computer.

WHO SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research, contact Parker Miles at pamiles@umich.edu or 703.731.4213. Your participation is completely voluntary. If you begin participation and change your mind, you may end your participation at any time without penalty or recourse.

CONSENT

Please place your initials by the statements below regarding your consent for your child's participation in this study. Your child's de-identified class work may also be shared with researchers. Additionally, your student may be interviewed by researchers. Students will also share some samples of their work to share with researchers.

_____ Yes, I agree to have my child participate.

_____ Yes, I agree to have my child interviewed.

_____ Yes, I agree to have my child recorded.

_____ No, I do not give consent for my child to participate.

Parent / Legal Guardian: I have discussed this study with my child. Your signature indicates that you have read this consent form and have had the opportunity to ask any questions about your child's participation.

_____
Parent/Legal Guardian's Signature

_____
Parent/Legal Guardian's name (PLEASE PRINT)

_____
Student's name (PLEASE PRINT)

_____
Date

SCHOOL OF EDUCATION
UNIVERSITY OF MICHIGAN

STUDENT ASSENT FORM TO BE A PART OF A RESEARCH STUDY

Title: *Cyborg Literacies in an Afterschool Makerspace* | **eResearch ID:** HUM00234880
Investigator: Parker Miles, doctoral candidate, pamiles@umich.edu and 703.731.4213

DESCRIPTION OF RESEARCH

We are exploring the literacy practices that Black kids use as they engage with digital technologies in an afterschool makerspace. Research activities will involve co-design of the afterschool space, observations of student practices there, interviews, and focus groups; students will have an option to share their work and products as well. These activities will take place after school, on campus, and will not interrupt their learning opportunities. Participants will have a chance to use and think about VR technology, coding and wiring, GPS technology, and other tools.

WHAT WILL MY PARTICIPATION INVOLVE?

You are being asked to be in this research study because you self-identify as a Black/African American If you say "yes", this is what will happen:

- We will have you attend meetings after school up to four times a week for 12 weeks this fall.
- We will invite you to work with other youth in the space to explore various digital technologies. You will be able to create and implement a project, solve a problem in your school or community, and/or build skills
- We will interview you intermittently throughout the afterschool program, at least three times (i.e. before, during, and after). Some of these interviews will be in groups (focus groups)
- This research will take up to the length of one school year

YOUR RIGHT TO ASSENT

For you to be in this study both you and your parent (or guardian) must agree to you being in it. It is the adult's job to make sure the benefits and risks of this study are okay for you. But it is still up to you if you *want* to do it. We want to tell you about a research study we are doing and see if you want to take part in it. Research is a way to learn more about something.

It is okay to ask questions about what we are telling you. Circle or highlight things on this paper you want to know more about. If you don't understand something, just ask us. We want you to ask questions now and anytime you think of them.

BENEFITS + RISKS OF THE STUDY

If you decide to be in this research and your parent or guardian says yes, you will participate in the items underneath the "**WHAT WILL MY PARTICIPATION INVOLVE?**" section. Some of the ways you could be helped are that you may:

- experience an increase in your digital literacy skills;
- learn more about how technology can that solve real world challenges;
- feel good about helping other youth in your school; and
- design and implement an afterschool program for years to come

One of our larger aims is to use this research project as a "pilot" or test run, that could help Marygrove design more afterschool programs in the years to come. That said, we do not know for sure if you will be helped by being in this study. This research study poses little risk to you; however, some students may feel uncomfortable being observed. We will take steps to help you with these feelings or discomforts. The researchers will not use your real name or names of other people or places in written records of this study; however, your real name, image, and voice may be recorded. Researchers will take steps to lessen these risks including asking permission before observing anyone, removing analysis of appropriate data if you decide later that you do not want to be included, and protecting your privacy and confidentiality by safely storing all records. Results of this study, including samples of student work, may be used for teaching, research, publications, or presentations at

scientific meetings. If you consent and your results are discussed, your identity will be protected by using a pseudonym or fictional name. Your name will never be used in any report. Personal information about you will never be reported to your teachers, school administrators, or peers. Your confidentiality will be protected to the maximum extent allowable by law. If you participate in this study, we would like to be able to quote you (repeat exactly what you say) without using your name.

HOW WILL AUDIO RECORDING HAPPEN IN THIS STUDY?
Interviews and group conversations will be audio-recorded. Audio files will only be heard by members of the research team who will save the files using fake names on password protected computers. Any transcripts of the files will also use fake names and will only be accessed by members of the research team. Unless required by law, only the study investigator, members of the research group, the investigator's staff, and the University of Michigan's Institutional Review Board (IRB) will have authority to review the study records. They are all required to maintain confidentiality regarding your identity.

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Some of our meetings will be video recorded. These recordings are only for internal note-taking practices. Unless required by law, no one besides the study investigator will see these videos. They will not be transcribed, coded, or otherwise analyzed for research purposes. These files will be saved without individual details, on a password protected computer.

WHO SHOULD I CONTACT IF I HAVE QUESTIONS?
You may ask any questions about the research at any time. If you have questions about the research, you should contact Parker Miles at pamiles@umich.edu or 703.731.4213. Participation in this study is voluntary which means you can choose to end your participation at any time and this will not affect your grades or standing in any student organization.

ASSENT

Please **place your initials** by the statements below about whether or not you agree to participate in this study and **circle your response to each statement**. Your faculty advisor will record youth learning and working together throughout the school year in the afterschool group. Students will also share some samples of their work to share with researchers.

Initial next to *Yes* or *No* for the following three statements.

I agree to participate. Yes____ or No____ **I agree to be interviewed.** Yes____ or No____

I agree to be recorded. Yes____ or No____

Your signature shows that you have read this assent form and have had a chance to ask any questions about your participation in this research.

_____	_____	9/27/23
Student's Signature	Student's name (PLEASE PRINT)	Date

The following should be completed by the study member conducting the assent process if the child agrees to be in the study. Check all that apply.

- ☑ The child is capable of reading and understanding the assent form and has signed above as documentation of assent to take part in this study.
- ☐ The child is not capable of reading the assent form, but the information was verbally explained to them. The child signed above as documentation of assent to take part in this study.
- ☐ The child had ample opportunity to have his or her questions answered.

Appendix B: Case Interview and Exit Interview Protocol

Take some time to discuss these questions with the people sitting near you. Feel free to skip any that don't seem interesting to you or if you feel like you answered it already. Anything you share with me will be anonymized to protect your privacy, but please only share what you feel comfortable with. Lmk if you have any questions!

What it's like at TSM

How long have you been a student here?

What makes you excited to be a student here?

What advice would you give someone who was transferring here into your grade?

What is your favorite class? Why?

How do you feel about your teachers overall?

Can you tell me a story about being at TSM that stands out in your memory?

If you could change anything about TSM what would it be?

after-school programs at TSM

Ambiance

Which clubs/teams are you a part of? What do you like about them?

What's it like in our club? How is it different from other groups at TSM?

Describe a typical day in here. What kind of stuff do you do?

How often do you come?

What do you like about coming here?

How do you feel when you're here?

Activity

What kind of stuff did you work on?

What inspired you to work on it?

What was your favorite thing to do in here?

What was something new that you learned or got better at? How did you learn it?

Did you teach anything to anyone? What was it?

What was something you wish you had used or done more?

What other thoughts do you have about what we did down here?

Are you coming back next year? What's something you want to improve about the club?

Technology Questions

Use & Experiences

What are some ways you use technology in your day to day life?

What do you use most often? Where do you use it? With who?

How much time do you spend doing things online? What kind of things?

Can you tell me a story about a time when you were using technology or doing something online and it was a really positive experience?

Can you tell me a story about a negative experience?

How do you feel about technology overall?

Skills and Habits

Do you think you're tech savvy? How did you learn?

Would you say you're better or worse with technology than your parents?

Would you say you're better or worse with technology than your friends?

What are some aspects of technology that you're excited about?

Whare are some aspects of technology that make you anxious or frustrated or scared?

Have you ever broken the rules or done something bad with technology? What was it?

Thinking about the Future

Imagine 10 years from now: what is life gonna be like in Detroit?

Do you think the world will be better than it is now, or worse? What will have changed?

Where do you see yourself in the future? What kind of life do you want?

How often do you imagine your future or the future? What do you think about?

Ok now imagine it's 100 years from now. What is life gonna be like in Detroit or in the world?

About Cyborgs

You've heard me talk about cyborgs in here to describe Black people's relationship to technology. I've been using two definitions:

1. A human with technological extensions or, having online and offline versions of themselves.

Think about how you use technology. Do you think this definition applies to you?

2. A rebel intellectual, connected to people around them, trying to be their best, most whole self and being joyful

Think about yourself and how you try to live your life. Do you think this definition applies to you?

How has your time in this club made you more like a cyborg?

If you *were* a cyborg, what kind of enhancements would you have? What would you use technology to do?

Potpourri (if the answer is yes to these, come holla at me!)

Want to help me write about this club? I want to write a young adult novel about it! I'll probably write some traditional research to publish as well.

Want to help me plan how to improve the space for next year? Can you meet after-school 1 day a week in the winter semester?

What else do you want to let me know?

Appendix C: Codebook

FAMILY	CODE	THEME	SUB	subsub	Definition
DESAF: Design Affordances					qualities and characteristics of the makerspace that impacted students' capacities to practice cyborg literacies
	DESAF-VIB	**the vibes**			**The way it** *feels* to be in the makerspace; the attitudes, energy, and ambiance.
	DESAF-VIBPos		**positive**		**expressions and indications with a positive bent**
_chill				chill	a positive vibe based on a state of relaxation or ease
_fun				fun	a positive vibe based on enjoyment
_heard				feeling heard	a positive vibe based on feeling heard or listened to
_sov				sovereignty	a positive vibe based on feeling free to be, do, and refuse
	DESAF-VIBNeg		**negative**		**expressions and indications with a negative bent**
_clean				cleanliness	a negative vibe based on the cleanliness of the space
_cramp				cramped	a negative vibe based on a lack of room, space, or equipment

_org			organization	a negative vibe based on the the set up/organization of projects
_opps			opps	a negative vibe based on the presence of unwanted persons
	DESAF-VIBNeut	**neutral**		**a neutral vibe, neither positive nor negative**
	DESAF-VIBSpat	**spatial**		**a reference to the physical layout of the makerspae**
_decor			décor	a reference to the décor of the makerspace
_plant			plants	a reference to the plants in the makerspace
_down			away & "down here"	a reference to the physical location of the makerspace within the school
	DESAF-VIBSon	**sonic**		**a referenceto or instance of the sounds within the makerspace**
_laugh			laughter	instance or reference to the sound of laughter
_sing			singing	instance or reference to singing, rapping, or karaoke
_mus			music	inttsnce or reference of music being played
_cut			cutting up	instance or reference of fooling, joaning, playing around, expressing exuberance
_yell			yelling	instance or reference of louder than conversational volume
	DESAF-VIBSpirit	**spiritual**		**moments or expressions of Blackness and/or fugitivity**
_joy			joy	instances of references to joyousness, exuberance, jouissance

_relax			relaxation	moments of or references to a state of respite or relaxation
_safe			safety	references to or expressions of feelings safe
_esc			escape	references to escape or flight
_free			freedom	references to or expressions of feeling free or self determined
_create			creative expression	references to moments of creativity, or self expression
_sig			signifying	moments of black signifying practices-- i.e. dozens, call and response, boasting, storytelling
	DESAF-VIBDes	**design & maintainance**		**moments of or references to designing or mainitaining the space**
_org			organizing	references to organising or strategically moving things
_plan			planning	discussions about future uses and design of the space
_vet			vetting/ protecting	clarifiying the presence of visitors
_inv			inviting	moments or expressions of telling peers about the space, extending invitations
_clean			cleaning	moments or expressions of cleaning, tidying, sweeping, straightening, trash disposal
	DESAF-SD	**self determination**		**The freedom to explore, the freedom to be; the freedom to refuse**
	DESAF-SD-play	**choosing play**		**the decision to engage in play**
_tech			play with tech	engaging in play individually, with technology
_together			play with eachother	engaging in partnered or group play, with technology

	DESAF-SD-work	**chosing work**		**the decsion to engage in work/nonplay**
_work			homework	expressing desire to or actively working on homework
_make			making	working on making activities
_maint			space maintainaince	working on maintenaince of the space
	DESAF-SD-ref	**refusal**		**rejection, non participation, flight, disengagement**
_quit			quiet quitting	refusal of activity or circumstance without verbally indicating a desire to do so
_esc			escape	leaving the space, going "elsewhere" in VR
_vnp			vocal non participation	verbally refusing or rejecting activity or circumstance
	DESAF-SD-moveout	**movement outside**		**bodily leaving the makerspace**
_club			other clubs	leaving for other afterschool clubs/activities/sports
_teach			visiting teachers	leaving to visit with a teacher
_space			getting space	leaving to decompress or get space or take a breather
_priv			private talks	leaving to have a private conversation
_leave			leaving campus	leaving campus
	DESAF-SD-movein	**movement within**		**bodly moving about the makerspace**
_rooms			changing rooms	moving from one room to another
_frolic			frolic	moving about playfully, running, jmping, dancing, chasing
_isolating			isolating	moving about the space to isolate or be away from others

_stations			changing stations	moving between technology "stations" or changing activities
	DESAF-SD-bound	**boundary setting**		**describing or actually. verbally or physcically establishing or maintaining boundaries with others**
_me			from me	boundaries with me
_parents			from parents	boundaries with with parents
_teachers			from admin/teachers	boundaries with school adnim and/or teachers
_peers			from peers	boundaries with peers
	DESAF-SD-name	**naming**		**naming themselves and others with nicknames**
CYBLIT: cyborg literacies				**technologically mediated practices through which particiapnts reject victimization and/or abjection**
	CYBLIT-Self	**selfmaking**		**Black youth practices of crafting, trying on, assuming, and discarding roles and identities for their current and future selves**
_skills		practicing current skills		expressions or moments of practicing/enhancing current skills
_fut		imagining future selves		expressions or moments of imagining future selves
_newskills		trying new skills		expressions or moments of trying new skills
_digitally		"dig-entities"		expressions or moments of selves that are combined digital and material
_avatars		developing avatars		expressions / moments of creating or manipulating avatars

CYBLIT-sense	**sensemaking**		**discussing, debating or otherwise individually and collectively processing their lived experiences of being in the world**
_curr		discussing current events	sensemaking about current events in news/media
_gender		debriefing gendered experiences	sensemaking about gendred experiences
_race		debriefing racialized experiences	sensemaking about racialzied experiences
_horizon		horizontal learning	sensemaking via horizontal learning
_open		open source learning	sensemaking via open source learning (i.e. thingiverse, youtube, scratch)
CYBLIT-world	**worldmaking**		**dreaming, wishing for, predicting, imagining, forecasting about a present and/or future that does not exist yet**
_loop		designing our loophole	worldmaking about the design/content/technology of our afterschool space
_decor		decorating	worldmaking about the layout/décor of our afterschool space
_iterat		planning future iterations	worldmaking that imagines futureiterations of the afterschool makerspace
_other		imagining otherwise	worldmaking that imagines more just/more liberated futures

_clean	cleaning	worldmaking about the makersapce that involves cleaning /straightening up
CYBLIT-joy joymaking		**everyday communal practices of dancing, singing, playing, creating, laughing, cutting up, memeing, joaning, signifying, and being fully alive**
_friv	frivolous tech use	moments ofjoymaking through playful use of technology
_sing	singing	moments of joymaking through singing
_danc	dancing	moments ofj joymaking through dancing
_meme	meming	moments of joymaking through memes/transmedia
_joan	joaning	moments of joymaking through signifying
_frol	frolic	moments of joymaking through physical frolic
CYBLIT-ref refusal		**renegotiating or outright rejecting participation or inclusion in class, school, democracy, society**
_bull	bullshitting	expressions or moments of nonparticipation coupled with relaxation, idleness
_school	rejecting treatment at school	expressions or moments of rejecting experiences within school
_home	rejecting treatment at home	expressions or moments of rejecting experiences at home
_maker	rejecting treatment in the makerspace	expresssions or moments of rejecting experienecs in the makerspace

_world			rejecting treatment in the world	expressions or moments of rejecting treatment in the world
_college			rejecting college trajectory	expressions or moments of rejecting the "collece track"
_plot			plotting	planning or preparing for future refusal
_ign			ignoring requests	experessions or moments of noncompliance
MAKE: making & actvity				**making, in the traditional sense via the tools and technologies on hand in the makerspace**
	MAKE-3D	**3D printing**		making or planning to make items with the 3d printer
_art			art	3d printing art and/or décor
_toys			toys	3d pritning toys and/or trinkets
_gifts			gifts	3d printing gifts for others
_fid			fidgets	3d printing fidget spinners clickers and twirlers
_tool			tools	3d printing utlitarian tools or other items
_task			assigments/tasks	3d prining as instructed or invited by a coach or teacher
	MAKE-Draw	**drawing**		**moments or expressions of drawing or sketching**
_digi			digitally	drawing digitally
_pap			on paper	drawing IRL
	MAKE-Paint	**painting**		**moments or expressions of painting or sketching**
	MAKE-Write	**writing**		**moments or expressions of writing**
	MAKE-tink	**tinkering**		**moments or expressions of tinkering**

_break			breaking	moments or expressions of desconstructing or breaking technology/tools
_fix			fixing	momenst or expressiosn of reconstruction, repairing, or fixing technology/tools
_expl			exploring	moments or expressions of exploring technology/tools
_inv			inventing	moments or expressions of creating new technology/tools or using extant tools in a new way
	MAKE-combo	**mixed/combination**		**a comination of making practices**
	MAKE-hw	**homework & assignments**		**making for homework or assignments**
	MAKE-trans	**transmedia**		**making that involves transmedia**
_ani			anime	making that invovles anime
_game			games	making that involves games
_meme			memes	making that invovles memes
	MAKE-misuse	**"mis"use**		**making that invovles using a technology tool "wrong" "incorrectly" or otherwise not as originally desiged**
	MAKE-abort	**aborting projects**		**stopping, quitting, moving on from, or forgetting about proejects in progress**
	MAKE-VR	**vr**		**engaging in making via VR**
_box			boxing	boxing in VR
_climb			climbing	climginb in VR
_mov			tv/movies	watching tv or movies in VR
_war			warfare	playing war/shooting games in VR

_foot			football		playing football games in VR
_fish			fishing		fishing in vR
_med			watching non-entertainment media		watching isntrutions, lessons, guides or other non-entertainment media
_amoung			"among us"		playing amoung us in VR
_cust			customizing		cusotmizing settings/set up/ layout in VR
_blend			identity blending		taking on a VR identity IRL
_esc			"escaping"		expressions of using VR to "escape"
_netgaming			networked gaming		gaming with others in the space or online, in VR
_imb			exceeding the virtual/iimbricated		physical expressions /manifestations of VR activity IRL; reembodiment
_avat			avatar management		expression or activity of choosing, editing, admiring or describing an avatar
	MAKE-eng	**engineering**			**making via engineering**
_mech			mechanical		mechanical engineering/construction/building
_cod			coding		coding or programming
_mus			music		producing or making muisc
	MAKE-eng-CAD		CAD		engaging in computer assisted design
_rob				for robotics	CAD for robotics
_fun				for fun	CAD for fun/pleasure/play
	MAKE-inter	**interpersonal**			**managing interpersonal relationships in the makerspace**

_arg	arguing	moments/ expressions of disagreeing or arguing, but not as a debate
_spa	holding space	moments/expressions of listeing, comisserating, holdign space for one another
_boo	boo loving	moments/ epressions of flirting, hugging, embodyign an amorous relationship
_squab	playfighting	moments/ expressions of pretend fighitng, slap boxing, squaring up
_check	checking behavior	moments/expressions of indicating that behavior is unwanted/innapropriate
_adv	seeking or giving advice	moments/expressions of asking for and/or receiving advice about a topic or event
_robo	talking robotics	moments/expressions of enagment about team K9.0 roboitics
_deb	debating	moments/expressions of debating/disagreeing about current events/ happenings at school
_recap	recapping / catching up	moments/ expressions of storytelling about past events, getting people up to speed, recapping the event, weekend, break
_bound	setting boundaries	moments/expressions of establishing or maintatining boundaries

_joan		joaning	moemnts/expressions of making fun, joaning, or otherwise frying up peers
MAKE-TL	**teaching & learning**		**moments/expressions of teaching or learning skills, behaviours, habits**
_funds		bringing outside knowledge	bringing in school-based, homebased, or otherwise previously acquired knowledge
_learn		open source learning	moments/ expressions of teaching or learning from open source/ online sources
_hor		horizontal learning (peer teaching)	moments/expressions of teaching or learning from one participant to another
_solv		group problem solving	moments/expressions of solving a problem or developing a skill in pairs or groups
ONTECH: On Technology			**expressions about the uses, purposes and limitations of technology writ large**
ONTECH-purp	**purpose of technology**		**expressions about the purposes of techlolgy**
_ease		make life easier	technology's purpose is to make life easier
_war		warfare	tech's purpose is war or violence
_distr		distraction	tech's purpose is distraction
_surv		surveillance	tech's purpose is surveilance
_com		communication	tech's purpose is communication
_disrupt		disrupt society?	tech's purpose is to disrupt or interven in society

_fun	pleasure/ fun	tech's purpose is enterntainment, fun, pleasure
ONTECH-homeuse	**current technology use at home**	**expressions about technology use at hime**
_pho	phones	use of phones at home
_gam	games	use of game or game systems at home
_appl	appliances	use of at-home appliances (I.e microwave, washing machine)
_cars	cars	use of cars
_fab	fabrication /3d	use of 3d printing or other fabrication at home
_vr	vr	use of Vr at home
_home	homework	use ot technology to do homework at home
_art	digital art	at-home creation of digital art
_comm	communication	at home use of technology for communication
_med	media consumption	at home use of technlogly for media consumption
_comp	lapotp/computers	at home use of laptop or desktop computer
ONTECH-futureuse	**future uses of technology**	**expressions about the uses of technology in the future**
_AI	AI	uses of AI in the future
_And	Androids	uses of androits in the future
_manu	manufacturing	uses of manufacturing/production in the future
_learn	support learning	uses of technology to support learning in the future

_clim			climate solutions		uses of technology to solve climate solutions in the future
_ben			benefits of technology		beneficial uses of technology in the future
_cons			conesquences of technology		consequences of technology in the furue
_Risk			risks of technology		risks of technology in the future
_opp			oppression		oppresive/racialized/gendered uses of technology in the furue
INTERVENT: Interventions & Futures					**interventions or changes studetnts would make or propose**
	INTERVENT-TLS	**school level interventions**			**interventions/chnges Ss would make in their school/district**
	INTERVENT-TLS-teach		teachers		interventiosn related to their teachers
_hire				hiring more teachers	hiring more teachers/ hiring back departed teachers
_fire				firing teachers	firing teachers
_supp				supporting teachers	supporting teachers
_admin			new administration		interventions related to TLS administration
_sup			new superintentdent		Interventions related to MWCS superintendent
_comm			better communication		interventions related to communcation between leadership and students
	INTERVENT-TLS-CURR		curricular interventions		curricular interventions at TLS
_stem			STEM courses		changes/improvements/additions to STEM courses

_sj		social justice oruses courses		changes/improvement/aditions to social justice coureses
_listen		listen to students		interventions centered on attending to student voice
_well		wellness days		interventions around student wellenss/ TLS wellenss days
	INTERVENT-TLS-disc	discipline		interventions around discipline practices at TLS
_poli			policing	instances of policing and/or calling police at TLS
_rest			restorative practices	instances of restorative practices at TLS
	INTERVENT-SOC **societal interventions**			**city/societal level interventions**
	INTERVENT-SOC-MWC	changing perceptions of Midwest City		expression of changing midwest city's perception
	INTERVENT-SOC-ACC	changing access in Midwest City		expressions about changing access to and in midwest city
_gent			gentrification	expressions about gentrification its effects, and its reversal
_ifra			infrastructure	expressions about MWC infrastructure, including failures and prooposed improvements
_env		protecting the environment		expressions about protecting the environment/climate
	INTERVENT-SOC-RACE	ending racism		expressions about ending , stopping, or intervening in racism
_inter			interpersonal	expressions about interveing in interpersonal racism

_sys			systemic	expresssions about intervening in systemic racism
	INTERVENT-SOC-ECON	ecconomic reform		expressions about intervening via economic reform
_ubi			UBI	expressions for or against universal basic income
_tax			tax reform	expressions for/against tax reform for indviduals and businesses
	INTERVENT-PERS	**personal futures**		**expressions about Ss personal futures**
_car		career plans		expressions about/references to career plans
_edu		education plans		expressions about/references to educational plans
_loc		location		expressions/plans about future locations to live
_lei		leisure activities		espressions about future liesure/fun activities
_fam		family		expressiosn about future familial shape/relationships
_rel		relationships		expressions/ plans about future amorous relationships
	INTERVENT-FUT	**possible futures**		**possible future outcomes for America/ the world**
_fasc		fascism		anticipation of facism in the furure
_clim		climate change		anticipation of climate change/disaster in the furure
_Blk		Black liberation		anticipation of Black liberation in the future
_ob		obesity		anticipation of obesity in the future

OPIN: Opinions & perspectives		**expression of participant opinions & perspectives**
OPIN-school	**about school**	**expression of opinions/perspectives about school & schooling**
_posi	positive	postiive opinions
_nega	negative	negative opinions
_neut	neutral	neutral opinions
_safe	safety	opinions about student safety
_good	good teacher/class/expe rienve	opinions about a good expeirence with a teacher/class
_bad	bad teacher/class/expe rience	opinions about a bad expereince with a teacher/class
_kept	kept promises	opinion/example of a kept promise at school
_broke	broken promises	opinion/ example of a broken promise at school
race	racism	opinion/example of racist treatment at school
_miso	misogynoir	opinion/example about misogynoir experienced at school
_targ	targeting & retaliation	opinion/example of ffeeling argeted/reatliated against at school
_admi	administration	opinion/ perspective about TLS administration
_faci	facilities	opinion/persepctive about facilities/campus
_dist	district-level	opinion/perspective about MWSD at city/district leve

	OPIN-school-after	afterschool activites		opinion/perspective about afterschool activities
_chs			chess	perspectives on chess
_rob			robotics	perspectives on robotics
_church			church	perspectives on church
_band			band	perspectives on band
_cho			choir	perspectives on choir
_spo			sports	perspectives on sports
_SC			stuent council	perspectives on student council
_girls			girls' groups	perspectives on girls groups
	OPIN-MWC	**about MWC**		**opinions/perspectives on MWC**
_crim		crime		opinions about crime
_trash		trash		opinions about trash in MWC
_gent		gentrification		opinions about gentirification in MWC
_race		racism		opinions about racism in MWC
_clas		classism		opinions about classism in MWC
_blk		blackness		opinions about blackness in MWC
_infr		infrastructure		opinions about infrastructure in MWC
_pos		positive		positive opinions/perspectives about MWC
_neg		negative		negative opinions/perspective about MWC
_neut		neutral		neutral perspectives about MWC
_pst		bball		opinions about the MWC basektball team
_leo		fball		opinions about the MWC football team
_pri		pride		expressions of pride about MWC

_rev			revitalizing	opinions about revitalizing MWC
LOOP : the loophole of retreat				expressions about the makerspace
	LOOP-FEELS	**opinions about our space**		opinions about the makerspace
_pos			positive	positive opinions about the space
_neg			negative	negative opinions about the space
_neut			neutral	neutral opinions about the space
_diff			different from school	articulations of how the space is different from school
	LOOP-USES	**uses of the loophole**		**uses of the the loophole of retreat**
_mak			making	activity/expression about making
_rest			resting	activity expression about resting
_wait			waiting	activity/expression about waiting
_play			playing	activity/expresssion about playing
_soc			socializing	activity/expression about socializing
_decom			decompressing	activity/expression about descompressing or resting
_expl			exploring	activity/expression about exploring in the space
_eat			eating	activity/expression about eating or snacking

_med	consuming media	activity/expression about consiming media
_esc	escape	activity/expression about escaping
_drm	dreaming	activity/expression about otherwise worlds

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