A Caring Rebellion: Literacy, Power, and the Problem of Marginalized Self-Actualization

in Neal Stephenson's *The Diamond Age*

by

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Abstract

Grounded in the methods of media ecology and Paulo Freire's *Pedagogy of the Oppressed*, this thesis examines the relationships between power, literacy, technology, and society. It poses the problem as to why some individuals can attain critical literacy and self-actualization through literacy skills and tools, while others are denied the same liberation. The thesis suggests that science fiction provides productive insight on this predicament because it is a genre focused on relationships between individuals, society, and technology; because science fiction organizes the perspective around a single naive protagonist it also enables structural questions about the relation of the individual to the group. The answer is found, in part, through a reading of Neal Stephenson's *The Diamond Age*. The resulting case study determines that access to literacy (or access to information) is not enough, and both the ability to partake in engaged participation and the support and formation of community networks are essential.

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Introduction

During the time that I write this I am deeply troubled by the question of my writing's value in the midst of the very real concerns of the age. Like so many times in the past, it feels like we are on the brink of global war; there exists in the world a bifurcated structure of wealth, power, and ideological opinion; scientists are silenced as we face total environmental collapse; and those marginalized by race, gender, or socio-economic position must fight for a voice in a world that is faster, louder, and more technologically saturated. Instead of stirring up critical inquiry between contradictory viewpoints, both sides of social arguments cyclone in their own echo chambers on the internet as we get led deeper and deeper into cliques of social stance and cultural superiority.

In the current media landscape, where social media trumps the average citizen's intake of rigorously researched news or peer-reviewed research, critical media literacy becomes more and more important.Yet, the achievement of critical media literacy has been as elusive as it is necessary. To understand these challenges, and to imagine pathways to their resolution, fiction has traditionally played an important role. Historically, science fiction has been a creative mode that focuses on imaginative outcomes for the future. Science fiction blends science and technology, real or imaginary, with the experiences of people. It is a meeting of two disciplines—science and the humanities—in a way that provides a reflection on our experiences with technology through the past and present, and an opportunity to imagine the trajectory of science and society into the future. By examining science fiction narratives we can reflect on our present relationship with technological saturation and imagine, observe,

and evaluate options for future media, media practices, media technology, and media education. As Roger Luckhurst says, science fiction is "a literature of technologically saturated societies" and science fiction texts can "speak to the concerns of their specific moment in history" (3).

The science fiction text that I have chosen to examine is interesting in its treatment of history and its place at the beginning of the digital age. By blurring together the nineteenth-century, the late 20th century, and the future, Neal Stephenson's *The Diamond Age: or, A Young Lady's Illustrated Primer* (1995) consciously interprets relationships between society and technology throughout the past and into the future. My reading of *The Diamond Age* recognizes the novel's position in the early days of the internet as well as examining how a generation's worth of time—twenty-five years—has changed (and retained) relationships between technology and society.

My research of *The Diamond Age* and adjacent texts, has led me towards the value of digital access and critical media literacy as we face news and narratives from the varied modes of mediation (eg. digital film, photo, sound) in this era after the invention of the internet. *The Diamond Age* demonstrates future mediation technology, education, and the specific impact for women and girls as they come into power and alter society. Stephenson's novel emphasizes education and literacy. The educational technology in the text (the Illustrated Primer of the subtitle) is both a gesture towards pre-industrial educational systems as well as a future-forward example of interactive digital education. Stephenson's juxtaposition of cyber-punk and Victorian settings casts the deeply hierarchical and hegemonic legacy of Victorian education into the future,

implying social persistence despite technological advancement, while also providing new technology that can champion social rebellion.

I focus on the need for participatory and critical media literacy that is implemented in Neal Stephenson's novel as I address questions about access to information and an argument for participatory literacy practices that are active and ongoing. Through Stephenson's setting of neo-Victorian futurity and emphasis on educational technology, I will describe the historical groundwork of our interactions with power, technology, and media. I will discuss how new media techniques disrupt hegemonic power structures in the novel while providing opportunities for self-determination of the marginalized female characters that ultimately leads to a redistribution of wealth and power. I plot a historic trajectory of these relationships of information, education, power, technology, and society from the invention of the alphabet and the printing press, through the rise of public education in the nineteenth-century, changing literacies in the digital age, and then into the future through the use of science fiction as a case study and reflection of present ambitions and anxieties.

My thesis is focused on anxieties about education, and more specifically, literacy. I am of the opinion that education is an institution of control, and literacy the controlled power. Through literature, we witness ways that this power is controlled, co-opted, and adapted. Through the lens of science fiction, and more accurately, alternative future science fiction, we see the nostalgia and regrets of past literacy education, the ambitions and fears for literacy education of the present, and the ambition and anxiety

for the education of the future. I suggest that through radical access, community involvement, and engaged participation, the evolution of the system can destabilize hegemonic power structures and support critical discourse.

Method, Influence, Social Position

This thesis is an ecological examination of the interconnection of society, technology, and power, and the mediation of information and education by and through a perpetually evolving system. It is ecological in that each component of the system depends on another and participates in changes to the system, while also being changed. I write through a lens of social constructivism and media ecology. I believe that we humans create society as we are simultaneously created by it. The same goes for technology—we make it, and it makes us.

This research has also been influenced by my reading of Nathan Snaza's *Animate Literacies* (2019 Duke UP). Snaza explains that human society functions the same way as a permeable cell membrane; there is a constant imbalance between who is on the 'inside' and who is on the 'outside' (Othered). The latter is essential for the establishment and maintenance of the former. The boundary is essential for delineating who is and is not—who has and has not. Snaza rightfully explains that "borders are not things, per se, but activities," but because they are activities, "borders are not stable, given, solid" (5). Borders are an activity of structuring, delimitation, and encoding non-intrinsic meaning.

Literacy, as a tool of power and control, is also a way of delineating who is and is not human. In the Greek *polis* the qualifications to be considered a 'legal' and 'political'

citizen was voting rights, which were only given to the literate (white) men. To ensure maintenance of the social structure, those in power regulated who was able to develop the skill of literacy, thereby ensuring a continued claim of power. If those who were denied the skill of literacy were permitted to attain that literacy they would, in turn, gain immense power and the ability to dissent. As such, the skill of literacy and access to knowledge has a direct relationship with power structures and their maintenance.

Restricting the skills and tools required for political action inhibits human agency. Through the control of language and literacy, the dominant group can control who can be literate, who can be political, who has freedom of human agency. Snaza argues that "the human is nothing other than a political concept . . . which is fundamentally porous and resistant to closure" (33). Snaza points out that, as the conception of what it means to be human was developed (to be a literate and political being), the counter-part (the other side of the membrane) was also defined—and it was racialized and gendered (31). This provided levels of human and subhuman that justified the inhumane treatment of others who were deemed subhuman (non-literate and non-political beings, who were forced to remain non-literate and non-political as an essential aspect of the boundary/membrane). This border-policing further instantiates boundaries, but does not make that boundary solid—it is still porus, still susceptible to leaking or reformations. Snaza continues, arguing that humans are "political subjects capable of political deliberation and political action" (34)— but most of these political activities (in the current system) are performed through literacy. But this is important: humans are the agents, literacy and books are the skills and tools. To deform the membrane requires

radical access to the skills and tools that provide literacy—that divide the political agents from those who have been systematically denied agency. So as Snaza says, "we need to learn to seize on ways of reading and writing the human differently that disrupt and rearticulate the energies that go into its maintenance" (35) . . . "not just decolonizing the human, but decolonizing the literacies" (37).

I am also influenced by the "problem posing" pedagogy of Paulo Freire and the embodied, question-asking research of Langdon Winner's *The Whale and the Reactor*. Snaza, Freire, and Winner each propose a methodology that emphasizes asking questions and problem-posing. Snaza calls the trans-disciplinary method of *Animate Literacies* "like trying to cobble together insights from a range of disciplinary standpoints" (5) while partaking in the invocation of the personal, "*affective attunement politics*" (6), or how the author touches and is touched by things. I believe that this method is important in the current age of disciplinary segregation and superiority; both problem-posing and making things personal highlight the diversity of individuals (their interests, backgrounds, and curiosities) and also makes the political personal.

Because I see a very real need for the personalization of learning and teaching—humanizing information by placing the human at the centre—I feel it is important to question how we come to our ideas about the world and why we hold previously held beliefs. In *The Whale and the Reactor* (1986), Langdon Winner explains the importance of asking "Where does my own personal interest in these topics come from? Why have I chosen to approach them in the way I have?" and that "These are not questions scholars usually ask" (166/7). But I certainly, definitely, want to ask. There is

nothing more important to me than *why* we ask the questions we do; *why* we gravitate to certain problems or solutions; what is it in the experience of reading that we feel feeding our personal experience (consciously or otherwise)? Theory need not be impersonal; quite the opposite. In the examples I draw upon, of authors or characters rebelling against the order that attempts to subdue and oppress, these agents of change speak and act from their *experience*. If we want theory to do more, be more, to be a possible agent of change—and I believe in this age it's more important (and easier) than ever to write and communicate and share our knowledge—if we want to share our knowledge we have to speak from experience. The starting line for that comes from asking *why am I interested in this*?

I became interested in this idea of literacy as power, of education as a journey to becoming an informed agent of change, because I see it modelling my own journey. Neal Stephenson's *The Diamond Age* appealed to me because I once *was* that impoverished girl with limited access who moved through the paces of fitting in to get ahead then stepping out to become her own agent. I know other women who have walked similar journeys with their own trials along the way who now are doctors, lawyers, managers, mothers, and academics. These women, whether they led a quiet resistance or loudly roared forward, all had to fight, overcome, challenge, question, act.

One final note on my social position and terminology: I write from a privileged position in the Global North and I am speaking of my experiences within a dominantly Euro-American society, which I'd further preface is only the dominant society—there are many other marginalized cultures and frames of experience here (in Canada). Even

within the Global North there are socio-economic disparities that impact the ability for individuals or social groups to access the technology and training for critical media literacy. More and more of our information comes from digital sources and the ease at which individuals can share their views supports a wide accessibility for participation; however, unrestricted participation also leads to a glut of information that requires the development of critical discernment of information—critical reading/thinking. As a result, critical literacy has never been more important to prevent the spread of inaccurate, strongly biased, or under researched information in cultural narratives, social communication, and news.

Literacy, Technology, and Control

Traditionally, literacy is the skill of reading and writing written languages, but as mediation technology changes, the skills needed for understanding media change too.[1] With these New Media Literacies[2] our mediation of the world has changed. Theorists have examined how technology and literacy impact our view and interaction of the world. Kathleen Welch explains that both literacy and technology influence how people interact with themselves, others, and their surroundings and that literacy is a way of structuring mental processes which is influenced by the language and technology of the communication medium (14). In the modern world, a main communication technology is the screen: we wake up to an alarm on our smart-phones, look at the screen and start our day. We read the news on screens, books on screens, we talk to friends, family, and colleagues on screens, we even hand screens to children to play with while we wait in the grocery line. Welch is correct to say that "screens accompany us," and, as we tote around our new companions, "in locations of power as well as of powerlessness," they define and "constitute" our intersubjectivity, our language, and our identity formation (4). However, Welch notes that the "screens of computers mostly appear in locations of power" (4). So while screens are prolific in the Global North, the unique powers of computer screens—with their inherent interactivity and participatory aspects—are held, used, designed, and controlled by the powerful. In contrast, the sites of little to no power

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[1] Although I do not directly cite Marshall McLuhan, this type of theory is frequently associated with his work, in particular: *Understanding Media* (1964) and *Gutenberg Galaxy* (1962).
[2] See: Ohler, Jason. "New-Media Literacies." *American Association of University Professors*, May-June 2009, https://www.aaup.org/article/new-media-literacies ; "What is New media Literacy." *IGI Global*. https://www.igi-global.com/dictionary/new-media-literacy/20287

are generally relegated to the passive screens of television. Screens (and literacy more broadly) define who we are as individuals and as a collective species. Literacy—from acquisition to access—defines an individual's position in society as well as their relationship to themselves and those around them, and literacy is innately tied to forms of mediation technology.

Both literacy and technology can be harnessed as a means of power and control; Langdon Winner succinctly argues that "technologies can be used in ways that enhance the power, authority, and privilege of some over others" (25). It's not simply the politics of power, control, and marginalization that occur in the aftermath of new technologies, it's also the conscious and unconscious choices and biases that go into the development and design of technologies. Even *that* a particular technology is under *consideration* is influenced by certain motivations (such as scientific knowledge, technological innovation, or corporate profit). Generally those who are making the decisions are already in positions of power and their choices are motivated in personal (or profitable) self-interest, which is problematic for those who are not in a position to make those society-shifting decisions. Andrew Feenberg argues that "technology can frame not just one way of life but many different possible ways of life, each of which determines a different choice of designs and a different range of technological mediation" (13). Thus, technology is a framework of society (its structures) and not simply the tools we apply to society. Technology affects each individual in different ways depending on the individual's interactions with technology and position of power or powerlessness.

Because literacy is tied to its corresponding mediation technology, I argue that literacy is a sort of technology. If technology is a tool of control then, as a sort of technology, literacy also has attributes of control. If you follow that literacy and technology are steeped in political matters of regulation and control, then you can agree with Winner that "technical things have political qualities" (19)—that is to say, technical things are value-laden; they are designed, created, and perpetuated due to the values of society, and in turn technical things impact society. James Gee similarly argues that "literacy is inherently political, in the sense of involving relations of power among people" (22), and that talk about literacy "is often a displacement of deeper social fears, an evasion of more significant social problems" (22). Both literacy and technical things are imbued with forms of power and authority—about who has them, who can have them, and how they can be used. As such, technical things have the ability of sustaining or subverting structures of power and privilege.

The relationship between technology, literacy, and control can be traced through Western history; a major argument in Burke and Ornstein's *The Axemaker's Gift* (1997) is that technology and the structuring of language is a functional representation of the execution of nature as something that could be "cut and controlled impersonally" (68). Literacy, they explain, allows humans to "cut to the core of the world in order to find the essential order in things and then to use that order to shape social behaviour appropriately" (81). Burke and Ornstein explain that "with the Greek alphabet, humans had for the first time an easy-to-use 'external data storage system'" (70), expanding the human capability for bureaucratic control and the documentation and storage of wealth

(and thus power and further control). In addition, early uses of the Roman alphabet were predominantly used for bureaucratic regulation that in turn perpetuated systems of control. The Greeks further advanced the early uses of the alphabet (from strictly commercial and economic tools) to include law and the decoration of personal luxuries, which (again) highlights the bureaucratic and societal control impetus of the alphabet, but also the systematic hierarchy those who have power and wealth, and those who do not.

Burke and Ornstein explain that the alphabet further restructured society because of the ease of learning (as opposed to pictorial languages which take more time and effort to master) as such, in the medieval ages more people (than before, but still few, and generally only members of the clergy and aristocratic classes) came to learn how to read (69). The alphabet spread literacy to more individuals than before. But it was not until the next technological advancement for literacy in 1440—the printing press—when the spread of literacy began in earnest. The printing press reduced the time and cost to produce books, and provided a means of mass production. These factors increased the number of texts being produced that in turn increased the number of books available for those looking to learn how to read. The mass creation of books made them a viable commodity, something that citizens wanted to buy and printers found profit in selling. As such, more books became available, which increased the access to books, led to more people learning how to read, more readers, and as a result, more demand for books. More readers also meant that more people earned the power to write and disseminate their own ideas.

The development of the printing press was a brand new means of transmission, one that was faster and cheaper; the only thing that limited the creation of texts after the printing press was hardware—the actual machines responsible for printing books, which was still in the hands of those who got a head-start in the race for social power. Owners of printing presses had incredible power; the power to regulate information. Although the printing press meant more books, more readers, and more varied *sources* of information, the underlying technology established a new way to maintain control—but of course, also new ways to practice dissent and durupt social, political, educational, and economic domination.

As diversifying and spreading literacy threatened previous systems of regulation and power, literacy became even more about control. Burke and Ornstein argue that writing regulated populations and restructured society; at the same time, increased populations meant that "regulation through writing was the only alternative to chaos" and "regulation in turn standardized behaviour through legal regimentation" (64). As an example, early printing was implemented by the church who used print to promote "conformity and obedience" (124). Dennis Baron explains that the expansion of print also increased censorship, since the increased amount of information was seen as "useful, empowering, and liberating" but due to those very virtues, was also "dangerous, subversive, and corrupting" as such, authorities deemed it necessary to control information and access to print (xiii). However, the church's plan—to spread literacy as a means to spread control—backfired. As the range of languages that The Bible was printed in increased, so too did nationalism and the decentralization of the church

(Burke and Ornstein 131). Print also made dissent much easier and quicker. And so, although print was originally intended to consolidate power, individuals (with the skill of literacy) used the tool to oppose the intended control and domination.

Stephen B. Kucer argues that literacy reflects cultural boundaries and cultural biases while shaping and controlling ideological values, knowledge, and group identity (which impact individual identity). Kucer adds that "literacy practices are one expression of the knowledge, values, and behaviours of any group. . . Demonstrations of, and engagements with, sanctioned forms of literacy envelop the individual's interactions with the group. With time, experience, and apprenticeship, the literacy practices of any individual come to reflect group norms and values" (206-7). The individual's identity is constructed in literacy practices. Dominant groups use their literacy practices and performances to "produce, consume, maintain, and control knowledge" and in doing so, produce, consume, maintain, and control what it means to be human (or in Kucer's original quote, American). Often groups do not know the beliefs of their group, especially if they are within society's dominant social group "because the beliefs of dominant groups so permeate society and because the individual may so seldom encounter alternative perspectives, he or she may come to view these beliefs not as socially constructed, but rather as normative or universal" (Kucer 206). So identity is influenced by literary practices which are constructed by the unconscious biases of the dominant. Literary practices that consciously resist dominant biases by focusing on subversive or marginalized narratives and ideology, frame those literary practices in relation to what is not dominant. Kucer explains that these subversive practices to

practice or perform outside of the dominant social-literacy-group is to become a "hyphenated" other, something less-than or different-from the "standard" American/human/identity. But this non-normative literacy practice resists the belief of a dominant universal and suggests other, marginalized alternatives. Questioning beliefs and critically analyzing the content of media is one component to critical media literacy.

According to Kellner and Share in "Critical Media Literacy, Democracy, and the Reconstruction of Education" (2009), those with critical media literacy develop the ability "to critically analyze relationships between media and audiences, information and power;" critical media literacy skills include abilities to analyze "codes and conventions, abilities to criticize stereotypes, dominant values, and ideologies, and competencies to interpret the multiple meanings and messages generated by media texts" (4). Together, these skills allow the reader/learner to discern and dissect media, meaning, and the ability to construct social, technological, or literary alternatives. Alternatives are necessary because media is socially constructed and hegemonically controlled. The creation and publication of contemporary media is also "governed by rules and conventions" (5). Media and technology change with society, but those who define these rules (and decide on technological developments) are generally the elite who make choices that best serve their ideological, political, or economic interests. But critical analysis avoids the blind reproduction of hegemonic ideology. New technology can sustain hegemonic power and domination or can be harnessed as a tool of experimentation, liberation, and empowerment. Kellner and Share argue that "media and information communication technology can be tools for empowerment when people

who are most often marginalized or misrepresented in the mainstream media receive the opportunity to use these tools to tell their stories and express their concern" (9). In this space, the marginalized have the potential to challenge these rules and conventions, and create media that serves their interests and responds to their socio-cultural experience.

Kellner and Share (their chapter is included in the 2009 *Media Literacy: A Reader*) say that technological innovation, saturation, and globalization make critical media literacy timely and vital (18). Of course, technological saturation has increased in the decade since Kellner and Share argued that "in this global information society, it is insufficient to teach students to read and write only with letters and numbers," because information and computer media play an "influential role . . . in organizing, shaping, and disseminating information, ideas, and values [that] is creating a powerful *public pedagogy*" (3). They carry on to say that "media is a form of pedagogy that teaches proper and improper behavior" and that the pedagogy of media is "frequently invisible and is absorbed unconsciously" (4). Because the public pedagogy of media is largely unconscious, we require further critical awareness about how media constructs meaning and influences audiences. Kellner and Share express how critical media literacy requires the development of these critical skills and the ability to discern codes, conventions, stereotypes, values, and ideologies in the complex multiple meanings of media texts--this allows the 'reader' to discern and dissect media, and construct alternatives (4). Through screens and cyberspace, most, if not all, twenty-first century individuals are consumers and creators in the media space, emphasizing that the public

pedagogy is actively co-created, allowing for this kind of critical engagement and subversive participation.

Furthermore, subversive literacy practices require training and engagement with dominant practices—one, because dominant training is that which is available; and two, understanding of a thing is essential to subvert a thing. Drawing on the writing of James Gee, Kucer explains that becoming literate requires learning and understanding the ideology and narratives of the dominant group, and that this "often requires taking on the master myths of those in control . . . this may actually require the acceptance of beliefs and practices that are, in fact, used to subjugate them. Literacy as practice directly challenges the master myths of our society" (Kucer 222). These "master myths" relate back to public pedagogy and cultural consciousness; they are the *dominant* narratives that have traditionally held mastery over society. JuliAnna Ávila adds that "critical literacies provide skills and tools to address social and educational inequalities" (2). In order to address social and educational inequalities, the agent must attain literacy skills, a practice that requires the training in master myths because that is the content laid out by dominant hegemonic pedagogy, but also requires training in these master myths so that they may be reworked, over-hauled, updated, or abandoned. The social-agent must become literate in the master myth before they can dismantle it—to develop mastery of literacy in order to gain access to the tools of literate reform. The interrogation of texts can transform ideology and culture, and digital literacies can allow the consumer to be the producer, blurring the space between creator and consumer, while also allowing new narratives to be constructed.

Literacy & the Social Knot

Society and technology are entangled. Science fiction generally illustrates the ways that technology and society interact. Often, computer technology and science fiction arise as sites of social struggle. Hawisher and Selfe interlink technology and society with their theory of the "social knot." They say that "technology is a nexus—a knot—of power in our culture" within that knot are the old "politics of economic status, age, race, sexual orientation, and gender" (2). The persistence of these political hierarchies and discrepancies rests on ongoing issues of access that "suggests that those in power will remain powerful and those without power will remain without" (2).

John Dakers describes a similar social knot as Hawisher and Selfe, saying that "the social and cultural development of human beings can therefore be seen to have a strong correlation with their technological development. . . cultural development and technology have always been inextricably bound up with each other" (Dakers "Defining" 147/8). Technology, what we create, who creates it, why and how it is created are all questions that point to the societal affect and influence of technology. Humans design technology for particular purposes, these purposes are determined by bias and belief systems that may or may not be conscious. Who is in a position to make decisions or receive the education required to develop new technology is determined by social power structures. How technology is created has, historically, perpetuated a system of hierarchy, where the powerful invent ideas, but the fabrication of material products is completed on the small hands of women and children who are impoverished, less

powerful, and (often) deemed "less human" or inferior to those in control. Those in control have more access to technology meaning that they annex more and more control over the distribution of power. As such, technology, society, and power make up a tangled triangle of interconnection and imbalance—a knot that literacy *just might* have the ability to untangle as it restructures access to knowledge.

Kucer explains that social groups use literacy "to mediate their interactions with the world" and also "to produce, consume, maintain, and control knowledge" (198). Humans contain the knowledge of how they see the world through storytelling. The stories that are shared demonstrate the values of the society as well as the institutions of power that govern through control. Stories also make social structures seem normal, perpetuating power structures and social hierarchy. Because literacy is the skill needed for storytelling, and because literacy is the skill to produce, consume, maintain, and control knowledge, storytelling can *also* be mobilized for either control or rebellion. Control of literacy and the narratives told can maintain social order. Because storytelling is outside of reality it is a safe place for alternative storytelling that can enable play between the regrets of the past and the anxieties of the future, presenting an alternative social order.

Storytelling is also an innate part of human experience that predates modern educational systems and comprises the narrative of collective human knowledge, experience, and unconsciousness. Joseph Campbell famously wrote about "The Hero's Journey," which works to explain all human stories as a pattern of a generally young and uneducated protagonist journeying into the unknown, acquiring knowledge, and

returning to share that knowledge with society (Campbell). Story is a basic building-block of social construction—it expresses the experience of the individual within society, but from a space of distance that in turn provides access to the knowledge of that experience for the reader. Storytelling, according to J.S. Bratton, "is an essential activity of the human mind," an activity that arises from "the need to impose order and pattern upon experience in order to fend off despair about the negation of life's meaning which death presents. . . prove that we are significantly alive" (27). Stories are the experience of something outside of self, the unknowable experience of the Other, that can subvert or sustain ideologies or simply soothe the psyche that is battered from a modern world.

     I am particularly interested in the types of storytelling present in popular media and science fiction. Consumed en masse by society, popular media easily permeates the unconscious and aids in the development of a public pedagogy, or cultural unconsciousness. Because media can be (and historically has been) a source of cultural indoctrination, and because popular media is unconsciously absorbed, we must learn (and teach others) how to critically view digital media including an awareness of how media constructs and manipulates meaning, influences and educates audiences, imposes (frequently dominant) social values, silences dissenting (yet important) voices, and promotes a non-critical exchange with available information without considering context, bias, or source.

Science Fiction (SF)

In the last several decades, popular culture has adopted science fiction from the margins and made science fiction mainstream; in 2019 nearly half of box office hits were in the science fiction and superhero genre (a second large category was children's movies and remakes of children's movies from the 1990s that capitalized on adults' nostalgia).[3] These film statistics demonstrate a consumer fixation on the past of childhood as well as a technologically saturated future. These consumer trends of popular culture suggest that viewers are consuming media to resolve anxieties about the past or future interactions between society and technology.

Science fiction responds to the relationships between society and technology and so science fiction explores the social knot theorized by Hawisher and Selfe. Economic, political, ideological, and in a word, *social* conditions feed into science fiction narratives, mediating the knot of these social conditions and resulting political and power structures through technological innovations.[4] Science fiction is the socialization of science—the way of examining and experimenting with how science impacts society and how society impacts science. As such, science fiction provides a space for the playful time travel and experimentation between society's past and potential future.

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[3] The-Numbers.com recorded *Avengers*, *Spider-Man*, *Captain Marvel*, and *Star Wars* in the top ten; *The Lion King*, *Toy Story 4,* and *Jumunji* were also in the top ten and the original films debuted in 1994, 1995, and 1995 respectively. [See: https://www.the-numbers.com/box-office-records/worldwide/all-movies/cumulative/released-in-2019]

[4] In science fiction, technology is omnipresent and bound-up in a social knot of power, control, and domination. We witness this sort of entangling in texts such as *Gattaca* (1997), *Brave New World* (1932), or *Minority Report* (2002), where technological advancements have been conscripted as a way of organizing society and controlling its citizens. In these examples, technological control and organization has a sort of religious reverence, considered essential to the fictional world's epistemology and the experiences of everyday life. In *Gattica* (dir. Andrew Niccol) this is apparent when Ethan Hawke's character Vincent Freeman (who is not actually a "free man" due to his inferior DNA) dreams of flying to space, but scientific advancement in genome research has limited his social opportunities because of his genetic code. The greater-than-human experience of a space voyage is restricted to him and the protagonist would do anything, including breaking the laws that set the foundation of society, to attain his transcendent goal.

Science fiction, because it involves a different world than the reader recognizes, forces the reader to learn while reading. Not only does the reader need to learn the language, slang, and referents of a new world, the reader is also the interpreter of how technology works, how society responds, what the characters hope for, and also what they fear. A frequent technique for educating the reader is the implementation of a 'fool-type' character who is also learning about their world. This child-like archetype (which will be further explored later) serves to mediate conversations between generations, resolving the past and imagining the future. A few examples include the young heroes of *Dune, Ender's Game*, or the anthropologist-outsider in *The Left Hand of Darkness.* These naive heroes, through little choice of their own, are thrust into a world where they must learn about society before they can return to their normal life (if they are even ever able to). This naive hero strategy appears in archetypal narratives such as Joseph Campbell's Monomyth (that has been consciously made use of in science fiction such as *Star Wars*), as well as fairy tale or the narrative of Tarot (in the form of the young, naive, adventuring Fool card). Science fiction is well suited for this type of archetypal narrative, and the hero's journey of navigating the knot of technology and society may result in a dystopia, or possibly to a better world with a better understanding of the interactions between technology and society.

Because science fiction is a genre that educates the reader it is often a genre about education; each of my earlier examples deals with education to some extent. science fiction, as a genre, encourages education, both formal education in the

sciences, as well as social education about how science impacts society and the way

that humans interact with their world. Neal Stephenson has said:

> "SF inspires people to choose science and engineering as careers. . . Good SF supplies a plausible, fully thought-out picture of an alternative reality in which some sort of compelling innovation has taken place. . . the imperative to develop new technologies and implement them on a heroic scale no longer seems like the childish preoccupation of a few nerds with slide rules. It's the *only way* for the human race to escape from its current predicament".
>
> **Neal Stephenson; "Innovation Starvation,"** ***Hieroglyph***

Stephenson here explains the way that science fiction provides a "thought-out

alternative reality" where new innovations can be implemented and tested—like a

science experiment. According to Stephenson, these experiments are not simply

casual pastimes of "nerds" but fundamental to the development and salvation of

the human race. Science fiction not only inspires future scientists, but also offers

the opportunity to consider potential hypotheses, bettering the experiment before

real-world social trials.

The value of the science fiction genre extends past academic contexts

and the work of its theorists spills outside of academics conversations. WIRED

magazine has been a forerunner in bringing ideas about science and technology

outside of post-secondary classrooms since 1993. In 2018 author and historian,

Yuval Noah Harari (*Sapiens*, *Homo Deus*), was quoted in an article entitled "Why

Science Fiction is the Most Important Genre" saying: "it [science fiction] shapes

the understanding of the public on things like artificial intelligence and

biotechnology, which are likely to change our lives and society more than

anything else in the coming decades . . . there are many of these science fiction scenarios which never materialize because society can take action to protect itself and regulate dangerous technologies" (quoted by Johnathan Nicholson). By writing science fiction, humans are able to imagine potential outcomes of technological advancement, and by reading science fiction, society has the opportunity to adapt before these technological shifts materialize in our world. Science fiction theorist Sherryl Vint has also argued that science fiction "can offer insight into the social consequences of new technologies" (170); these texts "appropriate the authority of the scientific speaker to comment on social implications of these technologies, and attempt to intervene in the types of subjectivities that are forming through human interactions with technology. . . it [SF] offers us ways to engage with these technologies imaginatively and to choose the types of selves and the type of social that we will allow such technologies to create" (170). As such, science fiction texts are "potential models for and current critiques of the ways in which technology and culture are producing a new model of human identity" (Vint 170). As such, I believe science fiction can be used as a case study for interactions between potential future technologies and cultural history.

In Roger Luckhurst's introduction to *Science Fiction*, he explains how historians recognize that the shift between social history and cultural history forced History "to deal with 'low' as well as 'high' cultural sources and, in a related way, to think harder about the way certain agents of history (for example the

masses, women, colonized, marginal or subaltern peoples) had been erased or rendered anonymous in history-writing" (1-2). Science fiction is one historically 'low' source. 'Low' culture is closer to the ground-floor and thus more apt to speak for characters at ground-level, and as such, most likely to provide commentary or experiences of history's erased characters: the masses, women, colonized, marginal or subaltern peoples. Thus, 'low' culture like science fiction is apt to the formation of identity for those who have been trod upon by history.

Vint explains that "the discourse of popular fiction intervenes in the social construction of subjects" and argues that "it [popular fiction] can provide a space for the social formation of subjects that runs counter to dominant ideology" (138). The individual of popular fiction (such as science fiction) does not need to adhere to normative models because, as a "low" genre, the genre itself is non-normative, as such, the science fiction society can be non-normative, not only running counter to dominant ideology, but actively resisting the domination put in place through technology and the material chasm that is the result of what political, media, and communications scholars[5] call the *digital divide*--that is, the divide between "high" society/"high" tech and the "low." Science fiction provides a stage to act out different approaches to resolving social issues arising out of systemic divides.

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[5] To name a few: political scientist Pippa Norris [Norris, Pippa. *Digital Divide*. Cambridge UP, 2001.]; linguistics and technology professor Dennis Baron [Baron, Dennis. *A Better Pencil: Readers, Writers, and the Digital Revolution*. Oxford UP, 2009.]; and sociology and communication science professor Jan Van Dijk [Van Dijk, Jan. *The Deepening Divide: Inequality in the Information Society*, SAGE, 2005.].

The science fiction genre Cyberpunk is often characterized as "high-tech/low-society" that focuses on economic, technological, and social divides. Even when the world is technologically saturated, the character's in the place of low society do not always have access to high tech. In the definitive text, *Neuromancer* (William Gibson, 1984), the protagonist Case can no longer access cyberspace and only regains access through the intervention of individuals of wealth, status, and dominant society. *The Diamond Age* (which I will analyze in my case study) is another cyberpunk (or post-cyberpunk) novel where the characters only attain high-tech through intervention from dominant powers.

When Vint writes about *The Diamond Age,* she notes the importance of reading and writing for the character's subject formation (138). The reading/writing text—a Primer—in *The Diamond Age* is designed by and for the dominant social group and is intended to instill the dominant ideology. The novel questions the relationships between technology, society, and hegemony, experimenting with the idea that non-normative characters can read and write their own subject formation even when submitted to dominant ideological programming. *The Diamond Age* establishes this social experiment through a literacy technology that consciously mediates the Victorian past, the onset of internet globalization in the 1990s (when the novel was written), and a hyper-globalized and technologically saturated future. However, digital divides—or differences in the access to technology—impact the children in *The*

Diamond Age, further complicating the questions about the revolutionary potential of literacy.

Digital Divides

Literacy has technologically advanced since Victorian era book-printing, but the structures of power and management of society through control have both remained. As discussed in the first section, control of citizens' literacy is one way to maintain power over wealth and dominant ideology. In the Victorian age, the control of literacy via the education of youth was intended to maintain social order and instill particular world-views that re-instantiated the ideology and hierarchy of Empire.[6] Twenty-first century literacy, which is characterized in part by mediation through screens and cyberspace, provides a seemingly limitless expanse of information storage, an unrestricted circulation of knowledge, and *could* eliminate some barriers[7] to admittance, providing a truly democratic access to knowledge and literacy; however, this technological development of literacy also comes with its own issues and social imbalances—notably, concerns over the vast amount of available information and the digital divides that restrict some groups of society from accessing information, cultural currency, and social power.

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[6] In the second part I will mobilize Stephenson's *Diamond Age* as a case study that adopts the social paradigms of the Victorian age—another Empire of domination, slavery, and imperialism. In this setting, the group that holds the keys to information, power, and technology are the neo-Victorians. Because the neo-Victorians hold all of the power and wealth they are able to define the inner-workings of the society and distribute wealth as *they* see fit.

[7] Although virtual barriers have been eliminated, material barriers persist. Digital divides exist between the hardware rich and the hardware poor. In my fictional case-study of *The Diamond Age*, Nell is only able to attain her education because she becomes hardware rich at best *by chance* or at worst by virtue of criminal activity.

Due to the digital divide, marginalized groups are often systematically denied access to tools or education in digital media. Making matters worse, those individuals from dominant groups who do have access to technology and technological training are not always trained to think critically or inclusively. Kellner and Share explain that digital media, as a form of pedagogy, "teaches proper and improper behavior, gender roles, values, and knowledge of the world" (4). However, these teachings are most often from dominant sources and when individuals are influenced by this pedagogy, they are seldom aware because the pedagogy of digital media is "frequently invisible and is absorbed unconsciously" (4). Due to the unconscious power of media pedagogy, it is even more important that we address what meaning is disseminated.

While Kellner and Share express that "literacy is thus a necessary condition to equip people to participate in the local, national, and global economy, culture, and polity" (19), this literacy should not—ought not—be limited to dominant cultures, and rather needs to include historically marginalized cultures, classes, and voices. As vital as literacy is, it is even more important for critical literacy that recognizes, values, and includes the cultural narratives and knowledge from *diverse* sources. Those sources who have historically been excluded from media and pedagogical production *must* be allowed to participate in the further development of public pedagogy. Luckily, the democratic capabilities of digital media mean that this *may* be easier to achieve (since anyone with digital access and skills can create in the infosphere).

Not everyone can (or can choose to) become a creator as there are divides between access to information and the necessary tools. The way that information is

accessed has changed. Kathleen Welch, in *Electric Rhetoric* (1999), explains that "the owners of the electronic and print presses determine, one way or the other, what is disseminated and how it is disseminated. They determine who is voiced and who is unvoiced. They determine what is important and what is not important" (133-134). Again, this is an impact of power and domination, one that can be reshaped through critical literacy. Literacy in this environment means not only the ability to read these texts, but understand the political underpinnings and latent biases in order to analyze and adapt them towards the desired future. In the twenty-first century, the influx of self-publishing provides opportunities to hack or jam the media, broadens the range of voices and what knowledge is deemed important, but also increases the need for critical discernment about the quality of information disseminated.

Co-Creative Literacy

As mediation technologies change, so too do types of literacies and what it means to be literate in the culture. In an age after the invention of the internet, literacy extends past verbal and print literacies, to digital and cyber-literacies as well. There are numerous digital coding languages, each with its own syntax and structure. To be literate in one of these languages is somewhat like being able to speak a foreign language, except that cyber-literacies have a more immediate ability to create something; we use coding languages to create something within cyberspace, and that creation within cyberspace can have real impacts on the material world. Later, I will discuss how hacker literacies and the protagonists of the cyberpunk genre use the

creative functions of cyber-literacies to adapt and augment their reality. The rebellious attitude of these early-internet cyberpunk heroes is much like Johnathan Alexander's theory in *Digital Youth* (2006) about the digital literacy of twenty-first century youth.

Alexander is interested in the development of literacy in a digital landscape, a landscape, he argues, that is largely built and shaped by the rebellious and experimental attitudes of young people who are both creators and consumers of digital media. Children who grow up in a society after the invention of the internet will always experience a society saturated by digital communications technology. Through immersion and familiarity with this communication technology, youth develop native literacy in digital mediums. The digital literacy of youth provides a space for experimentation and composition of group and individual identities in a shared, networked space.

The participatory element of the twenty-first century public pedagogy allows the opportunity for a *democratic* pedagogy that encourages learners to create, developing the world through their creations. However, for these creations and developments to be humanely positive—good for the welfare of global humanity—these creative learners need to also develop critical media literacy so that the implications and side-effects of creations may be considered and mitigated. Kellner and Share agree that "changes in technology, media, and society require the development of critical media literacy," and that this practice is necessary to empower students to "be active participants in a democratic society" (3). Thus, in a technological world, developing a practice of critical media literacy becomes a vital component for being a democratic citizen. Without this

critical practice technological citizens risk advancing systematic tyranny and destructive hegemonic power structures.

As I explained prior, media becomes a form of public pedagogy that is built on the largely unconscious structures of dominant belief, relegating non-normative to the media margins. This public pedagogy or cultural consciousness is a collection of stories (myths, archetypes, pop-culture) that are shared amongst a culture and influence both the education and acculturation of citizens. In the era of digital media and cyberspace, consumers of media—the audience of public pedagogy—are passive receptacles sitting in front of screens. But importantly, digital and cyber mediation also allow this audience to become active producers of ongoing public pedagogy. The dynamic between passive recipients and active participants establishes a system of co-creation and participatory rhetoric that perpetually develops cultural narratives and thus public pedagogy. The data that educates citizens is designed in part by the public in co-creative, participatory acts.

By adding digital technology, literacy can include any of the ever-diversifying digital media, including sound, video, digital text, code, social media (and many others), as it becomes a rapidly evolving process reliant on group participation as well as individual performance.[8] Performativity is a crucial component of social media and participatory literacies. Examples include the user-created YouTube, TikTok, or Reddit, which are entirely composed of performative creation and participation of users who

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[8] In 1999 Darcy DiNucci coined the term Web 2.0 (popularized by Tim O'Reilly) for the participatory and social web that highlights user-generated content and participation. In contrast, early "Web 1.0" websites were passive, limiting users to reading on the screen rather than engaging with material or other users. World Wide Web inventor Tim Berners-Lee disputes these distinctions, explaining that the Web was always intended as a place where people could read *and* write. [Wikipedia. "Web 2.0"] and [BBC News. "Berners-Lee on the read/write web." http://news.bbc.co.uk/2/hi/technology/4132752.stm]

also create, post, share, or comment. In fact, most of the internet has an interactive element for its users—unless an internet user lurks without adding or engaging with content.

In actuality, people are not simply consumers of the internet, but producers also, participating in the creation of digital media or at the very least the perpetuation of modes (once popular, MySpace is practically dead, but as I write this, Facebook is still living) and the perpetuation of technologies or services (YouTube and Netflix are ascendant, broadcasting far less so). As such, citizens vote with their media practices and preferences; with each comment on a video or view of a series viewers send data to network executives and web producers about what media is being consumed and what to continue creating. As such, individuals participate in creating a world that they have (perhaps unconsciously) chosen. The fact that these practices (choices) can be unconscious is dangerous, because the dominant hegemony, advertising, and other exersions of power can mould citizens into making certain unconscious choices in their literacy practices. This is why critical media literacy is so important.

Another aspect of critical media literacy is collaboration in the pursuit of knowledge, which uses participation on the part of the student as well as the teacher. The student/teacher relationship is one of power, one that echoes larger power structures; the teacher, in most pedagogical systems is the leader. Paulo Freire tells us that many leaders, despite a desire for liberation of the oppressed, recognize the need for a different pedagogical approach, but choose to use the pedagogy of the oppressor (50). Freire explains that education is a practice of domination with the ideological

intention "of indoctrinating [students] to adapt to the world of oppression" (Freire 59). A system of co-creation is decidedly *not* a process of domination and oppression; in co-creation students are *active ongoing participants* of their education, granting students some power in their own education. Co-creation ensures that students are not simply "containers" to be "filled" as Freire fears (53). Freire explains that the more passive and absorbant the student is, the less space and action they have for critical reflection, which in turn, makes the human into an "automaton" (54-55). This is not an ideal sort of machine-human hybrid. If, however, students are provided with the agency and power to be active participants in their own education then they have more space for critical reflection and questions of how their knowledge comes to them. Freire argues for this type of pedagogical structure where teachers are students are partners in the "committed involvement" of learning (51). In this structure, learning takes an *active* role in the development of the understanding of the world, challenges all actors involved to critically question knowledge as it is re-created and re-structured for the ever-changing world, which turns into an understanding that the world itself is active and never finished, which finally means the learner (actor) can respond accordingly and act upon the world, making the world as they see fit.

Welch, writing at the end of the 1990s, defines literacy as an "intersubjective activity" that resists individualization in exchange for collaboration in the practice of "encoding and decoding screen and alphabetic texts within specific cultural practices," and that literacy is an activity that "recognizes the inevitable deployment of power and the control that larger entities have over these media" (135). For Welch, the switch to

digital literacy creates a collaborative platform (which it certainly can through the global-network of the internet). On this collaborative platform, media can be "encoded and decoded" or, in other terms, created and dissected. Through the process of creation and dissection of media, the users can learn to make sense of the way that media holds power and how power uses media. The agents who are provided practice in these skills are more likely to be able to decode other aspects of their life, creating critical citizens who pose problems and ask questions of their society. Asking questions and posing problems is the first step towards imagining answers and envisioning a different future than the past.

In *Pedagogy of the Oppressed* (1968), Paulo Freire argues for "problem-posing education," claiming that in this sort of inquisitive pedagogy "people develop their power to perceive critically *the way they exist* in the world *with which* and *in which* they find themselves; they come to see the world not as a static reality, but as a reality in process, in transformation" (64). Freire argues that those who are "posed with problems relating to themselves in the world and with the world, will feel increasingly challenged and obliged to respond to that challenge" (62). And so, those who learn a problem-posing education have a sense of obligation to create and challenge the environment in which they live. Another attribute gained through problem-posing is an ability for critical thinking—the ability to consider different viewpoints and value systems as well as question sources of information and the way media and meaning is constructed (essential qualities of critical media literacy). Problem-posing pedagogy, then, allows people to better understand their place within the world and the ways that world is

constructed as it is simultaneously being reconstructed. The nature of reconstruction—renovation—is to change the environment to suit personal tastes, needs, and values. Because problem-posing is focused on a state of *becoming*—of a yet unknown future, and a present in transformation—problem-posing asks what environment the individual would like to see in the future they imagine—a future that is yet undecided but in the process of becoming.

Dakers argues for the idea of "*becoming* technologically literate" in contrast to "*being* technologically literate," the difference being that "becoming" literate is an ongoing process of learning and evolving to the ever-shifting literacy landscape. Dakers argues that "the process of becoming technologically literate requires participants to become sensitive to the impact of new and emerging technologies upon their technologically mediated world. Moreover, it requires them to engage in a more critical examination of the interplay between technology, the environment, and society" (Dakers "Defining" 150). Dakers argues for technological literacy, but I want to reciprocate by claiming that *all* literacy is technological in some sense, since whether print, visual, or digital, all forms of media that require literacy (and I'd argue that's all forms of media) require some type of technological advancement and a tool of mediation. Thus, I would simplify Dakers argument removing technological literacy specifically, to simply say that becoming literate requires participants to become sensitive to new technologies. Whether someone chooses to participate in practices of new technological mediation is based on their own ideologies, but does not limit the impact of new technology on

society[9]—impacts that literate citizens should be aware of (and critical of) in order to actively engage with/in society as well as understand their own ideological beliefs and biases. Because technology constantly changes, a process of literacy that is aware of the changes in technology can never be completely finished. As such, it is an ongoing process of "becoming" literate.

Freire argues that problem-posing education also expresses *people* as "beings in the process of *becoming"* (65). Freire continues, saying that both beings and reality are "uncompleted" and "unfinished" so problem-posing is not only future-focused but a "revolutionary futurity" where individuals are beings who can "transcend themselves, who move forward and look ahead" and for whom "looking at the past must only be a means of understanding more clearly what and who they are so that they can more wisely build the future" (65). Likewise, Dakers believes that literacy provides a mode for understanding the past and imagining the future. Dakers' theory of literacy draws upon Deleuzian Assemblages, explaining that, as Assemblages, literacies are in a constant state of change, and can affect or be affected. According to Dakers, "all assemblages, while pointing to the future, are affected and influenced by the past" ("New Frontiers" 16). By viewing literacies as such, examining literacies of the past can tell us about our present, the narrative of which can point us towards our trajectory of the future. In addition, since literacies can affect change, we can use the skills to consider changes

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[9]Technology impacts society even for members of that society who resist particular technology; for example, many people may not choose to participate on the media platform TikTok, but during the COVID-19 pandemic it became well known for viral hand-washing videos, making appearances on the comedy news series *Last Week Tonight With John Oliver* [Oliver, John. "John Oliver Discusses Coronavirus" *Last Week Tonight with John Oliver*, HBO, ep. #3, season #7, 1 March 2020, https://www.youtube.com/watch?v=c09m5f7Gnic].

that can impact that future-focused trajectory. We cannot change the past, but through

literacy we can learn about the past to reshape the future. Dakers explains that:

> "by considering these possible alternative futures, a learner,
> in the process of becoming technologically literate, is able to
> speculate about technology in a creative way—one that
> opens up other possible technologically textured worlds that
> are open to alternative perspectives, alternative political
> influences on technological developments, and alternative
> ethical dimensions, all of which are less concerned with how
> the technological world *ought to be* and instead more
> interested in how the technological would *might have been,*
> *might be,* or *might become* other" ("New Frontiers" 25/26).

As such, Daker's theory and Freire's problem-posing education are both future-minded,

yet still deeply rooted in the experiences of the past; this education is not focused so

much on what *has* happened, rather than as a tool of understanding, and more focused

on what *could* happen—the future that people could create and are, at this very moment,

creating. As such, creative modes, in particular those that are focused on the future

(such as science fiction and alternative histories) can be viewed as experiments in the

creation of our potential future.

Hackers

The literacy of science fiction's cyberpunk heroes is most generally the digital literacy of

the hacker, coder, or some other artist-inventor hybrid. Rafi Santo's 'hacker literacy'

responds to the highly participatory and collaborative nature of digital literacy. Hacker

literacy is a mixture of critical media literacy and participatory media literacies that

Santo says that these are "empowered participatory practices, grounded in critical

mind-sets, that aim to resist, reconfigure and/or reformulate the socio technical digital

spaces and tools that mediate social, cultural, and political participation" (200).

Enacting change through hacker literacy includes understanding, and making visible the

often invisible values that structure society and technology, as well as "employing new

media as a means to change those digital spaces and tools whether on the social or

technological level via social or technological means" (200). This last point has the

closest similarity to our conception of hackers such as William Gibson's Case

(*Neuromancer*) or Neal Stephenson's Hiro Protagonist (*Snow Crash*). These are agents

that are intimately familiar with the digital space, fusing their body to the technological

machine, and blurring the line between reality and the virtual world as they undergo a

quest with their digital tools that will result in social changes in the real world. These

protagonists are marginalized figures as well; their agendas focus on their own

salvation, personal benefit, or a personal sense of altruism, than in support of the

dominant class. Santo explains that hacker literacies are practices that "are seen as

malleable avenues for expression of the values and agendas of the individual user, as

opposed to solely those of the designer or dominant community" (199). The internet is

democratic in this exchange of ideas, like the technology that hacker literacy practices

occur on/through/in, hacker literacies are democratic in their power, providing agency to

anyone with the skills rather than permitting access simply through funds or hegemonic

power structures. Because these literacies are democratic, it "does not seek to impose

any normative ideological 'right response' to technologies or people aside from one that

assumes active engagement with sociotechnical spaces based on the values one

brings to them" (199). That is to say, the only predominant value within hacker literacies

is the value of engagement within society and technology as well as the responsibility to bring personal values and experiences to these sites.

A practice like Santo's hacker literacy becomes important in the current technologically saturated world because so much of the "real world" occurs in a virtual space, mediated by digital technologies. Santo explains that "media inevitably change, and when they do, so do the social practices that surround and shape them" (198). The average citizen of the global North has a tool for hacker literacy in their pocket right now, but without the critical element necessary to Santo's theory, these tools can easily become conscripted to perpetuate non-critical, dominant hegemonies.[10] Critical media literacy responds to mass-market media, which is highly controlled and dictated by a few powers. Participatory media literacies (such as Santo's hacker literacy) reacts to the onset of the internet and the accessibility and participatory nature of that mediatization. In participatory media literacies "people can leverage and participate culturally through new media, empowering them not simply to be consumers of culture, but producers as well" (Santo 199). For science fiction hackers, this means consuming passive entertainment, but also creating or rewriting media. In *The Diamond Age* this is made explicit through the use of 'passives' that are consumption-based media, and 'ractives' that require the consumers active engagement in the narrative. One of the characters of Stephenson's novel is Miranda, a ractor (or ractive-actor) who not only acts in the narrative, similar to the Hosts in *Westworld* (2016 Lisa Joy, Jonathan Nolan), but has also been successful at crafting her own ractive storyline that provides both economic

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[10] Further examples from Tik Tok include protesters mobilizing and sharing important riot safety information through the short thirty second videos as well as a group of individuals who protested by communicating via Tik Tok to reserve seats at a rally to manipulate expected attendance numbers so that actual attendance would seem low.

and social value. And, unlike the Hosts in *Westworld*, Miranda is fully human and has full agency in the ractives, able to choose ongoing client relationships, as well we see her 'kill' (in the ractive) an undesirable client. Miranda and Nell's entire relationship is developed through these mediation, but that does not limit their active engagement in society and each other.

The relationship between Nell and Miranda in *The Diamond Age* remediates child/parent and child/governess relationships in other literary genres. Both normative and non-normative, Nell and Miranda's interactions are mediated through the hacked technology of Nell's Primer. The Primers developed in the novel are consciously intended to indoctrinate their reader through master myths and can do so easily because the readers are children in the early stages of acquiring literacy. However, Nell and Miranda's collaboration has unintended consequences of instilling Nell with hacker skills and a revolutionary mentality. Science Fiction often uses these mutable child-like figures, as a way of exploring the fictive world, as expressed earlier, making full use of Child archetypes and Fool-type characters to educate the protagonist and reader at the same time. These "blank-slate"[11] Protean characters are suited for applying the possibilities for social change for future generations or the adherence to the past's dominant ideologies.

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[11] Peter Gay quotes Locke that education "makes the great difference in mankind" (4), and that gentle guidance is more beneficial than a hard-hand because in childhood humankind is naturally malleable and children are "white paper," a blank slate, or *tabula rosa*. Through education, cultures could be improved "beyond recognition in a few generations" (8). [*John Locke On Education*. Edited, with introduction and notes by Peter Gay, William Byrd Press, 1964.]

The Child

The dominant ideology defines the rules of society, and those groups that have the greatest material wealth/power are generally those who assign the dominant ideology. One of the ways that ideology is distributed is through education (and indoctrination) of that ideology and rules to the child so that they will perpetuate the same social opinion into future generations. As such, the child holds immense power, and yet, seldom recognizes or understands their potential. Children, without power, are rendered images for manipulating adults. Meanwhile, the power of the child is harnessed through their literacy, which opens the child to read the meditations created to inculcate the dominant ideology. If, however, the child subverts the mediations—reads different knowledge and experience into text—then the child also has the power to subvert the dominant ideology. Literacy can be a tool to mould the child, but it can also be a weapon to overthrow domination.

Thus, literacy is a tool of social power and revolution. According to J.S. Bratton "literacy was the gateway" to move among social boundaries and raise the social standing of oneself or your child (11). Because children had this potential social mobility through self-development, the image of the child was mobilized in reform writing to represent future potential while addressing the most vulnerable classes. According to Laura Berry, "the child enters discursive play to expose the internal instability and artificiality of dominant ideological conditions" (14). Thus, the imaginative play seen in fiction finds resolution despite (or due to) the child's disfranchised social environment. Books, then, became a social instrument—a tool or

weapon (forged in institutions)—that was wielded in the battle of confronting ideologies as the written word presented various attitudes about the nature of society and humanity.

Early primers (educational books meant to 'prime' the child for reading), had a highly moral motivation, were produced by those with power, and had a clear class and gender stratification in terms of both content and access. The earliest printed primer for children, circa 1538, is entitled *The BAC bothe in Latyn and in Englysshe* (Thwaite vii). The first page, included as a frontispiece in Thwaite's text on the history of children's literature *From Primer to Pleasure* (1963), includes a full set of letters followed by "Amen," the vowels, short letter combinations, and finally the Lord's Prayer in both English and Latin. A large portion of the page is dedicated to an ornate capital at the beginning of the Latin Lord's Prayer. This primer demonstrates the religiosity predominating within the genre and early children's education as a whole. Considering that early printing of books was a costly affair, texts such as these were usually only commissioned for the private tutoring of the children of wealthy or clerical classes. Another predominant feature of this 1583 primer is the inclusion of both Latin and English. English was considered the "common-tongue" with Latin used in legal and religious matters; few commoners knew Latin, which gave the church and state power through their literacy (or lack thereof). This early primer emphasizes the value of morality in early iterations of childhood education, as well, it typifies the power dynamics of educational access and language.

The moral education of children was deemed necessary to save children from their "heathen" state (Bratton 14), but a child's salvation differed depending on their social position, and social position determined the content of a child's education. Childhood was a newly defined social role, but children hardly comprised one class all to their own. The various and different educations presented to the Empire's young people focused on the maintenance of social codes and rules for each child's social position. Girls and the poor were neither taught to, nor expected to reach far and attain the same success as the upper and middle class boys. These boys were given encouragement for self-development as long as they subsumed their individuality into the success and ideology of greater society. That ideology of society encouraged this engendering and class stratification, which is reflected in the literature for boys and girls in the nineteenth-century: boys received adventure tales to encourage the spirit of the Empire; girls were kept in the home with domestic and didactic writing. Bratton explains that books were written "to suit [readers'] level of literacy, their stations in life and their expectations of the future, and to reflect their present experience so as to mould through their response to it their moral and social attitudes" (13). Books, as any enthusiast of literature would know, reflect their time, and the culture that produced them; the books of the nineteenth-century echo a deeply ingrained stratification of society, for proper positions for every individual, as long as they fit into the codes of society. Thus, these early texts for children were partially responsible for the indoctrination of the dominant ideology and the perpetuation of social stratification,

both of which maintained social order. Books, and through them, the child, served to maintain social order.

During this time, revolution—both industrial and social—permeated society. Concern rose for women, children, the working class, and poor. Bratton explains how children, in particular, were seen as "a huge and rapidly growing army of new citizens who should shape the nation's future [that] were suddenly brought to everyone's notice" (14). The first order of business for this army was their proper education, to ensure social security from feral masses and so as to secure the Empire's control of the future. The first objective of that education was literacy (to encourage the intake of indoctrinating media). Morality was also important, especially for those who believed that children were a "heathen" class of subjects. Like the Others that the Empire sought to "Civilize" by teaching English, Christianity, and the social mores of nineteenth-century Britain, children needed to be saved from their feral state and domesticated into the Empire's ideology.

Another motivation in the education of nineteenth-century young people was the maintenance of social harmony. This drive presented itself as more conversation about the education of the working-class, and, in turn, more accessible education for working-class children. Karen Clarke argues that this horde of poor children presented a threat to social and political harmony; the school movements as an attempt "to control and contain the political energies of the working class" (74-75).The goal was to inculcate habits—or rules—of behaviour that socialized working-class children to the notions of upper-class taste, in particular, the habits that best suited the hierarchy of

working-class subjugation, that is: "obedience, cheerful subordination, cleanliness and order" (79). The emphasis on "order" echoes the attitude that each individual had a "right position in society" or an "appointed office" (Charles Mayo, quoted in Clarke 81). Thus, the education of the poor emphasized the maintenance of social stratification and happiness in one's own position in society.

In this social landscape, the control of literacy allowed groups of the dominant ideology "to direct and control the education of the people and to channel their literacy as soon as, or even before, they attained it" (Bratton 31). After the outlaw of child labour, the creation of the public school system meant that young people were removed from the streets (and threat to public) and placed in another institution that could mould them into the dominant ideology. For some children, this education was a potential to move out of their poor social class and become teachers or governesses, moving into the homes of the upper and middle classes to teach their young, or potentially becoming future revolutionaries and writers of social reform.

Adrienne E. Gavin explains that the Victorian image of the family was not always a friendly one, with abandoned mothers and abusive fathers, the children in Victorian texts were in a "vulnerable, often painful, powerless state. . . a victim of adult power" (Gavin 9). Victimized by the colonizing Englishman, the child was often used to showcase the impact of social neglect or abuse. As such, the child became the figurehead of social reform movements and other commentary on society. Thus, children in literature (in particular the victimized Dickensian children) reflected, and hoped to influence, the social reality of the Victorian era. The image of the child also

comes to represent the ever-increasing social inequity. Children were represented in fiction as well as discourses for social reform as "victims of an uncaring society bent on progress" (Berry 2).

The Child in literature is an archetype that symbolizes the unconscious as well as the conduit for indoctrinating social ideas or revolutionizing the future. The image of the child always comes from the position of an adult observer, watching children or reflecting on their own lost childhood. As such, writing about the child or childhood can be seen as a symbolic construction used for adults' nostalgic wish-fulfillment or as a vehicle for social commentary or social reform.

The concept of childhood as a modern portrayal of the adult-child dynamic and that the idea of the child is socially constructed is argued by Philipe Aries (1914-1984), in his influential text, *L'enfant et la vie familiale sous l'ancient regime* (1960, translated to English in 1962 as *Centuries of Childhood*). Many of the theorists who write about the nature of the child in literature (as well as children's literature) draw on the work of Aries. Aries' theory is not entirely novel, with a lateral relation to renowned child development psychologist Jean Piaget (1896-1980) who is considered the founder of constructivism, an educational theory that accounts for the learner's prior experiences and environment, from which the learner "constructs" meaning. Both Aries and Piaget argue for the construction of knowledge and both theories are called constructivist; however, the two theories differ in terms of perspective: Aries is focused on how the child and childhood are seen from the adult perspective; Piaget is focused on how the child sees and attains knowledge. I will not be drawing explicitly from the texts of Aries or Piaget, but these are

the foundation for other constructivist theorists. I believe that the two theories interact harmoniously, and we can observe the adult perception of the child's construction of knowledge through the adult's construction of childhood. Let me reiterate: through the image of the child, and the child's journey from ignorance to knowledge, we observe an *adult's* archetypal construction of the child that is grounded in the social environment, and deeply influenced by nostalgia for a lost time (the "easier/slower/better" past or their own childhood). This is how the image of the child is mobilized. The adult's construction of childhood allows nostalgic catharsis, but more frequently the adult construction of childhood serves as an agent of social commentary and social reform.

Within my understanding of the constructivist theory, childhood and the image of the child are both culturally defined and socially understood. However, to live in the experience of a child is a distinct, essential experience that is (however) influenced by these cultural opinions and the structures and institutions built around these constructions of childhood. When examining the child in literature, I am even more disposed to view the child as a construction of the society from which the writing originates, for in literature it cannot be the lived experience of a child since most writing is done by adults reconstituting or re-imagining the childhood experience for nostalgia, wish fulfillment, or the mobilization of social commentary. The childhood experience must be constructed because, for the adults who write about it, childhood has become unknown and unknowable. Gavin notes that childhood, for adults, is "knowable as far as memory extends" (2). One reason that childhood is unknowable to adults is simply the fault of memory, and another, more material, and perhaps more important reason is that

the experiences of children are altered dramatically by their era, culture, and social

location.

Since the experience of one generation of society differs so much from the

following generations, there is a doorway of knowledge and experience that cannot be

opened except through imaginative play and speculation. The work of that play opens

the door between the adult and child realms and provides the path to the child's

understanding of adulthood (and thus also their future), and the adult's understanding

of childhood (and thus also their past). Karin Lesnik-Oberstein's argument for the

constructivist nature of childhood focuses on the one-way byproduct of that

construction for the adult, saying that "the concepts of 'adult' and 'child' interact in an

immensely complicated process of adult self-definition" (Lesnik-Oberstein "Criticism

and the Literary Child" 27). However, I believe the construction of childhood is a two-way

street. A culture's image of childhood in the present influences and informs both the

child and the child's future, while negotiating the adult and their past. As such, the

image of the child crosses boundaries of age and time as it opens doors between the

concrete, material existence of adulthood and childhood experience of imaginative and

playful space.

Adults make use of that imaginative space they construct of childhood;

childhood is a nostalgic tool deployed by adults for the articulation and imaginative

exploration of society, the self, and the complicated unification of the two. Adult writers

mobilize the image of the child to illustrate the impacts of society and social

stratification on the most vulnerable classes—children, and more specifically, poor

children. Such narratives demonstrate that criminality and other deviant behaviour is a product of the machinations of society; that the plot of society's rapid and perpetual progress has victimized the individual who is embodied in the vulnerable child. The child stands in as the single individual and all individuals—the self and the social.

Fiction provides an imaginative mode for reconstituting the writer's personal childhood experiences of society, or of creating children for social action. The child image in literature acts as a way of demonstrating this move of the state into the family affairs, and how family affairs are societal affairs. The victimized child character can then be mobilized for criticism of the social inequities of race, class, and gender that subjugate the individual's social position. The child was seen as one way of reaching past these social boundaries, beyond the cultivated image and rigid ideology of Imperial England. Children, as the inheritors of the future society, have the potential to shape, marr, and cultivate the future society through their literacy practices.

Next, I will discuss how Neal Stephenson's novel *The Diamond Age* (1995) re-imagines Victorian education to respond to anxieties about technology and education in the 1990s and into the future. *The Diamond Age* imagines future educational technology as it mobilizes the image of the child and her developing literacy to remediate questions about technology, literacy, and control. To quote Liz Thiel, "we are late Victorians" (143), and although our technology has changed, our relationship to mediatization and educational technology has not, and our immersion in hierarchical imperial power dynamics has been retained. The current educational values and systems (that are descendants of British systems) are based on changes in literacy,

accessibility to books, and educational reform from approximately the nineteenth-century. In my analysis of *The Diamond Age* I argue that through literacy we can develop ideas about power structures and the way technology and literacy can be tools for destabilization. By setting the novel in a reconstituted Victorianesque era, Stephenson draws upon a history of reform writing and changing attitudes about children and education. However, as science fiction, technological advancements entangle with social structures in imaginative and revolutionary ways. Although many scholars argue to the conservatism of *The Diamond Age* (see: McClancy, McGinnis), the novel emphasizes subversion, ambiguity, and critical literacy; in fact, the novel demonstrates that critical literacy can be both revolutionary and maintain social order, and that community, participation, and access to literacy tools and training are fundamental to a critical subject formation.

A Case Study for the Future: Neal Stephenson's *The Diamond Age*

"girls, as children, do have greater possibilities before them than adult women. Society may change; they may change it". (Edith Honig 108).

In section one I spoke to how modern educational systems (those that are descendants of Anglo-American systems) emerged as a bureaucratic way to socialise individuals and regulate who could, by accessing information, become active political subjects. However, we saw that as soon as these literacy and educational systems emerged they transformed in the hands of individuals to meet the needs of a transforming society. Literacy and social transformations within the last twenty-five years have tended towards digital and screened media. These changes have opened the speed and spread of social networks and communication, permitting more individual participation in media creation. However, the digital divide denies some from accessing and participating in this community, education, and creation space.

As a case study, I will analyze *The Diamond Age* by Neal Stephenson (1995), a science fiction novel which intersects Victorian (and 20th century) education and digital literacy. *The Diamond Age* features characters that are marginalized by race, class, and gender, and explores the ways in which literacy enables their attempts to improve their material conditions and political agency. Its central character succeeds in this endeavor through the unlikely acquisition of an educational technological device, but *The Diamond Age* does not liberate equally across gender, race, and economic position, pointing to further systemic imbalances than simply technological and educational access. The text has been celebrated for placing a young women at its centre, and her

emancipatory actions are framed as a resistance to patriarchal traditions; yet at the same time, there are many characters within the text who cannot follow Nell's path to liberation, carefully applying their skills to a social problem in order to improve their lives. Problematically, *The Diamond Age* is a text that in its content is engaged in the way power distributes across various identity markers such as race, class , and gender. At the same time, it is also a text that is composed by these powers and bears the mark of their force on its composition. These problems are best seen in the group of undifferentiated Chinese orphan girls who gain the same material access to literacy as the protagonist but do not experience the same emancipatory potential from the literature constructed for them, maintaining the systematic limitation to their power. This contrast—of how literacy emancipates some but not others—is at the foundation of my analysis of Stephenson's novel. Drawing on Paulo Freire's *Pedagogy of the Oppressed*, I focus on the educational encounters of these girls and discuss ways that *The Diamond Age* mediates potentials and pitfalls for future pedagogy and the resistance of hegemonic power structures.

Pedagogy of the Oppressed for the Digital Age

Scholars Sheila L. Macrine and Donald Macedo have separately discussed the danger of twenty-first century institutions of power and how critical awareness may challenge structures of power and social imbalances. Macrine opens C*ritical Pedagogy in Uncertain Times* (2009) saying that "as we enter the second decade of the 21st century, we find the world adrift in economic, cultural and political uncertainty brought about by the West's unrelenting adherence to and proselytizing of neoliberal and

neoconservative policies – policies which have served to undermine public institutions, such as education, and to disenfranchise the economically powerless. In identifying the origins of this crisis and the possibilities for the renewal of democratic ideals, critical pedagogy continues to provide a critical framework that offers insight, understanding and hope for the future" (Macrine). Donald Macedo introduces the 50th anniversary edition of Paulo Freire's *Pedagogy of the Oppressed* (2018) with a similar fear of "the far-right power hegemony that, if left unchecked, may potentially result in the end of humanity as we know it. Thus, not only must an alternative political course be taken, but central to its agenda must also be the development of people's critical awareness of how they are in the world and with the world—a posture that Freire insisted upon and which informed his brilliant and insightful ideals in *Pedagogy of the Oppressed*" (Macedo 1). Macrine and Macedo present both a problem and the solution; the destruction of society characterized by ideological divisiveness that is solved by "critical awareness." This critical awareness is not just of society and the systems of the world, but also the reflexive critical awareness of personal position *within* society and global systems. One fundamental component of Freire's ideals is that society and humanity are in an endless state of becoming and through praxis and problem-posing the oppressed may realize they are empowered to transform society in the pursuit of liberation. Meanwhile, the oppressors can, and will (without conscious critical practice), continue to maintain the hegemonic power structures that enable their way of life—wealth, freedom, power, at the expense of the oppressed.

***The Diamond Age*: Synopsis**
"The Book of the Book contained a complete set of plans for a magical book that would tell stories to a young person, tailoring them for the child's needs and interests—even teaching them how to read if need be" (463, within the Primer and about the Primer).

The Diamond Age: or, A Young Lady's Illustrated Primer is an imaginative representation of the future of technology and education. Science fiction theorist Sherryl Vint explains that *The Diamond Age* shows "that access to knowledge is one of the most important formative elements in one's life" (140). Stephenson's novel arrived at a moment when the world was beginning to rethink what accessible information entailed. By 1995, when the novel was published, the Internet was moving outside the domain of academic institutions and research facilities and into the mainstream. Also by 1995, the internet service provider AOL had three million subscribers, and it seemed like information and access to knowledge could be democratized. Stephenson's novel considers what could be made of that radical potential. The major concerns of characters in *The Diamond Age* are experiments in education and questions about the way that society, education, and technology enmesh.

The Diamond Age is also an alternative history narrative in which the "moral squalour"[12] (*The Diamond Age*) and globalization of the late 20th century has caused society to fragment into groups divided by culture rather than location. These cultural groups, or phyles, are united by common systems of belief that are rigid and

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[12] A number of characters comment on the morality of the previous generation, notably Finkle-McGraw; in addition, later in her education Nell explains: "The Vickys have an elaborate code of morals and conduct. It grew out of the moral squalor of an earlier generation, just as the original Victorians were preceded by the Georgians and the Regency. The old guard believe in that code because they came to it the hard way. They raise their children to believe in that code—but their children believe if for entirely different reasons." To which, Constable Moore (one of her mentors and father-figures at the time) responds by saying "They believe it . . . because they have been indoctrinated to believe it" (355-356). Nell and Constable Moore's conversation continues on, demonstrating Nell's insight to the neo-Victorian hegemony as well as her critical awareness about the relationships between their power, ideology, and indoctrinating education.

hierarchical. *The Diamond Age* also features post-scarcity and nano-technology, where basic elements are fed into machines that can assemble anything, from food and clothing to buildings and vehicles, and important to the core narrative—dynamic, co-operative, multimedia devices that can "evolve" in real-time.

Stephenson's novel demonstrates a hybrid of Victorian, 20th century, and future culture in a plot that demonstrates how changes in technology affect changes in the mediation of power structures, but the same systems of domination and subjugation persist. Stephenson's world is post-scarcity, but it is not post-class, post-power, post-conflict and social injustice. By repositioning the time and setting of his novel, Stephenson enables a dialogue between the social concerns of the post-Imperial (19th-20th-and-21st) centuries and the interplay of power and victimization. Stephenson's world demonstrates some upward mobility for the white heroine, but a lateral move of her counterparts, the female Han orphans. All of these girls/women only have access to this movement and power due to the initial actions of men—Finkle-McGraw, Hackworth, and Dr.X predominantly. All of the men are characterized as intelligent, diligent, and hard-working, and each of them claims to act out of "filial duty." In addition, of these men, only one is *not* part of the neo-Victorian ruling class. Thus, their actions echo the actions of the Empire—to dominate or domesticate.

The Empire of the neo-Victorians, and their control of the flow and distribution of matter through "The Feed," makes them most powerful group in the world of *The Diamond Age.* Derogatorily called Vicky's by some and the New Atlanteans by others, the

neo-Victorians are a predominantly Anglo-American and Anglo-British group who adhere to the culture of the Victorian era and who have colonized China, where the majority of the text takes place. Nanotechnology, combined with their wealth and control of matter has made the neo-Victorian phyle see items as disposable—one character fabricates a new transportation device each morning and the novel opens with a party on a disposable island constructed for a princess' birthday; the decadence of the neo-Victorians juxtaposes the experiences of those in the Leased Territories, home to those with no cultural affiliation who live in or near poverty and receive basic needs from matter compilers that are slow and incredibly limited, unable to even provide real food. Those without a phyle (called thetes) are not restricted to only joining the neo-Victorians. Other phyles exist outside the neo-Victorians, each with their own slice of power and their own rules and restrictions regarding who can join. One such phyle is the Han group that is defined by its immense size and unlike other phyles is racially defined. Some characters demonstrate respect and appreciation for the Han people, especially in relation to art, but it is implied in the text that most people want to be like the powerful neo-Victorians (at least from the perspective of the largely neo-Victorian point-of-view characters).

One of these neo-Victorians commissions the creation of *The Young Lady's Illustrated Primer*. The Primer is a tablet-like book voiced by virtually-connected actors (ractors) and designed on a core of folkloric archetypes to educate as it evolves to the needs of the user. The Primer can also be any kind of book (for example an Encyclopedia, Dictionary, or Atlas), as well as other tools such as a telescope or

microscope. As such, the Primer represents a symbolic *access to information* rather than access to one particular text. This symbolic book illustrates the power of literacy and information because (as cliche as it is) knowledge is power. The Primer was commissioned by a neo-Victorian, designed by a neo-Victorian, and designed for the use of an aristocratic neo-Victorian girl, but, through several acts of rebellion, familial love, and chance, the Primer ends up in the hands of Nell, a young girl who lives in the slums of New Chausan/Shanghai and would never ordinarily have access to the technology and information contained within the Primer.

Nell is approximately four years old when she is introduced in the novel, and lives with her older brother Harv, her mother Tequila who is seldom around, and her mother's string of abusive boyfriends. Her volatile childhood is set in an apartment in the Leased Territories. Because they are not part of a phyle, these residents lack material power or prosperity, evidenced through the fact that they lease their apartments rather than own property. Despite the fact Nell's neighborhood is called Enchantment, it is characterized as a socio-economic slum. Children are unsupervised, uneducated, and those like Harv are part of child-gangs. Adults try to survive by working long hours or resorting to crime, such as Nell's absent father Bud who opens the novel with his criminal exploits. In this environment, the siblings Nell and Harv are largely self-sufficient, acquiring basic necessities as free (yet slow and limited) products from the matter compiler. Harv supplements their childhood by acquiring Passives (closed-system movies) and sometimes Ractives (interactive entertainment that is 'hosted' by real-life ractors, similar to the Primer) through petty crime and harvesting nanobots for Dr.X, a Han

Chinese engineer who is also celebrated for his skill of calligraphy. Dr.X takes the

Neo-Victorian nanobots and transforms them, generally into something described as

both biologically and artistically inspired. The work of Dr.X is spoken of highly, although

the man himself is considered an infamous criminal.

Dr.X's neo-Victorian counterpart is Hackworth; whereas Dr.X's nanobots take

biological inspiration, Hackworth's work looks like it's pulled from the pages of Jules

Verne. Hackworth is the Bespoke engineer who designs the Primer; he is described as a

talented engineer/hacker and devoted (albeit unemotional) father. His daughter is

approximately Nell's age, and although already a member of the Neo-Victorians, he

wants to ensure her good future. Hackworth is commissioned by a neo-Victorian

aristocrat named Finkle-McGraw, who believes in the Victorian Revival, but frets about

the education of young people and the lack of artists and critical thinkers in his society.

Finkle-McGraw believes that the Primer is the solution, which he commissions for his

granddaughter (also approximately Nell and Fiona's age) hoping to ensure a better

future for her as well. Inspired by Romantic-Wordworthian principles of education, the

Primer is meant to inspire the qualities of "subversion," to "lead an interesting life," and

to not "follow the straight and narrow" (34-36).

Through a narrative structure that nods to Victorian serializations, the novel tells

Nell's coming of age through the events occurring around her as well as excerpts from

the Primer. We read her development from toddler to young woman—from a victim of

systemic poverty and abuse to become the leader of a powerful community of young

female hackers that emphasize the protection and safety of others. Nell's acquisition of

the Primer is an anomaly in a society that would have denied her access to that information and technology. Her activity with the Primer demonstrates the potential when access is provided to those who have systematically been without. Because of that access, she grows up to be a critical, compassionate, and community-focused member of society who does not naively accept given information without first stopping to think.

Nell's coming of age experience is described along-side the development and lack of education of her brother Harv; the other two legitimate copies of the Primer, which belong to neo-Victorian girls Fiona and Elizabeth; and a final set of bootleg copies of the Primer that are given to a group of Han orphan girls who call themselves the Mouse Army. The Han girls' Primers are made through coercion, reduced functionality, and Imperialist ideology. First, Hackworth is made to create their Primers as part of a punishment for his crimes. Because there isn't the same financial backing as the neo-Victorian girls' Primers, Hackworth eliminates the individualization and reduces the quality of voice.[13] He also adds in a "trick" that imposes Imperialist ideology on the Han Primers: "'I can build in automatic voice-generation capabilities—not as good, but serviceable.' At this point, John Percival Hackworth, almost without thinking about it and without appreciating the ramifications of what he was doing, devised a trick and slipped it in under the radar . . . 'While I'm at it, if it pleases the court, I can also . . . make changes in the content so that it will be more suitable for the unique cultural requirements of the Han readership'" (*The Diamond Age* 179-180). The functionality

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[13] "To Judge Fang the voice sounded a bit dull, the rhythm of the speech not exactly right" (*The Diamond Age* 244)

changes of the Han Primers make their educational experience akin to mass education

[14]—one curriculum robotically deposited upon an undifferentiated group of students;

Hackworth's trick suggests an imposition of Imperial ideology that is so deeply

ingrained in his own self-construction that it is unconscious. Hackworth wields his

power under the guise of false generosity.

Not only do the Han Primers lack the same functionality of the other girls', they

are linked to Nell's, framing their education through her experiences.The

characterization and experience of the Han girls is problematic as it frames some of the

only racialized characters in relation to the white protagonist and completely eliminates

any individualization or self-actualization. In part, this emphasizes the differences

between bespoke education and mass education, but also highlights systemic racism in

education while squashing any potential alternative in the novel.

Engineering the Cyber-Victorian World: Juxtaposition of Two Father-Figures

The Diamond Age has been characterized as both neo-Victorian[15] and

post-cyberpunk.[16] The novel is neo-Victorian in its themes and stylistic details; it follows

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[14] Their Primers are also mass-manufactured "The program was written to work in a bulk compiler, extruding dozens of Primers each cycle" (*The Diamond Age* 244).

[15] See: "Neo-Victorianism". In *obo* in Victorian Literature. 1 Oct. 2020. <https://www.oxfordbibliographies.com/view/document/obo-9780199799558/obo-9780199799558-0083.xml>. "Neo-Victorianism can be divided into two distinct categories: creative works that in some way engage with Victorian literature and culture, and scholarly works that seek to explore the shifting relationship with the Victorian period since its close in 1901, often through a critical investigation of Neo-Victorian creative works. . . A number of scholars have argued that not all works that employ a Victorian setting can be identified as Neo-Victorian and that the term implies a "knowing" engagement with the period. According to this definition, works that employ the period merely as backdrop are excluded from the Neo-Victorian genre, and thus issues of inclusion and exclusion are potentially problematic.

[16] A range of voices have spoken about post-cyberpunk; most relevant to this thesis is Rafael Miranda Huereca's analysis of *The Diamond Age*. Views from outside of scholarly discourse explain that the difference between cyberpunk and post-cyberpunk is a sense of optimism or the already pervasive existence of technology (as opposed to 1980s cyberpunk).

The crowdsourced TvTropes.org has characterized post-cyberpunk as "intended to present a less pessimistic, more realistic vision. Where Cyberpunk is anti-corporate and anti-government, Post-Cyberpunk is willing to give both parties

the *bildungsroman* tale of a Dickensian character, and the use of a subtitle, the phrase "a

young lady," and the concept of a primer emphasizes the neo-Victorian setting and

styling. In addition, each section of the text opens with spoiler titles, which are common

in writing (particularly serialized writing) in the 17th, 18th, and 19th centuries. The first

of these spoiler titles, "A thete visits a mod parlor; noteworthy features of modern

armaments" (10) also uses archaic sentence structure and word-choice (such as using

the word armaments rather than weapons). But, the opening sentence jams the

cyberpunk future with the building historic setting:

> **"The bells of St. Mark's were ringing changes up on the mountain when Bud
> skated over to the mod parlor to upgrade his skull gun" (10).**

The "bells of St.Mark's" chime throughout the novel (page 4, 36, 232, 332, 499), and

frame the first and final lines of the text. The bells connote a traditional European

setting (St.Mark's is actually in Italy) and reminds me of the recurring image of Big Ben

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redeeming features" ("Post-Cyberpunk." 29 September 2020,
https://tvtropes.org/pmwiki/pmwiki.php/Main/PostCyberPunk).
Shadowrun is a popular cyberpunk game series; on the website's forum user u/AndyNakamura has said "Just like classic cyberpunk was a reaction to old school sci-fi's utopianism, post-cyberpunk rejects the dystopian bleakness of classic cyberpunk. Just like its predecessor, it follows the spirit of its own time - 10-20 years later, when technology is in wide use. Just like its predecessor, it hypertrophies the themes of the period. The problems and conflicts of post-cyberpunk fiction arise not out of alienation between man and machine, but out of pervasiveness of technology. The characters (e.g. Hiro Protagonist and Y.T. from Stevenson's "Snowcrash") are no longer freaks and loners, but actually those who are _better_ adjusted to technology around them than their peers. Their abilities to utilize technology are no longer shunned, and are often admired." ("Cyberpunk vs. post-cyberpunk." 18 Aug 2012, https://forums.shadowruntabletop.com/index.php?topic=8326.0).
At Tor.com Malka Older, who also references *Snow Crash* says that post-cyberpunk is more about the normalization of cybertech and the ability for corporations to co-opt what was previously seen as potentially revolutionary as a means of influencing the public: "So while some draw the line between cyberpunk and post-cyberpunk as a shift from dystopia to, if not utopia, at least a more positive approach, I can't agree with the first part of the premise. To me, the difference lies more in the degree to which the given technology has mainstreamed, the difficulty of our hero punks maintaining their edge. Yes, we still have hackers in today's world, and they perform derring-do for good and evil and at various stages in between. But more and more we see the wild frontier of the hacker, the virtual world, being tamed and landscaped in ways that let corporations exploit the power of the technology: data gathering on users for targeted ads; search algorithms that privilege certain results and render others invisible; control over certain kinds of speech and an unwillingness to tackle others. As the paradigm shift fades and the new status quo becomes more entrenched it may look less dark and more normal, but it's getting harder for a cyberninja to overturn" ("Optimism and Access: The Line Between Cyberpunk and Post-Cyberpunk." 8 June 2016, https://www.tor.com/2016/06/08/optimism-and-access-the-line-between-cyberpunk-and-post-cyberpunk/).

in Virgina Woolf's *Mrs. Dalloway*, but Bud's modern name breaks the establishing tone, and his actions—how, where, and why he is going—resituate the setting into a futuristic, cyberpunk world.

Other scholars (such as Johnathan Peter Lewis) compare Bud to William Gibson's iconic Molly Millions, partner to Case, the hacker who must face a powerful AI in the cyberpunk classic *Neuromancer* (1984). Like Molly, *The Diamond Age*'s Bud is the "muscle" of cyberpunk—he is introduced "wearing skin-tight leather, to show off his muscles" and has nanobots implanted that twitch his muscle fibers "to maximize bulk" (Stephenson 11). Bud's lifespan—and as an extension, the muscle and guns of cyberpunk—is quickly cut short to make way in the text for Bud's daughter Nell, as well as the hacker/engineer Hackworth—whose value at hacking is right in his name. In time, Hackworth becomes another mentor and potential surrogate father-figure to Nell, further supplanting the outdated cyberpunk character of Bud.

Post-Cyberpunk: Domestication, Community, Pedagogy

Rafael Miranda Huereca, one theorist who argues that *The Diamond Age* is "post-cyberpunk," describes post-cyberpunk as a distinct genre (from cyberpunk) that includes topics overlooked by cyberpunk such as "reproduction, feminism, social progress, biopolitics, familial structures, education, ecology, psychology and health" (Huereca 142). I interpret this definition of post-cyberpunk to characterize the genre as focused more on individuals within family/community structures rather than the relationship between lone individuals and corrupt power (that is a predominant feature

of cyberpunk). Huereca argues that in Stephenson's work "the male characters are depicted as ferocious entities obsessed with empowerment, political struggle, shallow entertainment and violent actions, whereas the female spheres, free from the virile competition, are assigned the roles of education, upbringing, guidance and intellectual nourishment" (Huereca 145). Other theorists (McClancy, McGinnis) have discussed the ways in which *The Diamond Age* domesticates the cyberpunk genre. Reading *The Diamond Age* through this definition of post-cyberpunk—focused on questions of family, community, childhood and education—questions *why* domesticate a genre. In *The Diamond Age* we witness how lone individuals—the heroes of cyberpunk, such as Bud—have a short life expectancy when up against powerful socio-economic structures. The follow-up generation—the *post*-cyberpunk hero—is written in *The Diamond Age* as Bud's literal offspring. As a child of cyberpunk, Nell's story takes the genre into the domestic sphere of home (where she spends the first half of the novel) and the world of child-raising and education—the formation of a follow-up generation to the cyberpunk past.

There are two key attributes to this domestication process: First, Nell is not alone. Although Nell is functionally abandoned by her parents, she is not abandoned in the same sense as the orphaned Chinese girls in the novel; she *does* have a roof over her head and she *does* have people who care for her, namely her brother, then Miranda, and finally Constable Moore. Nell's development showcases the necessity of community—family—a quality that the Chinese orphans do not receive, and which (problematically) stiffles their personal development and individualization. Without the

same sense of community involvement, these orphans attain a collective identity—the Mouse Army—without a clear sense of personalization between each girl.

The second component of Nell's domestication is the fact that it appears to only be temporary and that during her domestication she learns the attributes of hegemony so that she may actively resist them. Nell's use of the Primer demonstrates the way that education can indoctrinate particular roles and attitudes in future generations (as we discussed in the first section). When Nell is young she spends almost all of her time in the home, reading (and being read to) from the Primer. During this time, Nell adopts the speech patterns and mannerisms of the neo-Victorians. But as Nell enters the domestic neo-Victorian world, her time with the Primer changes[17] and focuses on computer logic and puzzles rather than being read stories of adventure and Victorian manners that do not require critical thought. When the content of the Primer is less about maintaining systems, and more about figuring out how systems work and can be reworked, Nell's developing critical thought uncovers that the hegemonic neo-Victorian system functions like a computer program. With that insight, Nell chooses to leave the comfort of domestication to return to the streets and make a life for herself (rather than adhere to her Victorian training). Some may argue for or against either social conformity or rebellion, but the true value of Nell's education is in her ability to make a *critical choice* about in which community she would like to take residence, the rebels or the conformists. And so, the domestication of Nell—or the domestication of the cyberpunk—requires community and education,

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[17] The Primer "kept getting more like a ractive and less like a story, and by the end of each chapter she was exhausted by all the cleverness she had expended just to get herself and her friends through another day"(258)

but ultimately results in the same lone cyberpunk individual decked out in streetwear finding a living in the margins of society. However, through community and education, Nell also acquires a group to rally behind her, providing her with a more powerful position than that which her father held.

In "Remediated Readers," Eileen McGinnis argues that Stephenson's use of a female protagonist rather than the traditional muscle-bound male serves to remediate the cyberpunk genre's fascination with the subversive male hero (like Nell's father Bud). McGinnis explains that the male heroes of cyberpunk are loner cowboy figures who operate outside of society; however, Nell "participates in the values and agendas of the neo-Victorian hierarchy" (481). McGinnis believes that this is in an attempt to "domesticate" the cyberpunk novel and that the female programmer protagonist "represents a means (and a medium) for reinstating hegemony and social order" (482). While Nell does participate in the neo-Victorian society for a time, I believe that the shift from the male loner, such as Bud who refuses to join a community at the expense of his life, to the female collective of Miranda, Nell, and the Mouse Army places emphasis on the protective and productive potential of a band of individuals participating in a community that need not be bound to the constraints of the nuclear family, although community in this sense is grounded in a network of care and emotion. Although Nell is not intended to receive the Primer, Finkle-McGraw continues to fund its operation so that he may observe the outcomes of his educational experiment. Unknowingly, Nell participates in this Neo-Victorian agenda. However, Nell does not *maintain* that agenda and does not *remain* within neo-Victorian society.

Nell's narrative illustrates the way that digital media and programming can perpetuate hegemony and social order—she moves from a place in the margins into the hegemonic core, and through her education, not only succeeds, but matches and possibly even exceeds the talents of those girls born into the hegemonic social order. However, due to the nature of her education Nell develops critical thinking skills that inhibit her from being content to mindlessly adopt the social values and identity of the powerful neo-Victorian group. Instead, Nell chooses to return to the streets—the place of the marginalized and subversives—and here, she decides to write her own story, walk (or roller blade) on her own path, and build her own community. Nell *does* reinstate social order, but it is not necessarily hegemonic in structure. Rather, the social order promoted by Nell is one of a community of affectionate duty to one another and the well-being of those in danger. Rather than hegemonic, Nell's community is based on reciprocal humanistic values and action. The emphasis on family and community—and family and community that defies the white, nuclear model—suggests the necessity for different structural models for society, community, and education.

Community

Community is incredibly important to Nell's development, and to the greater narrative pull of the novel, but the Han girls' lack of community leads to a further question of access and oppression for the marginalized group who are denied that resource. Alper points out that even though each of the girls, including the Han orphans, are given the Primer from a "benevolent paternal figure' (Alper "Digital Divide") the girls'

Primers are not equal and that "the family components of the Primers, the caregiver

ractor/child relationships, are the very parts that the orphans are made to do without"

(Alper "Digital Divide"). Alper continues, adding that "though the Primers that Hackworth

engineers for the orphans attempts to address some aspects of one type of 'digital

divide' — that of basic degree of access — they exacerbate other key inequalities, such

as the lack of personalized scaffolded learning, and they simulate pseudo-emancipation

for the nameless young women" (Alper "Digital Divide"). Although Hackworth provides

the orphans with a semblance of the same informational access as the other girls, the

Primers do not—and cannot—address the systemic social issues that resulted in the

girls being orphaned in the first place (due to a systematically impoverished social

group and a recreation of China's One Child Policy). Access to information is not

enough. The conditions surrounding that access, and the conditions surrounding the

child, impact the value and effectiveness of those resources. As Alper puts it:

> "The gaps in children's home and/or school access to digital
> technology cannot be isolated from the content of that
> digital material (e.g. online community 'walled gardens');
> variations in immediate environmental context surrounding
> that access (e.g. shared usage on slow dial-up in public
> libraries versus a personal bedroom laptop with a high speed
> connection); and social variables such as age, income,
> gender, race, ethnicity, education, and geography . . . Even
> with hardware and software access being equal, not all
> children have developed the skills and knowledge to fully
> participate in civic engagement, can comprehend the
> opaque influence of media, nor work through the ethical
> complications that in many ways define the modern internet
> . . . A 'scaffolding gap' may create another chasm among
> young children (often low-income and ethnic-minority) who
> are less likely to have adult guidance and dialogic support
> when using the Internet at home . . . [and] Children with
> special needs are often left out of the discussion of digital
> inequalities entirely" (Alper "Digital Divide").

Stephenson's novel does not resolve the societal issues that maintain the Han girls'

divide from the neo-Victorian girls; instead, *The Diamond Age* illustrates the deeper

inequalities that divide the sets of girls. Access to information—the Primer—is not

enough to balance the division between the two groups, especially when the Primer

(and society/education more generally) frames the Han access *in relation*, or *as a*

subsidiary of the white "hero."

Although the example from *The Diamond Age* problematically uses the racialized

characters for Nell's advancement, in Nell's experiences we see the value of the very

thing the Han girls are made to do without, which, when in other science fiction texts,

has disastrous impacts. Sherryl Vint compares Nell and Fiona from *The Diamond Age*

to Lola from Jack Womack's *Random Acts of Senseless Violence* (1993), saying that

that "the key difference between Nell and Lola is that Nell is able to move into a

community that will protect and value her, while Lola loses the various communities in

her life" (157). Vint adds that "Nell is able to move from her discursive identity to a

material one because she has the support of a community" (166). Nell's experience

within a community also conditions her to the concerns of others. When Vint compares

Nell and Fiona she explains, "Nell is able to use the Primer as a tool for social change,

while Fiona — who lacks a community of readers to share her story — uses it only for

escapism" (166). Notably, Fiona rejects her family and neo-Victorian communities,

latching onto the first community that she finds that models the artistic escapism she

has been practicing.

Alternatively, we see that Nell and Miranda forge a relationship even though they're physically separated—as such, communal bonds can be built and maintained not simply through programming but also through experience in the digital world. Alper explains that *The Diamond Age* "hinges entirely on sociology and family dynamics . . . deeply tied to the social interactions that parents have with their children around or through the technology that stays put or passes through their homes" (Alper "Parenting"), and the Primers show how technology can serve as "conduits for remote interaction" (Alper "Parenting"). Nell's success in the Primer is due in part to this relationship; Alper says that "Nell's Primer needs the tutor/friend/mother's intuition that Miranda provides. In *The Diamond Age* not just any human being will do" (Alper "Learning"), or to quote a Reddit post by Neal Stepehenson about the real-world possibility of a Primer like in *The Diamond Age*: "Kids need to get answers from humans who love them" (u/NealStephenson). Miranda loves Nell, sacrificing her career to raise the girl through the Primer, as such, she supplies answers not as an actor, but rather as a teacher or mother.

Miranda fulfills the role of mother/mentor/actor/teacher, and McGinnis explains that Miranda's role points to the same roles women took in the nineteenth-century as mothers, teachers, and governesses while also pointing to the "crucial but unacknowledged work of professional women in giving voice to new media" (487). Nell, through her training with Miranda, develops a sense of the need for community, in part because (unlike the other girls) she has a stable maternal voice guiding her through her training. McGinnis argues that "if Nell's Primer works in part to mediate a girl's

relationship to a society, it also serves as a medium in another sense, intimately connecting two human beings, figured as mother and child, through the ongoing process of literacy education" (486). It is through the process of Nell's education (and only through this process) that Miranda and Nell bond with each other. The connection between the book and the family is one of education, demonstrating the way that education—in this case the education of literacy—can forge deep, familial relationships. Inversely, the family is re-inscribed through participation with books and education. As such, the book is a site of social connection—literacy is the skill needed for this connection.

Nell also develops a relationship with an army of girls through the Primer; when she is united with the Mouse Army, they work together in collaboration—at one point literally joining arms to create a raft and get to safety. The protection provided by Nell and her army is not focused only on themselves, but rather on the entire population in need of assistance. In this way, their participation is *as a community* while also *community-focused*. Because of each individual's active effort, and their collaboration, each girl can focus on one task, compiling all of the tasks together to form one, community-focused and collaborative act. Likewise, Nell and Miranda construct the Primer together. Both of their experiences feed into the Primer, and they tell the story mutually, influenced by Nell's back-tracking and questions as well as through Miranda's interpretation of the scenario. Nell's active engagement with the text supports critical engagement, curiosity, and problem-posing. Furthermore, her active participation during her training provides a source of empowerment and self-actualization.

Despite her empowerment, Nell is still not safe on her own in the world—she is attacked several times over the course of the novel—but Nell's community rescues her from these moments of danger, emphasizing the security in numbers. It is inherently dangerous being a marginalized figure at the mercy of those more powerful. Women in cyberpunk may advocate for revolution or rebellion but must maintain some social order and community to ensure their own protection and survival. Whereas Victorian men—like Hackworth in *The Diamond Age*, can go on a ten year underground quest and come out virtually unharmed, other than a new beard and the final fracture of his cold marriage, Victorian women, like Nell, cannot safely go into public on their own without some sort of protective barrier—they cannot be the loner hero of cyberpunk, but they *can* foster communities to love, protect, and fight alongside them.

As such, the female cyberpunk hero can free herself through the cooperation of others like her. Women's literacy and community provides the potential for self-actualization and self-emancipation, that resists the paradigm of the woman locked in the tower by the evil queen who must be saved by the lone male hero. As such, the post-cyberpunk remediates woman as object to be saved into a self-actualizing individual who navigates the secret corridors of the castle, manipulates the archaic paradigms that have kept her there, to liberate herself and aid others who have been spellbound so that they may in turn liberate themself. This is like the magic of Belle from Disney's *Beauty and the Beast* (1991) who liberates the serving staff from being household objects, or Gritta from *Gritta Von Ratsinourhouse* (1840s, English 1999) who liberates the spellbound rats to regain their humanity. In these tales, through acts of

participation in hegemony along with acts of rebellion, women liberate themselves and those who have been trapped alongside as (literal or near-to) objects.

The objectification of marginalized groups in these fairy tales is not a coincidence, for it makes the marginalized objects to be used by the more powerful—this parallels Freire's explanation that "the oppressed have been destroyed precisely because their situation has reduced them to things" (Freire 68). The process of reducing individuals to objects is an act of dehumanization that maintains an order of supremacy between oppressor and oppressed. Despite the history of the oppressed/oppressor system we can practice solutions to rehumanize the future, starting by liberating the oppressed from the status of object by the oppressors. It is important to Freire that this practice be of "reflective participation" of both the oppressor and the oppressed, and that "attempting to liberate the oppressed without their reflective participation in the act of liberation is to treat them as objects which must be saved from a burning building" (Freire 65). That is to say, the spellbound objects in Belle's castle must participate in their own liberation because accepting their state as dishware is to accept their current state of domestication. Their status of objects is not so much a literal state as a symbol for their own position in the oppressor/oppressed paradigm—liberating them from their literal state of objects is to break the spell that normalized objectivization; it can not free them from oppression without further work.

Resisting domestication and oppression must be "by means of the praxis"—work—"reflection and action upon the world in order to transform it" (Freire 51).

Work is a direct translation of values, and work against oppression is a vote for that future. Unfortunately, the oppressor will not work towards that future at the expense of their way of life and so the work befalls the oppressed and their allies. Those who recognize the reality of oppression can enter that reality and transform it. Freire explains that "the more radical the person is, the more fully he or she enters into reality so that, knowing it better, he or she can better transform it" (Freire 39). By entering into the domestic sphere, by entering into the oppressor/oppressed hegemony, the radical ally can transform reality for the benefit and liberation of others. By entering into the neo-Victorian world, Nell is able to uncover the codes and contradictions of the hegemonic order and use, manipulate, and transform those codes for her own liberation and others' salvation.

Alternative History: Chinese Colonial History

The same cannot be said for Nell's orphan counterparts, the Mouse Army. Although the image of Nell's education in *The Diamond Age* is optimistic, there are major complications in the characterization of the Chinese girls and their access to education. It's troubling that Stephenson's marginalized figures in the novel are literally a racialized nameless mass whose role is to save the white princess and serve under her rule. This could demonstrate the difference between individuated education within a caring community and mass-education through digital, disembodied means; however, the treatment of the Han orphans also demonstrates racist stereotypes and decision-making both in and outside of the text. Assessing and analyzing the treatment of the Han orphans at length is not the primary goal of this paper, but Greta

Aiyu Niu offers an astute commentary on the racism present within *The Diamond Age*—pertaining to the Chinese, the Han orphans, and "techno-orientalism."

Techno-Orientalism is defined by Niu as "a practice of ascribing, erasing, and/or disavowing relationships between technology and Asian peoples and subjects" and that "Techno-Orientalism is intertwined with capitalism and consumption," being sure to note that the primary producer of technology are Japan and China—and in particular the small underpaid hands of women and children (Niu 74). Niu explains that Nell's rise to power through the Primer is "eerily reminiscent of nineteenth- and twentieth-century British imperial rule" and that "*The Diamond Age* depicts China's relationship to technology as one of inadequacy" (Niu 77). While the Primer gives white Nell power, the Han Primers train the girls "to revere Nell, indoctrinating an army of 333,000 dedicated followers," and "these girls are unindividuated cyborgs whose value lies primarily in their immense numbers, their reverence for authority, and their fanatical devotion to their primers . . . Sharing some similarities with Asian women and men laboring in computer chip and electronics factories, they provide the necessary support for the individual white engineer" (Niu 80).

Niu considers *The Diamond Age* "nano-punk" (a punk subgenre that uses nano-technology) which, because of the biological potential and implications of nanotechnology, is "ripe for investigations of ethnicity, gender, class, and other markers of difference" (Niu 73). Niu continues, explaining that:

> a major perceived advantage of the Internet and cyberspace
> is that using it changes certain spatial requirements—there is
> no need to share the same physical space in order to work or
> interact, no need to apply (or wait) for visas to work in a

different nation—rendering the fantasy of the cyborg posthuman more visible. Nonetheless, the geography of this space still relies on physical bodies and physical spaces, particularly on locations where labor has been cheapened and in areas that offer financial incentives . . . The example of the Internet and digitized information reveals that the ability to experience these as posthuman relies partially on overlooking Asian workers (among others) making the software and hardware, working in integrated circuit computer chip foundries and factories assembling various electronic and/or digital components. To put it simply, without their work one could not access the Internet (Niu 88).

Making the matter worse, these workers who make the Internet possible are some of the least likely to have access to the digital world. This reality is reflected in the novel as the Han girls do not receive the same technological advantages as the neo-Victorian girls or poor, yet white, Nell who can slip into that hegemonic world and rise through the hierarchy.

Whereas Nell can pass in the neo-Victorian world, the characterization of the orphans is difficult to gloss over as they are each imagined with very little in terms of identity, autonomy, or social mobility. While *The Diamond Age* creates a community of female computer programmers, the Mouse Army (as they name themselves) are bound to that community out of loyalty and duty that is hierarchical towards the white leader "Princess Nell." The girls act less like individuals than like Nell's private hive mind—like a team of ants rather than a community of girls. This troubling erasure of Chinese identity remediates the colonial narratives of the nineteenth century, and like the question of the value of women's education, drags this imperialistic racism into the future of *The Diamond Age*'s alternative (and ambiguous) timeline.

Alternative History: Parody/Subversion/Ambiguity

Peter Brigg explains how and why authors may construct alternative timeline narratives, explaining that by drawing on the past to represent the future: "authors often make choices from the past that speak to their attitude about the present . . . the future can be used to comment on the present by means of the elements of the past that are selected for projection into it and the attitudes towards those elements demonstrated in the text" (117). Like in Niu's analysis of *The Diamond Age*, Brigg argues that "Stephenson's future is a recapitulation of late-nineteenth-century Chinese colonial history . . . by claiming their own territories around Shanghai and imposing dominance through materialism" (117) as well as "a return to the structures, morals, and behaviours of high-Victorian England" (117). However, Stephenson also incorporates the ideological rhetoric of the late 20th-century, explaining that moral and social concerns of that era caused the return to the past Victorian social structure and attitudes. At the same time, the text is set in a future—a future that reflects both the near and more distant past. Brigg calls this "a set of reflecting mirrors that are complex and troubling for a reader who pauses in the exciting headlong puzzle of the narrative to consider them" (117)—in other words, for the critical reader of Stephenson's text, there is a layering of reflections that makes getting a clear image of the text's attitude about the past difficult to parse.

Kathleen McClancy argues that Stephenson's novel replicates the moral rhetoric "straight from late 20th century political commentary" (69), and some characters in *The Diamond Age* do argue that the late 20th century saw moral degradation. However, I

counter McClancy's argument because these are all characters of the older generation; protagonist characters, such as Nell, are of a younger generation and do not have the same social opinions. I think it is important that we note Johnathan Peter Lewis in his introduction to *Tomorrow Through the Past: Neal Stephenson and the Project of Global Modernization* (in which McClancy is published). Lewis explains that "Stephenson is parodying the many derivative cyberpunk protagonists modeled on Gibson's Case and Molly " (sic) (xiv). Arguably, Stephenson's characterization of Bud is equally parodying the cyberpunk image. Since the parody of Bud and cyberpunk opens the novel, we can interpret the text as continuing with a parodic tone, or at the very least embodying the *ambiguity* preached in the novel.

So, while McClancy argues that "Stephenson's novel essentially plays out this conservative fantasy of a return to the Victorian" (73) meaning a return to the white nuclear domestic life of self-control and oppression of the other, and while this is the opinion of *some* of the characters such as Finkle-McGraw and Hackworth—this *is not* the attitude of Nell who leaves her "nuclear family," is adopted by a bachelor, and *consciously leaves* the Victorian society. Yes, by the end of the novel Nell is united with her mother-figure and a potential father-figure—but Nell saves her mother-figure (Miranda) by literally biting her—this is not an action of the controlled emotions and behaviour we have seen in Victorians such as Mr. and Mrs. Hackworth and their daughter Fiona.

McClancy explains that "although not always liberal in its politics, most cyberpunk certainly emphasizes the fight of the individual against The Man, the struggle

to tear down hierarchical structures, to make information free for anyone cool enough to hack the net" (74) and that "*The Diamond Age* keeps to this code, giving us a heroine who does nothing but question what she's told for the entire length of the novel; however, the answers to which she comes are the same ones advocated by 20th century neo-conservatives" (74) and as such "the individualistic ethos of cyberpunk inevitably results in a determination to reaffirm the monolithic politico-corporate entities that earlier cyberpunk worked to undermine. Through the seductive cyberpunk style, *The Diamond Age* re-educates alienated youth into productive members of society" (74). But Nell demonstrates how you can be a productive member of society and still resist hegemony—you can rise through the ranks so you can better understand the system and be in a position to change the system. While Nell *does* benefit from Victorian influence and *does* become a productive member of society, the most substantive element of her development is the interaction between individual and community. She and the other girls (Elizabeth, Fiona, the Mouse Army, and even Miranda) demonstrate the productivity of individuality while also showcasing the value of *a* community—*any* community—over a specific community (in this case, the Victorians).

None of the youth *are* reintegrated into the hegemonic Victorian world: two previously Victorian girls leave the kingdom and the outsider who has temporary access (Nell) makes the conscious choice to return to the streets and make her own future and her own community. As such, the Primer has trained these girls on how to be assertive in their subversion and aid them in the discovery of like-minded subversive communities. The novel closes with a rebellion, reclaiming land from the Victorian

empire, although this is a physical threat to our protagonists, it represents the revolutionary power of non-hegemonic/non-dominant communities (importantly) *when they rally together*. Rather than reincorporate the subversive into normative society, *The Diamond Age* shows the value of incorporating subversives into their own sects of society, how subversiveness is essential to prevent the stagnation and hypocrisy of larger society, and how subversiveness is really just a quality of critical thinking—not simply accepting the status-quo because it has been handed to you by parents or political or corporate indoctrination.

Brigg argues that *The Diamond Age* Primer, which focuses on "a fuller realization of human potential" (122), is quite unlike historic Victorian primers, which focus on morality and order. The result, according to Brigg, is the ability for the reader to consider "the function of education in all three eras, Victorian, late twentieth century, and the Neo-Victorian age" (122)—or, the future. The main narrative of *The Diamond Age* is a question of the function of education and variations on how education might look and might provide different results. The educational ideal proposed by the characters is not Victorian at all, but rather Wordsworthian (Romantic). But what is the answer to the question of education?

One way we might be able to solve the puzzle is to examine the things the various characters have in common (rather than what sets them apart). One of the major complaints of *all* of the characters in *The Diamond Age* is the hypocrisy of the dominant class (the Victorians), the need for individuals to group together into

communities, and the need for subversion and artists for a powerful society. The other thing all characters seem to emphasize is the value of education and literacy.

Literacy in *The Diamond Age*

The Diamond Age is enacted through a narrative that focuses on the entanglement of media, literacy, and education—the core novum of *The Diamond Age* is the Primer of the title and this novum mediates an educational format as well as the social implications of such an invention and educational change, including the interpersonal relationships forged with (and within) that literacy space. Stephenson crafts multiple expressions of literacy, including a new form—ractive literacy, which is akin to present-day mediums that are immersive and participatory (such as VR, MMOG/MMORPG, or, to a large extent, social media and user-to-user content creation, such as YouTube).

Huereca provides an excellent description of the Ractive network in *The Diamond Age*: "One of these grids [electronic networks or cyberspaces] is the *Ractive* network, a purveyor of interactive adult entertainment and basic Sesame-Street responsive type of education for children, a type of cyberspace to which people jack-in in diverse manners: with the aid of eye goggles (as in Stephenson's *Snow Crash*), smart paper (flexible electronic displays), mediatrons (3D-image projector bulging from electronic walls), or attend specialized parlors and theatres, while *ractors* or interactive actors require 'tat-grids' (skin embedded nano-prod tattooed lattices), which turn them into actual interfaced cyborgs" (Huereca 144).

Nell's governess/mother-figure is one such ractor who has the best possible tat-grid (the "Audrey"—most high-level female grids are named after classic Hollywood starlets). Miranda is characterized as someone driven to escape the cloisters and abuse of the neo-Victorian world through artistic independence; she is called an *artiste*, and has made a name for herself as a serious performer in the ractor world before she sacrifices that career to raise/mother/educate Nell. Racting is described as an artistic spectrum, from the Shakespearian-like art of Miranda's mid-career, to the base, bawdy, and violent escapisms played by Nell's brother Harv.

The literary environment is established with the setting, through the opening juxtaposition of Bud and Hackworth; Hackworth's POV is stylistically more complex, and his use of media more traditionally refined, conversely, Bud's POV is stylistically simple, we learn he is illiterate, and his media tastes are traditionally 'low' and violent. In *The Diamond Age* the voice of the omniscient narrator matches the literacy abilities and discourse of the point of view character. Hackworth's point of view is stylistically complex; meanwhile, Bud's point-of-view includes swears, slang, street jargon, and abbreviated words ('sites, Coasters, theezed). When Bud looks to join a phyle for protection, he says that the Jews will not take him unless he "learned to read a whole nother language, which was a bit of a tall order since he hadn't gotten round to learning how to read English yet" (Stephenson 30). This quote highlights the sort of everyday illiteracy and attitude about literacy in the world of *The Diamond Age*. Bud says that he is illiterate and we as readers experience casual language through the point of view dialect.

Conversely, Hackworth is shown as having more distinguished literacy skills and a more complex literary style; he reads the *Times* a number of times in the early sections of the novel (page 14, 17, 36) and at one instance the use of the newspaper in *The Diamond Age* is explained: "Hackworth picked up a large sheet of blank paper. 'The usual,' he said, and then the paper was no longer blank; now it was the front page of the *Times*. Hackworth got all the news that was appropriate to his station in life, plus a few optional services: the latest from his favourite cartoonists and columnists around the world; clippings on various peculiar crackpot subjects forwarded to him by his father, ever anxious that he had not, even after all this time, sufficiently edified his son; and stories relating to the Uitlanders—a subphyle of New Atlantis, consisting of persons of British ancestry who had fled South Africa several decades previously" (36-37). Here we see a more complicated sentence structure, composed with a number of clauses strung together, which is both more similar to the Victorian sentence structure of authors like Dickens, and thus more appropriate for Hackworth's neo-Victorian character, and also more complicated, requiring a more advanced mastery of literacy. Additionally, because Hackworth can read and Bud cannot, the information that Hackworth can attain from the newspaper is different from that of Bud who acquires information through mediaglyphs and images.

Hackworth's description of *Times* newspaper also outlines how various types of information and modes of mediation are deemed "appropriate" for each of the classes in the society: "a gentleman of higher rank and more far-reaching responsibilities would probably get different information written in a different way. . . One of the insights of the

Victorian Revival was that it was not necessarily a good thing for everyone to read a completely different newspaper in the morning; so the higher one rose in the society, the more similar one's *Times* became to one's peers" (36-37)**.** The individuals in the neo-Victorian phyle have tailored (and thus differing) newspapers, but each individual's resources of information and media are similar to their peers, or those in a similar social position. This points to a) a division and distinction between individuals; and at the same time b) a unity of individuals, beliefs, and values. The first point means that not everyone gets access to the same information, the second point suggests that those with the same access stick together. This both controls what information particular social groups get, and also limits what information an individual will receive.

The control of information and information retrieval skills is one way of controlling who can and cannot practice political action, inhibiting that aspect of human agency. Dominant groups can control language and literacy to maintain their own social and political power. Granting access to the technology and skills of information exchange, such as in the case of Nell, subsequently provides marginalized individuals to become political agents capable of gaining power and subverting power structures.

In Nell's development we witness the changes in her social position and power as a direct relationship with her developing literacy and critical thinking skills, both of which are instigated by her rebellious possession of the primer. Literacy development is demonstrated through Nell's personal development and interactions with the Primer and literacy more generally, as well as the changing style of the narrator's voice as Nell develops. As the novel, and Nell's education, progresses, the fluctuations in the style

and tone between points of view coalesce into one narrative voice following the highly-literate characters who are each embedded in the Primer in some way: Nell, Hackworth, Miranda, and Carl Hollywood.

Nell's evolution of literacy is also demonstrated through her interactions with her older brother Harv. Harv teaches both the reader and Nell about the Matter Compiler (M.C.) and mediaglyphs; at this point in the novel, Harv is much more experienced and informed than either the reader or Nell but "Nell could already read some of them" (44). We see that even in this cursory introduction of Nell that she has some latent literacy skills; she can relate the use of the M.C. to other media devices she is already familiar with, and can recognize a few of the images that signify certain things. Harv and Nell's skills divide around the same time that they run away; Harv acts (or truly is) confused by Nell's more elevated diction, which she modifies to maintain communication with her brother. Later, when her abilities have far exceeded her brother's she writes him letters, but not *in letters* but in mediaglyphics—Harv can't read letters, but he can reciprocate the mail through that language. Nell, who is committed to her acquisition of literacy, information, and social security, can continue writing this mail to her brother, even when he can no longer participate and escapes into a virtual media world.

Another dimension of the 'low' media environment in *The Diamond Age* is demonstrated through the description of Harv and Nell's childhood, plopped in front of passives while the adults gossip in the other room or sent to the other room while their stepfather plays misogynistic and violent Burly Scudd Ractives. Harv and Nell's childhood experiences show that the poorer classes of people in *The Diamond Age* use

ractives to escape from reality or to distract the children with a passive while the adults talk. We see similar types of escapist virtual-reality use and literacy in many other science-fiction texts, notably: Vernor Vinge's "True Names," Ernest Cline's *Ready Player One*, The Wachowski's *The Matrix*, Stephenson's *Snow Crash*, David Cronenburg's *eXistenZ*, and of course William Gibson's *Neuromancer*. In all of these examples the virtual space and the 'real world' begin to blur together as the characters use their mastery of the virtual/digital space to enact revolutions and solve real world conflicts (these conflicts are often the domination or oppression by powerful mega-corporations). The use of virtual literacy in narratives highlights the individual's rebellious potential within the virtual/digital space. The hackers/researchers in these texts are instilled with power—power to defend themselves and the other "little guys" in the margins of society.[18] Likewise, through Nell's activities within the digital space of the Primer, she gains the knowledge and ability to enact rebellious and revolutionary—"subversive"—action.[19]

Radical Access and Engaged Participation

The core motive of the Primers is subversion, and as such are experiments in resisting hegemony. The encoded subversion is beneficial for Nell, but the same subversion, mediated through Nell and to the Han orphans does not have the same emancipatory effect. For one, hegemony impacts Nell and the Hans differently. Alper

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[18] Another hacker narrative that strives to protect the individuals from the terror of the corporation is Sam Esmail's *Mr. Robot*; the television series is particular because it emphasizes the real lives of the hackers (and their motivation), rather than their virtual lives.

[19] One thing that is very important about Nell's 'hacking' in the digital space, and the hacking of all of the other examples, is that none of the protagonists go at alone—they may face the final challenge alone, and they likely only have a handful of help from a trusted community or partner, but they are never alone on their quest.

explains that "critical thinking' and 'subversion' mean different things to different populations of children — not independent of cultural, racial, and socio-economic background. The problem with sustaining a univocal definition of subversion is also a commentary on the trouble with conceiving of technological access as an essentially democratizing force" (Alper "Digital Divide"). Alper further explains that "Finkle-McGraw [who commissioned the Primer] defines subversive thinking as the ability to grapple with subtlety and ambiguity. Stephenson, in presenting this leitmotif in rather contradictory ways, challenges readers to think subversively about 'subversion' in *The Diamond Age* itself" ("Digital Divide"). That means thinking critically about the ways subversion works within the text, how the subversion that liberates Nell is neither the same subversion that saves the orphans, nor the same subversion that the Han girls need for their own independence. This demonstrates one way that radical access is not simply egalitarian distribution of resources, but also the restructuring of hegemonic imbalances. The education and requirements for literacy access are not the same cross-culturally. Providing access to white educational resources is not enough because it frames education and literacy through the white-colonial experience. And so, we must think subversively about what access really means.

Access to the information and technology of the Primer is possible through rebellion and subversion. Not *all* of the recipients of the Primer are marginalized individuals in society (although they are all women/girls). But importantly, Nell who is marginalized by class, and the Mouse Army (Han orphans) are marginalized by class and race. As such, marginalized access to information and technology is *made possible*

through acts of subversion and rebellion. Through their access to the Primer, Nell and

the Mouse Army are able to question and restructure hegemonic power, thus *The*

Diamond Age demonstrates the way that subversive or rebellious power can redistribute

power and help acquire further marginalized access. If the hacker (a talented and

marginalized individual) is provided with access (to information and technology) and

allowed to participate, then they can restructure power systems in ways that encourage

decentralization and the prosperity (and security) of themselves as well as other

marginalized or threatened groups.

Through her access to the Primer, Nell transcends the literacy abilities of her

family. Vint explains that "it is only Nell, for whom the Primer has provided a means to

change her given social circumstance and create a space for herself in a different social

world, who treats the Primer seriously, as a tool of social engineering" (153). But Nell is

only able to attain her education because she becomes hardware rich through several

acts of familial love and duty, crime, violence, and a bit of chance. Nell *accidentally*

receives her Primer; but in reality, it is no accident; many responses to established

power structures result in Nell's acquisition of the technology. Most directly, Nell

receives the Primer from Harv (Harvard) who provides real-world education long before

the entrance of technology in Nell's life. Harv educates Nell out of love and duty; he

steals the Primer to give to Nell out of the same love and duty. Harv steals that

tech/book from Hackworth: father, engineer, artist, thief. Hackworth, the architect (a

term that connotes a boundary between art and math/science) of the Primer, who only

has a copy out in public because he stole a second compilation for his *own* family: his

daughter. Hackworth only *designed* the technology at the request of Finkle-Mcgraw who wants the Primer for *his* family also: in this case, his granddaughter.

These rebellious acts are done to improve the life of a loved one. When the crime is discovered and a trial is held to determine the fate of Nell and her Primer, the judge determines it is best to leave her with the book. Stephenson's novel has a strong undercurrent of Confucianism demonstrated through a number of the conversations between characters, notably Judge Fang or Dr.X—both Shanghainese men of authority. In the way that Confucianism is described in the text, two main attributes are an adherence to cardinal virtues (in particular filial duty) and the importance of education. At Harv's trial (for stealing the Primer) Judge Fang and his advisors explain the importance of filial piety and the value in Harv's act of giving the book to his sister. Fang explains that Confucius stated that "the extension of knowledge was the root of all other virtues" and that "in teaching there should be no distinction of classes" (105). This judgement highlights the value of radical access, or access to anyone, regardless of class, race, or gender. The judge does not take the Primer away from Nell because she is entitled to that access—it would be a worse crime to try to take it away from her (evidenced by the fact that the Lieutenant is "unable" to take it from the girl, not because he isn't physically strong enough, but because it would be morally incorrect). And so, *The Diamond Age* demonstrates the way that subversive or rebellious actions are permissible if they redistribute power and help acquire access.

In a similar way, Hackworth justifies his crimes because it is "the best [investment] a father could make" and "he was not profiting directly. He was just trying

to secure a better place in the world for his descendants, which was every father's responsibility" (78). Like Harv's act of filial piety (which sees judicial leniency), Hackworth commits his crime out of love for his daughter; he wants to provide the power and freedom for his daughter to have "equity" of her own. He assumes that the Primer will enable Fiona to gain that valuable equity. The Primer was originally commissioned by Finkle-McGraw so that his granddaughter would be successful in society. As such, there is a relationship between success in society and the Primer (a tool/symbol of educational technology and informational access).

The men in The Diamond Age demonstrate how rebellion, when performed from a space of care, can benefit both the individual and the community—what's more, the judicial system in *The Diamond Age* supports these acts of rebellion with leniency. In part, the men represent hegemonic and paternal structures of society. However, they are each radicalized in their own way. Harv, a criminal, is the most rebellious and most self-sacrificing (he is asthmatic and gives his face mask to Nell), and is proud of Nell's accomplishments. Harv actively resists hegemonic structure, and, since he has an unstable paternal structure, performs acts of care for the sake of Nell's well-being, not his own gratification. Finkle-McGraw epitomizes hegemony, and his paternal ambitions—the development of the Primer—feel nostalgic, rather than progressive or protective. He supports the girls' development, but it is almost like an experiment and since none of the girls became neo-Victorians, a botched experiment (in his eyes). Hackworth is more ambiguous—his actions of resisting hegemonic structures are intended to perpetuate the structure; he's rebellious behaviour is for the concern of his

daughter, but it may come from self-gratification by living through his daughter; he has pride and love for his daughter, but he is disappointed that she did not become a successful neo-Victorian engineer.

Each of these men (Hackworth, Finkle-McGraw, and Harv) try to provide for their family in the ways that their power allows them to: Finkle-McGraw through money, Hackworth through artistic and engineering talent, and Harv through crime. As such, all of the Primers come into being and come into the possession of each of their girls, through love, a network of power, as well as various forms of rebellion and subversion. The men who initially supply access demonstrate how individuals with power can mobilize that power for the benefit of the marginalized. Finkle-McGraw demonstrates that those with power, money, and access, can still provide modes of subversion (since he commissions the Primer as a book of subversion) and (since he still pays for the illicit copies as well as sponsors Fiona and Nell at school) Finkle-McGraw can also been seen as valuing subversion and supporting the marginalized with his wealth. Hackworth demonstrates that those with knowledge of systems sometimes need to hack the system to acquire the necessary power and tools as well as distribute access; Harv demonstrates that sometimes rebellion—even if it seems violent or criminal—when performed with love, is exactly what's called for.

Participation: Because Liberation Cannot be Gifted

Through these rebellious acts of their community or kin-network, all of the girls gain access to the Primers, but the gift alone cannot lead to self-emancipation; it is only through community participation in her education that Nell becomes a talented critical

thinker and hacker, able to continue her participation in the digital network to facilitate change. Through Nell's experience we see three interconnected threads: access, community, and participation. Each relies on, and impacts the others. These threads tie together to construct Nell's literacy-abilities that surpass the skills of her family before her, but also rely on her adopted family as well as her on-going personal participation with the work.

As Nell practices literacy she reshapes her social position and thus her relationship to hegemonic power. The power granted by Nell's literacy in turn enables her mobilization of hegemonic structure for her protection and liberation. Vint explains that "Nell's ability to remake herself into a subject able to rise above her disadvantaged birth suggests that fiction can function as a technology to remake our selves. Through remaking our selves, we can work to remake the social structure of the world, to challenge the hegemonic ideological configuration" (169). The ability to 'read' power systems and critically engage within them enables the individual to maintain or subvert the code. Through our own self-actualization via literacy we confirm or challenge hegemonic ideology. Reading, writing, language, and other literacy-acts are fundamental to our subject formation. As such, literacy-acts confirm or challenge hegemony—the systemic erasure of languages by the oppressor has been a historic testament to the power of controlling language and erasing subject identities deemed non-hegemonic, non-normative, marginalized, or subversive. Through participation in subversive literacy-acts, communities can re-assert these non-hegemonic subject identities that are disallowed in hegemonic systems. In *The Diamond Age* Nell 's experiences are still

encoded with the white supremacy of the neo-Victorian society, and the Han girls are denied personal identities—are denied their own self-actualization.

Self-actualization through literacy cannot be gifted, it is a process that requires diligent practice and participation. An important aspect of Nell's advancement with the Primer is because of her active engagement with the device. Two components of Friere's work come into play here: 1) Freire said that liberation cannot be gifted; 2) liberation and self-actualization requires practice and participation—work/praxis. Finally, because this process requires constant participation it is also in a state of constant evolution, or a constant state of becoming. This means that our actions, and the ideologies that influence our actions, create the future. With critical literacy we can look at the past so that our actions and ideologies in the present can foster a different future.

In *The Diamond Age* we witness an individual who is oppressed by society, but learns the language to rewrite the social code; through her knowledge she succeeds in her personal liberation and may potentially lead others to their own quest for knowledge and self-emancipation. By learning and applying language, the oppressed can radicalize reality. Likewise, the tool for controlling, domesticating, and oppressing has historically been the control of language and ideas. Thus, the oppressor constructs their own reality by mobilizing ideology. Finkle-McGraw wanted to code subversion into the Primers as a way to instill that belief into his granddaughter, but, quoting Freire, just as liberation cannot be a gift, "nor can the leadership merely 'implant' in the oppressed a belief in freedom" (Freire 67).

Finkle-McGraw's ambition was not the liberation of his granddaughter from the contradictions of the oppressor, but rather to groom her into seeing the benefit of her oppressor position. Finkle-McGraw's gift is one of false generosity, meant to sustain the social order. As such, the pedagogical intentions of Finkle-McGraw are as Freire explains: "Pedagogy which begins with the egoistic interests of the oppressors (an egoism cloaked in the false generosity of paternalism) and makes of the oppressed the objects of its humanitarianism, itself maintains and embodies oppression" (Freire 54).

Liberation is a process of praxis, or practice. While leaders and former oppressors may aid in the process, liberation is a personal action. Because liberation is a personal action that requires an individual to recognize their place within the world, liberation cannot be a gift but *must* be the result of one's own *conscientização* (Freire's term), or critical consciousness.

Freire argues that "freedom is acquired by conquest, not by gift. It must be pursued constantly and responsibly" (Freire 47). In *The Diamond Age* the Primers are all given to the girls as a gift, specifically, a gift of paternalism. It is not the paternalism itself that aids the girls, but rather their own work within the Primer and within the world. Elizabeth treats her Primer as another place to rule, as such, she cultivates that action. Fiona remains tethered to her father and becomes lost in a world of illusion and false freedom. Only Nell who relinquishes the bonds of paternalism and works *on her own* cultivates liberation from her earlier position. Nell also does not save the Mouse Army through a blind gift; she finds the plans for subsequent Primers for these girls and resolves to use her resources to build the tools that the Hans can use for their own

liberation. Freire explains that "not even the best-intentioned leadership can bestow independence as a gift" (Freire 66) and that "no one liberates himself by his own efforts alone, neither is he liberated by others" (Freire 66). Dr. X cannot liberate the orphans, neither can Nell; but with Nell's assistance in creating new individuated Primers for the girls, perhaps she and the girls can work together to liberate themselves and each other.

Banking Model

The problem with attempting to 'gift' liberation is that it thrusts value onto the oppressed without representation, consultation, or any of the required praxis and work. Freire discusses a similar issue with the "banking" model of education that works through the idea of a teacher depositing information into the student receptacle.[20] This banking model "anesthetizes" students' critical abilities, domesticating them to the social order while also diminishing the relationships between ideas and disciplines.

The banking model that converts students into receptacles for information eliminates the requirement for critical consideration of deposited data, turning students into less reliable and efficient computers, able to compute numbers and regurgitate facts without understanding or even considering their place or affect on reality. Detached from reality, these students can change neither the world, nor their place within reality. The banking model of education eliminates students' ability to be active

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[20] Freire argues that "education is suffering from narration sickness" where reality is seen as "motionless, static, compartmentalized, and predictable" and the students are meant to be "filled" like a bank (Freire 71). "Education thus becomes an act of depositing, in which the students are the depositories and the teacher is the depositor" (Freire 72). These deposits "contain contradictions about reality" (Freire 75), and the oppressors do not want the oppressed to see these contradictions because they "may lead formerly passive students to turn against their domestication and the attempt to domesticate reality" (Freire 75). "The more students work at storing the deposits entrusted to them, the less they develop the critical consciousness which would result from their intervention in the world as transformers of that world. The more completely they accept the passive role" this "serves the interests of the oppressors, who care neither to have the world revealed nor to see it transformed" (Freire 74).

participants and transformers of the world. According to Freire, the necessary educational reform is to "abandon the educational goal of deposit-making and replace it with the posing of problems of human beings in their relations with the world" (Freire 79). Thus, instead of rote transferrals, students are required to participate in acts of cognition and critical thinking.

Freire points out that educational reform or liberating education requires power that the oppressed do not have, but that the ultimate goal is educational projects enacted *with* the oppressed. Freire explains: "Authentic education is not carried on by 'A' *for* 'B' or by 'A' *about* 'B,' but rather by 'A' *with* 'B,' mediated by the world—a world which impresses and challenges both parties, giving rise to views or opinions about it" (Freire 93). This is what Freire calls problem-posing education, a system founded on dialogue about problems and the considerations for solutions. This collaborative education resolves the contradiction of the teacher as "one who knows" and the student as "one to fill." Rather, problem-posing education requires critical thought about the world. Freire explains that problem-posing education nurtures critical reflection and empowers students to recognize themselves as part of the world and potential transformers of the world. To quote Freire: "in problem-posing education, people develop their power to perceive critically *the way they exist* in the world *with which* and *in which* they find themselves; they come to see the world not as a static reality, but as a reality in process, in transformation" (Freire 84). This transformative potential demonstrates that reality (and people) are always in a state of becoming, and ideological actions are votes for a particular personal and social future.

Participation: Co-Creation and Self-Actualization

By the end of the novel, Nell and her army of girls have learned hacking and literacy skills through Primers all created and attained through caring rebellious acts. Without those acts, these girls would have had limited to no power in society. Through their access to the technology of the Primer, the girls can access information, which makes them more powerful and more capable to participate within society. Importantly, these girls also partake in engaged participation with the Primers. Their time both in and outside of the digital space of the Primers is active, collaborative, and community-focused. Although Miranda narrates Nell's Primer, and Nell's Primer governs the Primer of the Mouse Army, the digital media space of the Primer is co-created through the interactions of Miranda, Nell, and the Mouse Army.

Gray Scott reminds us that Nell's instruction is through "interactive storytelling" (7), and real-time storytelling that involves reader and teller in the activity—much like table-top roleplaying or online multiplayer gaming—this type of participatory learning and story-telling forces the learner to engage in problems from a multifaceted perspective, incorporating various disciplines (for example math and reading) into the solution to one problem. Furthermore, the ludic quality of this type of learning serves to engage students in the puzzle-struggle-reward loop that encourages participants to continue working on a puzzle through the struggle because they know there is an

eventual reward (there is plenty written about the ludic nature of games and their relation to learning.[21]

Likewise, McGinnis explains that in *The Diamond Age* we witness an "alternative, more relational model of knowledge in contrast to the isolation of the Anglo-American educational models" (487), in part because "Nell and her primer are *co-emergent*—that is, the human user and the technology mutually define each other" (483). The Primer is co-created through the shared experiences of Miranda, Nell, and the Mouse Army, and filled by these users around the core programming of human archetypes in folk and fairy tales, which are themselves part of the collective consciousness. The reader's experiences and surroundings shape the reading experience. This is also true of analog reading—reading a book on a beach, on an airplane, or for a class will all affect the reading experience and the interpretation of the text. Because the Primers follow the girls on their development, and the experiences each girl goes through is part of their development, the development of the Primer provides a useful mirror to the way we as humans progress and learn over time, adapting what we learn and how we learn it to where we are at in our life and how our previous experiences have shaped our personal identity, and personal and social values.

McGinnis explains that "Nell's ability to immerse herself in the Primer, to depth and quality of her reading experience versus an extensive but shallow reading enabled by mass media, suggests the possibility of an intensive interaction with a computer

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[21] see: Fran. C. Blumberg, James Paul Gee, Jane McGonigal, Mary Flanagan. The psychological evidence is promising, yet still mixed: https://www.apa.org/monitor/2015/04/gaming).

program" (484). Nell develops a more sophisticated understanding of the world than her brother who learns from Passives and popular Ractives. However, Nell also notes that she could learn more through her Primer than she gains through the education at Miss Matheson's school that is more interested in training young people in the social values of a particular group (the neo-Victorians) than developing complex and critical thought that may question the hegemonic order. Nell, Fiona, and Elizabeth, while they excel at Miss Matheson's, each learn (from the Primer) the hypocrisy of that hegemony and leave in search of their own (subversive) social communities. Nell, like Fiona, and like Elizabeth, and all of the girls of the Mouse Army find their own version of familial and communal values that are outside the neo-Victorian hegemony. Those who have interacted with the girls through the Primers, for example Hackworth and Miranda, are further from their neo-Victorian roots, despite still being members of the neo-Victorian society.

In *The Diamond Age* Nell demonstrates the emancipatory potential of social participation through literacy, and we see in her experiences that through literacy-acts we can consider the impact and alternatives of social systems. Vint explains that Nell's success is in part due to her "willingness as a reader to translate between text and life" (142) and that "reading a text critically opens a similar space [to writing] in which one can reflect upon cultural interpellations and perform cultural critique" (168) because "books are what allows us to step outside the confines of our material existence, and see our social arrangements as contingent and cultural choices rather than necessary and natural givens" (164). To perform cultural critique requires critical literacy skills,

which is a core program of the Primers. Those who are provided access and subsequently trained in the political act of literacy can turn the tool around and use it to hack the system. After Nell learns the inner social workings of neo-Victorian society she uses this knowledge to her benefit, securing herself a place to live and a stable and fulfilling source of income, quite literally selling the neo-Victorian stories and desires back to them.[22] Vint explains that Nell "is able to understand social structures as the outcome of the systematic application of rules" (161). Vint argues that because Nell is an outsider, she sees that this is merely one set of rules among many, rather than as "natural or right" (161). Because Nell can see the rules and understands how they are constructed, as well as how those rules construct society, she can manipulate the rules to her benefit, crafting (or hacking) her own programs out of the same lines of "acceptable" code. Nell develops the literacy skills to rise through the neo-Victorian ranks and uses that position to undermine the hegemonic power structures at play.

Nell shows that the literate individual has the capability to mobilize their literacy as a tool or defensive weapon, recreating stories or new knowledge, that can redefine personal and social experience. Writers in the nineteenth-century, such as Dickens, used this literacy power to instigate social reform and cause real change in their society. In our post-internet age, literacy extends past verbal and print literacies, to digital and cyber-literacies as well. With these we can create something within cyberspace, and

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[22] Nell learns the inner-workings and can hack the system: "Nell did not agree with Miss Matheson but She had the neo-Victorians all figured out now. The society had miraculously transmuted into an orderly system, like the simple computers they programmed in the school. Now that Nell knew all of the rules, she could make it do anything she wanted" (323)

science fiction's hackers show us that creation within cyberspace can have real impacts on the material world.

Cyberspace in the twenty-first century changed learning and literacy; Meryl Alper writes that "as learning has the potential to become more individual and customized in the early 21st century, it is also becoming more social, networked, and peer-led . . . In our culture at large, personalized media is co-existing with social media in complex ways . . . Critical thinking and reflection skills are necessary to actively participate in an increasingly complex digital media environment" (Alper "Learning"). Alper argues that New Media Literacies could be implemented in educational situations and "might empower young children of various social, economic, and ethnic backgrounds to be successful" (Alper "Learning"). These are the children who are least likely to succeed in institutional educational systems that were not made for them, but rather, made to iron-out differences between individuals, (un)consciously privilege white upper-class boys, and indoctrinate social order at the expense of the individual (we see this distinction in the differences between Nell's Primer experience and the Han girls' Primer experience).

Whereas the Han girls' Primers model mass education that provides one educational narrative to all students, Nell's Primer suggests the possibility of dynamic and individuated learning experiences. Nell's Primer is mobile, ludic, and interactive, motivating independent thinking and active participation within the virtual space. Because the Primers educate through the lens of fiction, the information is also engaging. Because the media is active, the puzzles have a ludic quality, rather than the

frustrating repetition of a classroom drill. As a result, Nell becomes engaged in her participation with the Primer, and because the Primers are mobile, the girls become inseparable from their individual books, devoting all of their free-time to the development of literacy, story-telling, computing, and hacker skills.

Conclusion

In this thesis I sought to answer how *The Diamond Age* remediates social structures of hegemonic power that impact the empowerment of individuals through the control of literacy. To answer this I delved into the relationship between literacy and power in Anglo-American educational history. I explained how literacy is tied to technology, and both are political—we see this in technologies such as the printing press or the internet, which augmented literacy and society simultaneously. Literacy and technology can also both be harnessed by those in power—sometimes unconsciously—to sustain hegemonic ideology. In this way, the powerful maintain control, mobilize technology and literacy for their self-interest, and influence who can and cannot be political agents in society. The child is one way of instituting this control, injecting hegemonic ideology into education and media. However, learning critical literacy skills can improve an individual's susceptibility to unconscious and oppressive pedagogy. With the development of literacy skills, individuals can resist this indoctrination.

After the public spread of the internet and movement towards digital and screened media, access to information became more accessible. However, I noted that

some are unable to access the internet's wealth of information due to the digital divide, which inhibits some from acquiring the necessary skills or technology. In Stephenson's *The Diamond Age*, critical participation with technology serves to liberate a marginalized protagonist, but the text does not liberate equally. The interference of power structures—demonstrated through neo-Victorian ideology—eschews responsibility for the liberation of racially marginalized characters and systemically inhibits their equal liberation.

A problem within the novel concerns the digital divide—or the imbalance of technological hardware and training that spans gender, race, or economic divides. One fundamental difference allowed to the protagonist Nell is the application of critical thought fostered in an environment of community and kinship; in contrast, the Han orphans in the novel are denied kinship, have their technological and educational access suppressed, and as such mutes both their participation and self-actualization. All of this comes to pass through applications of power—applications to oppress some and to advantage those already in control. Literacy is not a perfect utopia—the literacy afforded by Nell's technological boon is still steeped within a structure of power, and because of the systemic imbalances inlaid within society and education, literacy is neither available to all nor implemented equally.

I suggested that this imbalance of power can be mended by a three thread approach, one that includes radical access to technology and education, community support and engagement, and both personal and co-creative participation. For the

character afforded these threads, critical literacy is an empowering and revolutionary force.

Nell's mentors coach her on the difference between information and knowledge, and the skills of seeing the world as flexible, sometimes contradictory, and often ambiguous. Although many of Stephenson's characters value hierarchies and rigid belief systems, Nell learns that hierarchies can be dangerous and oppressive, but still discovers the value of finding a community of like-minded thinkers with common beliefs. *The Diamond Age* remediates the Victorian age to anchor the text in the ongoing system of hegemonic power and subverts themes in the cyberpunk subgenre to present a domestication focused on kinship networks rather than nuclear family structure and hegemonic social order. Drawing on Freire's *Pedagogy of the Oppressed*, I examined the features of participation that conditioned why some characters were able to uncover self-liberation while others were denied that empowerment. The principles of participation and community are shown to be essential for the protagonist's liberation—the Han's who are denied these features in their education are denied liberation in turn.

The Han girls receive a hegemonic mass education that denies their individuality or self-empowerment, instead perpetuating Imperial structures of marginalizing the Other. It's a troubling complication of the text, that demonstrates the on-going concerns of political inequality. However the novel may suggest that through participation, radical access, and community-focused engagement we may create a democratic space of media and communication that enables a mindset of social egalitarianism by permitting

the rebellion or "hacks" of those who are systemically restricted in society; these are the skills and tools that enable the evolution of society in ways that upset systems of power and oppression. We've inherited a system and now it's up to us to hack it to change it for those who suffer under its domination and oppression.

Nell's experiences with the Primer demonstrate the emancipatory potential of media use and critical literacy. Through inquisitive, problem-solving engagement with the Primer, Nell learns how to interact with society from a place of critical understanding. It is through this critical understanding that she uncovers self-actualization and defines her own empowered society of women—a community of women who place their own survival as well as the protection and well-being of others at the forefront. Importantly, this society of critically empowered women is *only possible* through a series of rebellious actions—in a world where complacency and fitting into society is encouraged, thinking critically is a rebellious act. This is the act of the hacker. In a world where the type, format, and access to information is contingent on your social class, defying those boundaries—hacking into the information network previously barred to you—isn't just a rebellious act, it is a necessary act for survival.

CODA: Moving Forward, Together

I began writing this thesis amidst the climate rallies of 2019 and I end in the global COVID-19 pandemic of 2020 and 2021. During this time, I have witnessed even more divisive dialogue in the media, as well as the co-opting of conspiracy-type media under the guise of critical thought. However, I have also witnessed the gathering, mobilization, and participation of individuals, *digitally* banding together into a global community of

compassion, support, and optimism.[23] As the world has changed and the media

responded to those changes, my approach to this research has evolved into this theory

of caring rebellion that includes radical access, active communities, and engaged

participation, which I see unfolding in pockets of the digital media landscape. I feel we

are witnessing some of these actions *right now*.

Companies are donating digital resources and making their services free while

communities are sharing their skills and expertise to keep quarantined children actively

learning. All of this has served to keep communities active and informed despite

physically distancing. It is the benefit of the digital age and the treasure of using digital

tools to advance and sustain education and social literacy in a strange time. Yet, here

the physical arts suffer—how is the pottery student supposed to learn how to spin on

the wheel when they cannot go to the classroom—but perhaps technology like

Stephenson's ractive literacy could resolve this, perhaps VR pottery classes could mend

the gap until in-person instruction could be made possible. But that still requires

technology in our households, and the digital divide cannot be forgotten. Through the

2020 pandemic, we have seen the impacts of the digital divide[24] and the *need* for

accessible digital resources for all individuals; museums, operas, and orchestras can

provide free streams and virtual tours, departments at Universities can move to online

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[23] See: Roose, Kevin. "The Coronavirus is Showing Us How to Live Online." *The New York Times*, Published 17 March, Updated 18 March.
https://www.nytimes.com/2020/03/17/technology/coronavirus-how-to-live-online.html
Padres, Arielle. "Amid Social Distancing, Neighbors Mobilize Over Facebook." *Wired*. 14 March.
https://www.wired.com/story/coronavirus-social-distancing-neighbors-mobilize-facebook/?utm_source=twitter&utm_medium=social&utm_campaign=onsite-share&utm_brand=wired&utm_social-type=earned
[24] See: Zhong, Raymond. "The Coronavirus Exposes Education's Digital Divide." *The New York Times*, Published 17 March, Updated 18 March, Accessed 18 March.
https://www.nytimes.com/2020/03/17/technology/china-schools-coronavirus.html?action=click&auth=login-google&module=RelatedLinks&pgtype=Article

interfaces, and this can liberate some physical or financial burdens, but to truly be accessible—that requires technological wellbeing across the global community.

We are staying apart and connecting digitally to protect our community, to protect the most vulnerable in our households, our cities, nations, and the entire globe. Most of this has been the work of individuals, public institutions, governments, small businesses—not the massive corporations that send tone-deaf emails to everyone's inbox to be deleted. This is the work of people.[25] People who care about their fellow humans and not only want to see a better, healthier community—digital and otherwise—but want to put in the work to use available technology to these ends. If we want to build a better community for our present and our future we must keep our communities healthy, connected, and engaged in the process of mobilizing technology towards critical thought and community. Whether this time in history is the first page, or the last page of a science fiction novel, the dystopian or utopian future is always in a state of becoming, and our creation and consumption of media is part of that process.

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[25] See: Smith, Ben. "When Facebook is More Reliable than the President." *New York Times*, 15 March, Accessed 20 March. https://nyti.ms/2waMALB

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